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Role of HSP 90 in Oral Lichen Planus: A Molecular Study

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Abstract

Background: Oral lichen planus (OLP) is considered as a chronic inflammatory mucocutaneous disorder. It has also been classified as a potentially malignant component in the oral counterpart lesion (OLP). The treatment of choice involves topical or systemic corticosteroids, but other drugs may also be used. Heat shock proteins (HSPs) are dynamized by both Environmental and patho-physiologic stresses thus enabling the cells to survive from stressful conditions. Heat shock proteins show an increased expression in a range of human cancers. Yet the role of HSP' s in carcinogenesis is ambiguous. The aim of this paper helps us identify the Heat shock protein 90 as a potential and promising target in the treatment and management.

Methodology: Real time PCR was performed for 90 samples. The RNA was extracted using TRIZOL. cDNA was reverse-transcribed. HSP90 primers and beta actin primers. HSP90 and beta-actin in parallel with were amplified in triplicate.

Results: Showed increase in expression from normal when compared to study groups. This was measured by fold changes. As the disease progressed, levels of HSP 90 gene expression also increased accordingly and was found statistically significant ($p<0.0001$) amongst the study groups.

Conclusion: The role of HSP 90 has been identified by genomic analysis. This forms a clear foundation for further research to develop targeted therapy for lichen planus targeting HSP 90 gene.

Keywords: *Oral lichen planus, Heat shock protein 90, targeted therapy.*

Introduction

Oral lichen planus (OLP) is considered as a chronic inflammatory disease and a potentially malignant disorder with a malignant transformation rate of 0.5-2%[1]. The commonly involved sites are buccal mucosa, gingiva and tongue. It clinically presents as bilateral white striations or papules on the involved sites. Erosions and blistering along with erythema may be seen. Almost 50% of patients who have oral lichen planus also have skin lesions. Skin lesions in LP usually resolve within 1-2 years where as in OLP they persists as long as 20 years or more. OLP affects approximately 1-2% of the general adult population, all races can be affected and the female to male ratio is 1.4:1.3,[10]. As of date, there is no curative therapy. Topical corticosteroids promote healing of erosive areas, but do not eliminate lichen

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planus. Systemic steroid therapy is used to reduce the submucosal lymphatic infiltrate and inflammatory signs but at the same time adverse and long-term side effects associated with steroids such as candida overgrowth or even adrenocortical suppression restricts its usage to minimum.[9]

Heat shock proteins 90 and Oral Lichen planus: Heat Shock protein 90 (HSP 90) is an essential ubiquitous protein. It is been expressed throughout the eukaryotic lineage. High stress and anxiety levels have been strongly correlated as the etiological cause of OLP. Although this association has been known for decades, difficulties in objectively measuring these variables has been a limitation. Recently the importance of anxiety and stress been widely recognized; these factors are now the target of numerous studies. Soto-Araya et al. (2004) investigated the relation between psychological stress and disease of the oral mucosa which proved to be statistically significant[12]. Molecular Studies eliciting the exact role of HSP 90 in the pathogenesis of the disease and as a target for treatment for Oral lichen planus are very limited.

Pathogenesis of Oral Lichen Planus: OLP is a autoimmune disorder mediated by CD8+ T cells. They lead to auto-cytotoxic apoptosis of the basal cells of the oral squamous epithelium. [4] The basal keratinocytes thereby express or unmask an antigen which may be a self peptide or a heat shock protein. [5]. Subsequently, the T cells (for the most part CD8+ and some CD4+ cells) enter the squamous epithelium of the mucous membrane. This happens either due to routine surveillance to encounter an auto antigen or due to a chemokine mediated migration towards the basal keratinocyte.[5] Activation of T cells takes place when the antigen (on the basal keratinocytes) binds to major histocompatabitily complex-1 (MHC-1) or through CD4+ helper cells. In addition, as the MHC-II expression gets upregulated, the Langerhan cells in OLP also show a increase in the number. This increase is followed by antigen presentation to CD4+ cells. Interleukin -12 activates CD4 + T helper cells which activate CD8+ T cells through receptor interaction, interferon γ (INF – γ) and IL-2. The activated CD8+ T cells in turn kill the basal keratinocytes through tumor necrosis factor (TNF)-α, Fas– FasL mediated or granzyme B activated apoptosis.[8]

Treatment regimen currently followed for Oral Lichen Planus: Topical steroids have been found to be effective in treating symptomatic oral lichen planus by reducing pain and inflammation. But controversially the over usage of systemic corticosteroids in the treatment of oral lichen planus can cause adverse long-term effects in patients. Thus the timely follow up is very essential in the Oral lichen planus patients to avoid the long term use of steroids.[13, 14] Currently the other modalities like calcineurin inhibitors, retinoids, dapsone, have contributed significantly toward treatment of the disease.[8] Though the drugs have a role in treatment, none of them offer a cure for the disease. The lacuane in the treatment of OLP is targeted therapy using the self peptide or HSP. Thus our studies aim to provide foundation for this by experimenting the molecular mechanism of HSP 90 in the Oral lichen planus.

Aim and Objective of the Study:

1. To evaluate the expression pattern of HSP 90 in OLP patients and to compare with normal, controls and those with inflamed mucosa.
2. To quantify the molecular level of HSP 90 gene in the Study groups (Normal, Inflamed and Oral lichen Planus) by real time PCR.

Study Population: Study samples were collected from patients attending outpatient department of Dermatology, Oral medicine and Oral surgery. The research proposal was approved by the Institution of Ethics, SRU in April 2012 (NI/11/OCT/25/64). A written informed consent was obtained from all the patients prior to the procedure. A total of 150 samples were collected from Department of oral medicine, Oral Surgery and Dermatology, Sri Ramachandra Institute of Higher education and research. The slides were reviewed by the research panel. Cases with histopathology oflichenoid reactions were removed from the study groups.

Materials and Methodology

Tissue Preparation: Informed consent was obtained from patients undergoing incisional biopsy. Tissues from oral lichen planus patients with and without skin lichen planus were included. The normal tissue samples were collected from patients who visited the institution for therapeutic removal of impacted teeth. All tissues obtained were reviewed and confirmatory diagnosis were made. Immediately after biopsy, tissue samples were frozen in liquid nitrogen and then stored at -80^0C until RNA was being extracted.

RNA Isolation: The stored samples were thawed and dissolved in Trizol. Tissue homogenization was

done. A portion of the dissolved tissue was transferred to another vial and RNA conversion was done according to protocol. Samples were dissolved in RNasefree water and quantified using Nanodrop. Purity of total RNA was determined by the A260/A280 and A260/A230 ratio, respectively.

Single stranded cDNA Synthesis: The cDNA synthesis was carried out using Prime Script RT Reagent Kit (TAKARA BIO, INC, INDIA). The protocol for the cDNA synthesis was followed. The calculations of the same are mentioned in the table below (Table 1). Each reaction was set at 10µl of which 3.5 µl was used from takara kit and 6.5µl was made of RNA(500 µg) and diluted with RNase free. RNA concentration was calculated based on the nucleic acid concentration obtained during the Nanodrop check. Every sample is expected to have a different RNA quantity based on the nucleic acid concentration. The remaining quantity was diluted to 10 µl using RNase free water. The reaction mixture was incubated under the following conditions: 37˚C, 15 minutes (Reverse Transcription); 85˚C, 5 sec (inactivation of reverse transcriptase with heat treatment); 4˚C.

Levels of HSP90 expression were determined by real-time PCR (RT-PCR). For real-time PCR, hsp90 primers and beta actin primers were used. These primers were blasted by primer- blast site on NCBI website. The forward (F) and reverse (R) primer sequences of hsp90 and β-actin used in real-time PCR were shown in (Table 2). Beta actin was used as the internal control gene. For hsp90, a 66bp amplicon and for beta actin a 648bp amplicon were generated in a 10µl reaction mixture that contained the reagents as showed (Table 3). Each RNA sample was divided into equal amounts and then, HSP90 and beta-actin in parallel with each other were amplified by real-time PCR in triplicate. Negative controls were prepared each time with 2µl DdH2O instead of the cDNA template. Real time PCR amplification was performed using a ABI system with the following setting as manufacture protocol. The reaction mixture was incubated under the following conditions: 95˚C, 2 minutes, 1 cycle (Holding step); 65˚C, 20 seconds, 45 cycles (Annealing); 72˚C, 20 seconds, 45 cycles (Extension); 75-99 ˚C, 1 cycle (Melting).

Table 1: cDNA conversion calculation shown for one sample. RNA concentration for each sample will vary according to the Nucleic acid content of the sample. Real Time PCR

Components	Quantity (µl)
5X Prime Script Buffer	2
Prime Script RT Enzyme Mix	0.5
OligodT Primer	0.5
Random 6 mers	0.5
RNA (500ng)	0.712
RNase free Water	0.5.788
Total Kit	10

Table 2: Forward (F) and reverse (R) Primer Sequences of β-Actin and HSP 90 Used in Real- Time PCR

Gene	Oligo Name	Primer Sequence	Product size
HSP 90	HSP90F	5'-ATTGCCCAGTTGATGTCATTGA-3'	66 bp
	HSP90R	5'-ATGCATCTGATGAATTTGAAATGAG-3'	
Beta Actin	BetaactinF	5'-CGTGCGTGACATTAAGGAGA-3'	648bp
	BetaactinR	5'-CACCTTCACCGTTCCAGTTT-3'	

Table 3: Reaction mixture for Real time PCR

Components	Quantity (µl)
2X PCR Master Mix Syber Green	5
ROX	0.2
Forward primer	0.25
Reverse primer	0.25
cDNA	3
Distilled water	1.3
Total Kit	10

Statistical Analysis: Statistical analyses were performed with Graph Pad Prism 6.01 software. Results were expressed as the mean±standard deviation (SD). Statistical differences were assessed by 2 way Anova - Bonferroni's multiple comparison test and a value of p less than 0.05 was considered significant. (Table 4 & 5)

Results

Statistical Results: 2-way Anova- Bonferroni's Test

Table 4: Mean Δ C_t of HSP 90 expression amongst the study groups

Results	Normal	Inflamed	OLP
Mean	2.591	2.753	3.184
Standard Deviation	0.6943	0.8364	0.9117

Table 5: Bonferroni's Multiple T-test Results p Value <0.05 was considered significant

Bonferroni's multiple comparisons test	Mean Diff.	95% CI of diff.	Significance	Summary
Normal vs. Inflamed	-0.1619	-0.3685 to 0.04467	Ns	0.87
Normal vs. OLP	-0.5934	-0.8000 to -0.3868	*	0.039
Inflamed vs. OLP	-0.4315	-0.6381 to -0.2249	*	<0.0005

Effects on the gene Expression: The levels of HSP 90 gene expression were measured by Real Time PCR. Changes in the expression levels of the protein between the study groups were normalized to beta actin levels and then calculated by Livak method. As the disease state progressed, the levels of HSP 90 gene expression was increasing accordingly. Real time PCR data analysis signified a gradual increase in the expression from Normal to inflamed and a sharp increase to OLP. The fold changes in comparison to the normal is as shown in the Livak Method in table 6. Using the formula, the fold change seen clearly proves the upregulation of the protein in OLP patients.

Livak Method Formula:

1. Step I:
   - Normalize C_t (Target Gene) to C_t (Reference Gene) = ΔC_t (C_tTarget -C_t Reference)
2. Step II:
   - Normalize Δ C_t of case to C_t of Normal = $\Delta\Delta C_t$ (ΔC_tcase -ΔC_t normal)
3. Step III:
   - Calculate expression ratio/fold change increase $2^{\Delta\Delta Ct}$

Application of the formula for calculating the fold change

- **Normal vs. Inflamed**
  1. Fold change in Normal vs. Inflamed
  2. Mean ΔCt of Inflamed: 2.75
  3. Mean ΔCt of Normal: 2.59
  4. ΔΔCt: 2.75-2.59=0.16
  5. $2^{\Delta\Delta Ct}$ Fold Change=$2^{0.16}$=1.117 (approx. to 1.12)

Therefore it is quantitatively estimated that the HSP 90 gene has a mean fold increase of 1.12 in the tissue samples of inflamed when compared to the normal samples using Real Time-PCR

- Normal vs. OLP
  1. Mean ΔCt of OLP: 3.18
  2. Mean ΔCt of Normal: 2.59
  3. ΔΔCt: 3.18-2.59=0.59
  4. $2^{\Delta\Delta Ct}$ Fold Change = $2^{0.59}$ = 1.505 (approx. to 1.51)

Therefore it is quantitatively estimated that the HSP 90 gene has a mean fold increase of 1.51 in the tissue samples of OLP when compared to the normal samples using Real Time-PCR.

Table 6: Summary of fold change amongst the study groups in comparison to Normal

Inflamed	OLP
1.12	1.51

Discussion

Lichen planus is a chronic mucocutaneous disease of multifactorial etiology and pathogenesis. OLP is considered a potentially malignant lesion, so lesion

monitoring must be periodic even in asymptomatic patients and symptomatic ones should be treated. This chronic lesion is usually detected in 0.5-2.2% of population. Among these, only 0.5-.1.5% of the lesions progress to carcinoma. However, there are no prognostic markers available presently to recognize the increased risk in malignant transformation of the lesions. As well the current therapeutic regimen has The concept linking OLP and oral squamous cell carcinoma states that chronic inflammation results in crucial DNA damage, which further progresses to development of carcinoma. Even though in the past decade, enormous information has been accumulated on malignant potential of OLP, its transformation still remains unclear. This molecular work done in identifying the role of HSP 90 in OLP as a good prognostic marker.

Corticosteroids are considered as first-line treatments since their topical form has better benefits and fewer side effects over time. Alternative therapies efficacy has not been demonstrated yet. These drawbacks make us identify the role of novel molecules that could be a potential target for the treatment of OLP. This study demonstrates and identifies HSP 90 as a novel bio- molecule. Heat shock proteins expressed by oral keratinocytes may be auto antigenic in Oral lichen planus. Susceptibility to Oral lichen planus may result from dysregulated heat shock protein gene expression by stressed oral keratinocytes or from an inability to suppress an immune response following self-Heat shock protein recognition. Over expression of Heat shock protein 90 in Oral lichen Planus has been associated to the persistence or chronicity of the disease, or they could have simply reflected cellular injury. The findings were substantiated with the study done by Bramanti T.E. et al (1995), Yin Cao Shen Li Jia et al (2006) and Ponlatham et al (2009), Yin Cao Shen Li Jia et al (2006) .

Conclusion

The importance in identifying the role of HSP 90 in genomic analysis could provide rich information to help understand the pathology of a disease in an integrated way. Understanding the histology, premalignant state and molecular mechanisms of oral carcinogenesis may facilitate the development of novel strategies for the prevention and treatment of oral cancers arising from Oral lichen planus. This tumor-associated protein can be further evaluated as potential biomarker for pathogenetic investigations.

To our best knowledge in the literature, there has not been any previous studies done in this sample size and tissue samples of OSCC and OLP Patients. This is the first global data to be published on this huge sample size. Though trials are currently happening in finding novel HSP 90 inhibitors, base for OSCC targeted therapy is still unknown and this study enlightens and unfolds the path to attempt HSP 90 in targeted therapy for OSCC patients. Studies on tissue samples are more authenticated and reliable as it directly is related to the patient and the results are validated better.

Conflict of Interest: None declared.

Ethics Statement/Confirmation of Patients' Permission: This study was approved by the Institutional Review Board and all patients provided their informed consent for all examinations and experiments.

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A Study to Assess the Attitude of School Teachers Regarding Sex Education Among School Children Inselected Schools at Mangalore

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Abstract

Objectives: The objective of the study was to assess the attitude of school teachers regarding sex education among school children and to find out the association between attitude scores and selected demographic variables.

Method: A non-experimental descriptive study was used to carry out the study on assessment of attitude of teachers towards sex education among school children in a private school at Mangalore. Non-probability purposive sampling was used to select 100 sample. A structured attitude scale was used for finding out the attitude of teachers towards sex education. Data were analysed by using frequency, percentage and chi-square test

Result: The result showed that all the teachers had favourable attitude towards sex education for school children. The study also showed that there is no association between attitude scores and selected demographic variables. ($p<0.05$)

The findings of the study showed that among 100 school teachers most of the subjects (38%)were in the age group of 25-29 years, majority of the respondents (80%) were females, most of the respondents (47%) belongs to Hindu religion, majority of the respondents (77%) were married, most of them (56%) are qualified with B.Ed., most of them (35%) have teaching experience of 2-4 years, majority of them (68%) stay in urban area, majority of them (88%) have previous knowledge regarding sex education, most of them (44%) got information from internet.

Conclusion: From the study, reveals that the teachers have favourable attitude towards sex education. Hence, the teachers are the valuable human resources on whose development depends the future of the nation. In order to enhance the attitude of teachers, a publicity programme should be organized..

Keywords: *Schoolteachers, sex education, attitude.*

Introduction

Curriculum is a planned learning activities, that is guided by the schools and it is carried out individually or groups. An effective successful curriculum development should have goal to meet the needs and demands of the society and expectations of the population[1]. School children who experience a sudden change in their body will not be able to accept the changes, so they need adequate knowledge and good attitude towards sex.

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Now a days the children are more alert, intelligent and conscious about the facts, that are kept like secret behind them and they are more curious to know the secret. To reveal the secret they depend up on friends, relatives, TV programmes, internet etc. Which may give incorrect information that can spoil their life[2]. In this situation a teacher and provide correct information for children that will make the child free from their doubts and it is useful in their future life. The children who are having disharmony in parent-child relationship will really get benefit from a good teacher.

The survey conducted by SIECUS (Sexuality information and education council of united states) found that, most of the parents believe that sex education in schools help them to communicate easily with their children regarding the matters of sex. They also told that teachers should have good attitude and knowledge regarding sex education to provide clear and adequate knowledge to the children[3]. The role of sex education in students is that it enhance the life of students with appropriate guidance and several problems may arise in their life if not guided adequately and properly[4]. Many studies have shown that, Sexual activities that are dangerous and its complications and consequences are result of decreased knowledge regarding sex, sexual diseases etc[5]…Sex education requires a positive attitude of educational professionals. So that, this study aimed at determining the attitude of school teachers towards sex education. A teacher is the most important person in a curriculum implementation process. School based sex education will be effective way of improving knowledge and attitude of school teachers regarding sex education among school children[6].

Materials and Method

The study was conducted in a school at Mangalore and the school was selected based on the availability of samples and feasibility of conducting the study. Non probability purposive sampling technique was used for the selection of sample. The samples of the study was 100 school teachers. A structured attitude scale was used to assess the attitude of school teachers regarding sex education.

Findings:

Section I: Assessment of attitude of school teachers regarding sex education among school children: The data presented in the table 1 shows that all of the respondents have favourable attitude regarding sex education for school children.

Table 1: Level of attitude of school teachers regarding sex education among school children N=100

Attitude	Frequency (f)	Percentage (%)
Favourable	100	100%
Unfavourable	0	-

Maximum score: 84, Maximum Questions: 21

Conclusion

The study showed that all of the school teachers had favourable attitude towards sex education and none of them have unfavourable attitude regarding sex education among school children and there is no association between attitude score and selected demographic variables.

Ethical Clearance: Yenepoya Ethics Committee-1 approved our study protocol number 2018/074 titled "A study to assess the attitude of school teachers regarding sex education among school children in selected schools at Mangalore" on 31/5/2018 under the chairmanship of Dr. Vikram Shetty.

Source of Funding: Self

Conflict of Interest: Nil

Reference

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Facilitators and Barriers to Home Based Exercises in Physiotherapy Practice: A Cross Sectional Study

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Abstract

Background: Physiotherapy had provided an invaluable treatment and assistance to the patients. The physiotherapist who provides a home based exercises [HBE] to the patients is one of the most fundamental and important aspect in our daily life. Understanding the facilitators and barriers to home based exercises is most important factor in follow up of any physiotherapy rehabilitation. Hence an attempt was made to analyze facilitators and barriers to home based exercises.

Materials and Methodology: A cross sectional study was carried using self-constructed questionnaire which was validated from institutional professors. Patients coming to physiotherapy OPD were screened.

Conclusion: There was lack of self confidence and motivation for performance for performing home based physiotherapy exercise.

Keywords: *Facilitators, barriers, home based exercises, rehabilitation.*

Introduction

Physiotherapy had provided an invaluable treatment and assistance to the patients. The physiotherapist who provides a home based exercises [HBE] to the patients is one of the most fundamental and important aspect in our daily life. In general, patients adhere was poor to their prescribed home program, with varying estimations. Non-adherence to a home exercises program has showed a high as 50-65% for general based conditions. Another major issue with non-adherence was important to continue with prescribed exercise regime to decrease the risk of recurrent injuries. Patients who did not comply with their prescribed exercises have shown to demonstrate less positive outcome.[1]

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Non-adherence also gave result to the physiotherapist who believed that there current treatment was not effective and proceeding to unnecessarily modify their program. The physiotherapist who had worked with a patient on improving mobility, strength, endurance, range of motion and joint mobilisation. The therapeutic exercises had greatly reduced stiffness and had caused relief in pain[1]. Patients may also be given exercises to carry out at home to improve strength and flexibility. Self-managed therapy was an increasingly a common element of rehabilitation program for various long term conditions.[2]

Adherence is defined as the extent to which person's behaviour – taking medications, following diet, and/or executing lifestyle changes, corresponds with agreed was also increasingly used in relation to patient self-management of their health.[2] Despite adherence to physical therapy regimes beings recognized as fundamental to positive outcome, there is evidence that non-adherence was often very high. Self - managed HBPT was particularly often demonstrate the lowest level of patient adherence amongst physical therapy modalities.[1] HBPT that failed to achieve either a

certain proportion, or absolute value, of recommended exercise repetition, or recommended exercise duration, or recommended frequency or sometimes a combination of these. Although there might be little consequences regarding what proportion, repetition and frequency should be considered.[3]

Understanding the factors influencing the patient's adherence to HBPT could facilitate the identification of barriers and help practitioners maximise exposure to factors promoting adherence. HBPT was often characterised by a number of features that make it particularly susceptible to non-adherence[3]. These features include the unsupervised nature of treatment, necessitation of lifestyle modification, not providing immediate symptomatic-relief, doubts and uncertainty, about the therapy and potential provocation of the symptoms. Alternatives to self-report are also associated with their own limitation. For eg: in clinical practice, assessments are not necessarily an accurate reflection of unsupervised home practice. Device for objective measurements of exercise adherence such as accelerometers may not capture the movements[4].

In some cases self-motivation refers to individual's tendency to persevere with the behaviour in the absence of external drives. Someauthors established taxonomy where motivation was structured in the form of a continuum that covered the different degrees of self-determination of behaviour[4]. Higher self-motivation and greater intention to complete HBPT exercises also emerged as strong predictors of greater adherence to HBPTs. In self-managed therapy programme relatively free of external motivators, individuals reporting higher intensions and self-motivations are likely to have comparatively high intrinsic motivations. Social support is believed to facilitate adherence via encouraging optimism and self-esteem, buffering stresses of illness and giving practical assistance[5].

Physiotherapy rehabilitation for many conditions includes 'hands on' manual therapy techniques (mobilization, Manipulation or massage) and 'hands off' approaches including postural advice and exercise therapy. Exercise programmes were commonly used but encompass a wide range of concepts. General (fitness) type exercises were conducted on a group basis in either hospital department or sports centre and focus on promoting graded resumption of normal activity. They may be supervised by physiotherapists or fitness instructors and carried out over a set number of weeks, usually for one to two hours per week, in a format similar to cardiac rehabilitation. These interventions have typically been targeted at patients with on-going (chronic) disabling pain[3].

In contrast, specific exercises are also prescribed but these are individually taught. They may follow a specific regimen or be individually tailored. It is common for these exercises to be prescribed on a 'little and often' basis. This means interspersing them with the patient's daily activities, so that by the end of a typical day the patient may have performed several (e.g., more than three and possibly up to ten) bouts of exercise lasting 2 – 5 minutes on each occasion or they have activated postural control muscles prior to undertaking certain activities or tasks. Although monitored by physiotherapists these exercises are unsupervised[6].

Unfortunately, adherence across the range of possible physiotherapeutic exercise is often problematic. In some cases, poor adherence could be the reason for ineffective treatment outcome since it has yet to be established what level of partial adherence is required for beneficial effect. It may also explain the ambiguous research results assessing effectiveness of exercise therapy for pain. The task of the physiotherapist is to improve the patient's condition, by improving not only the ability to recover physical fitness, however the patient is activated not only in the somatic aspect; the patient begins to understand and to see the meaning of his own life, he knows that he becomes active; working on it (if possible) might give him the chance to be more independent and decrease the burden that is taken by someone to improve his health conditions.

The individual is considered in the context of the system (family, community, nation). There should be a proper understanding of mutual expectations, a clear definition of options to help (the availability of specific expertise, specific tools). It is also taken into account not only an external event, environmental, but internal forces (emotions, perception, behaviour). Contemporary view and opinions broaden the range of activities of people supporting the patient. Physiotherapist profession requires, in addition to excellent technical background, knowledge of the condition of the patient, as well as the ability of contact with the patient and understanding what the patient expects from a physiotherapist. Understanding is conceived as understanding of patient's intentions, sensing his/her dysfunction problems, not to interfere too much in the personal life of the patient[6].

Materials and Methodology

Study Design: Cross sectional study

Study Setting: Dr. D.Y. Patil College of Physiotherapy

Target Population: Patients visiting the Physiotherapy OPD for musculoskeletal problems.

Sample Population: Patients suffering from musculoskeletal pain like OA, Mechanical Low Back Pain, Kneeand Ankle Injuries who are visiting Physiotherapy OPD.

Sampling Method: Purposive Sampling

Sample Size: 100

Inclusion Criteria:

1. Age : 18 to 50 years
2. Both genders
3. Participants who are able to follow the commands and are hading to participate in the study.
4. Participants having problem regarding their musculoskeletal pain such as OA Knee, mechanical low back pain knee and ankle injuries, old orthopedic conditions.
5. People with both operative and non-operative cases.

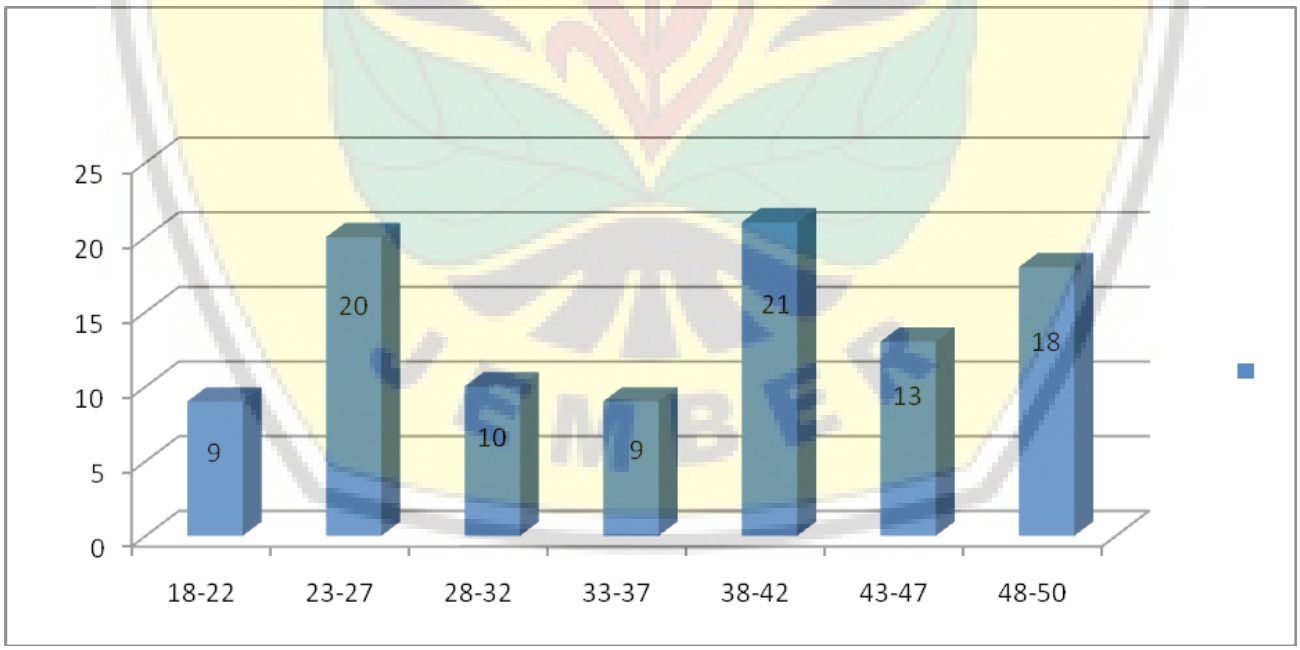
Exclusion Criteria:

1. Participants with trauma and neurological conditions.
2. History of any recent abdominal, back surgeries, Pregnancy, Psychological risk factors.
3. Any contra indication for exercises.

Materials Required:

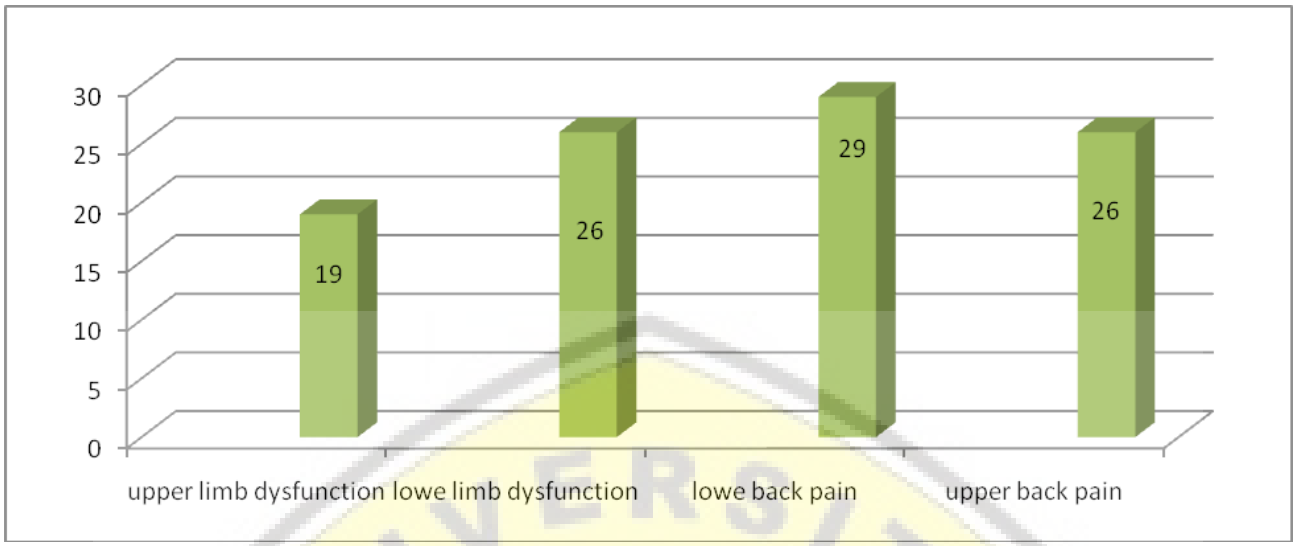
1. Consent form/Questionnaire
2. Pen/Paper

Findings:



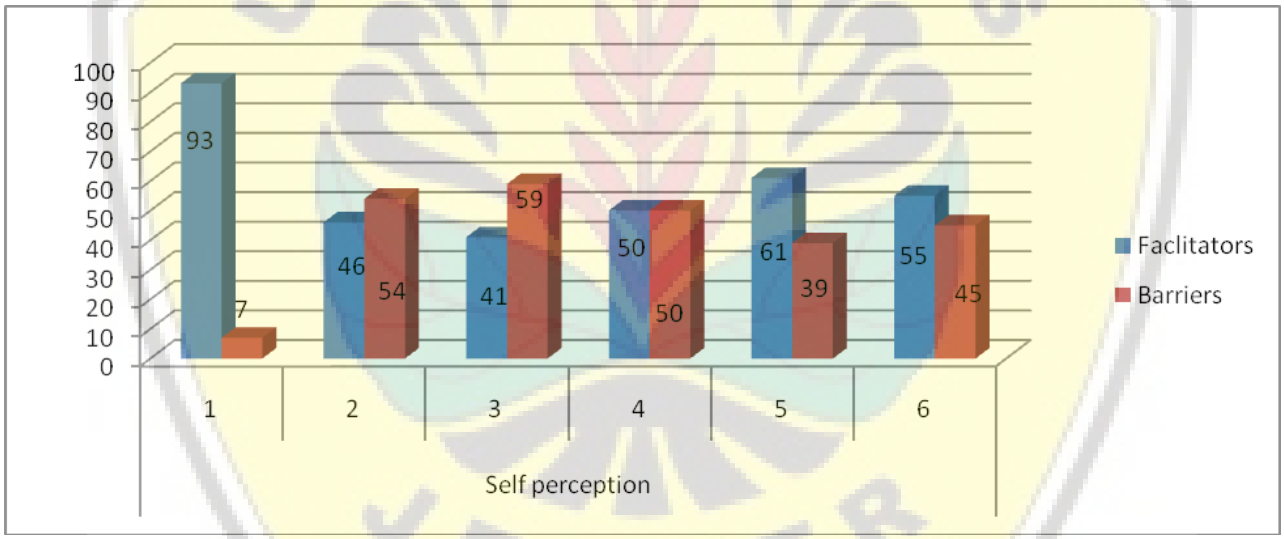
Graph 1: The age group of 18-22 years, 23-27 years, 28-32 years, 33-37 years, 38-42 years, 43-47 years, 48-50 years.

Interpretation: In the Age Group of 18-50. The most affected Age Group was 38-42 years of people.



Graph 2: This graph shows the different types if musculoskeletal dysfunctions that people suffer from.

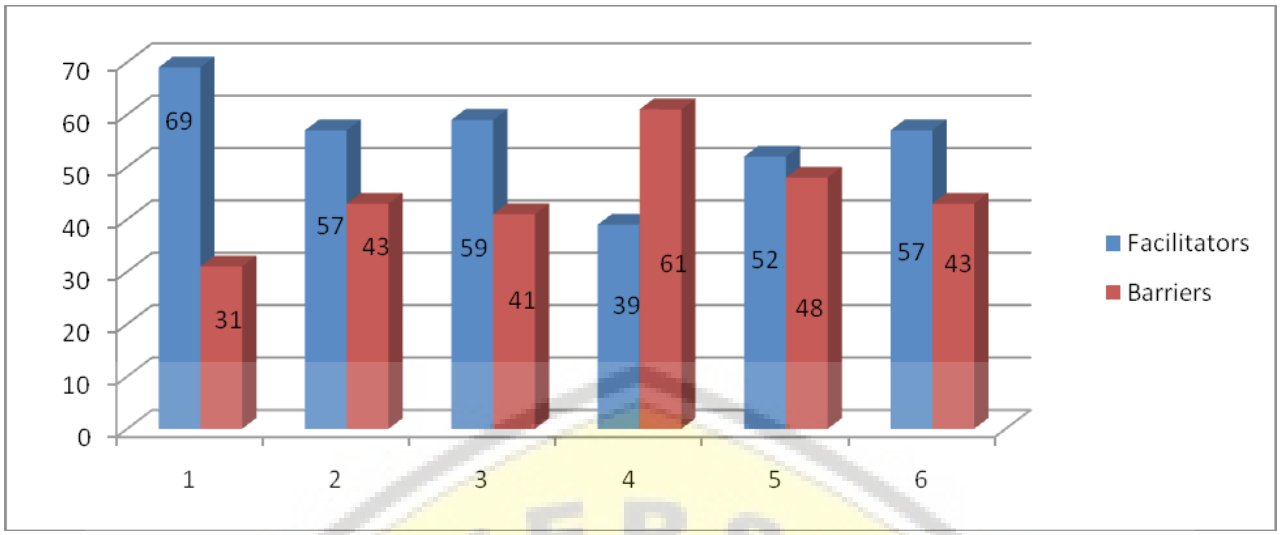
Interpretation: People suffering from different musculoskeletal dysfunction have most common complaint of lower back pain which is 29 in number.



Graph 3: This graph represents the self-perception of Facilitators and Barriers to exercise in Physiotherapy practice

Interpretation:

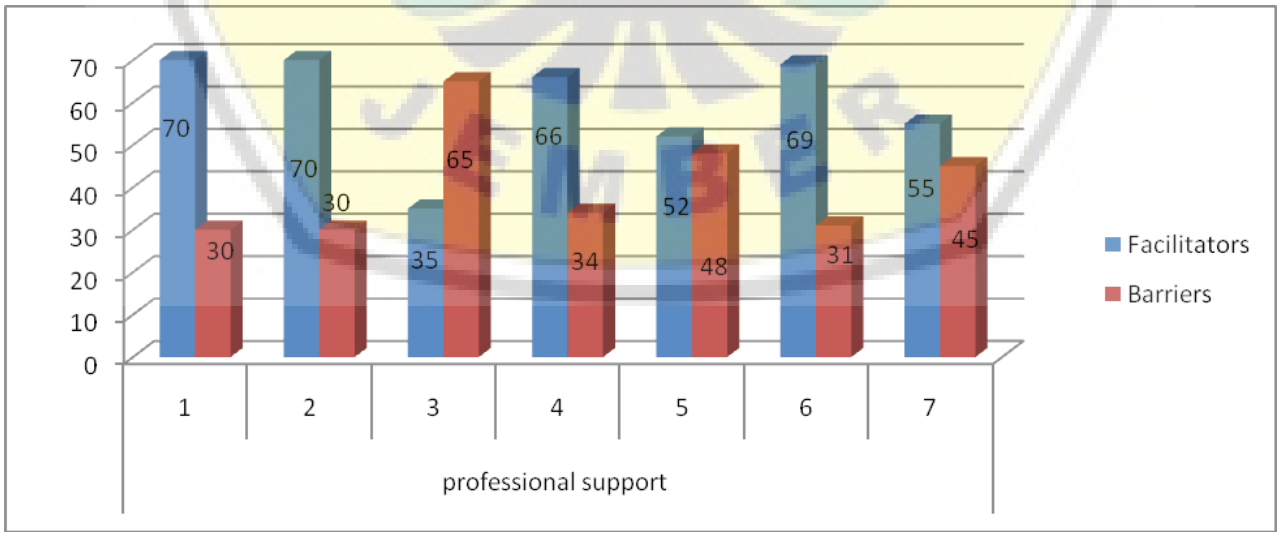
1. 93 number of people are able to do their prescribed exercises at home.
2. 46 number of people do self-monitoring programs.
3. 41 number of people feel on fear of injury while doing home exercises.
4. 50 number of people feel that home program should be supervised.
5. 61 number of people fell that time availability is an important factor.
6. 55 number of people have family members who spend time with them while performing exercises.



Graph 4: This graph represents the social suport of Facilitators and Barriers to exercise in Physiotherapy practice.

Interpretation:

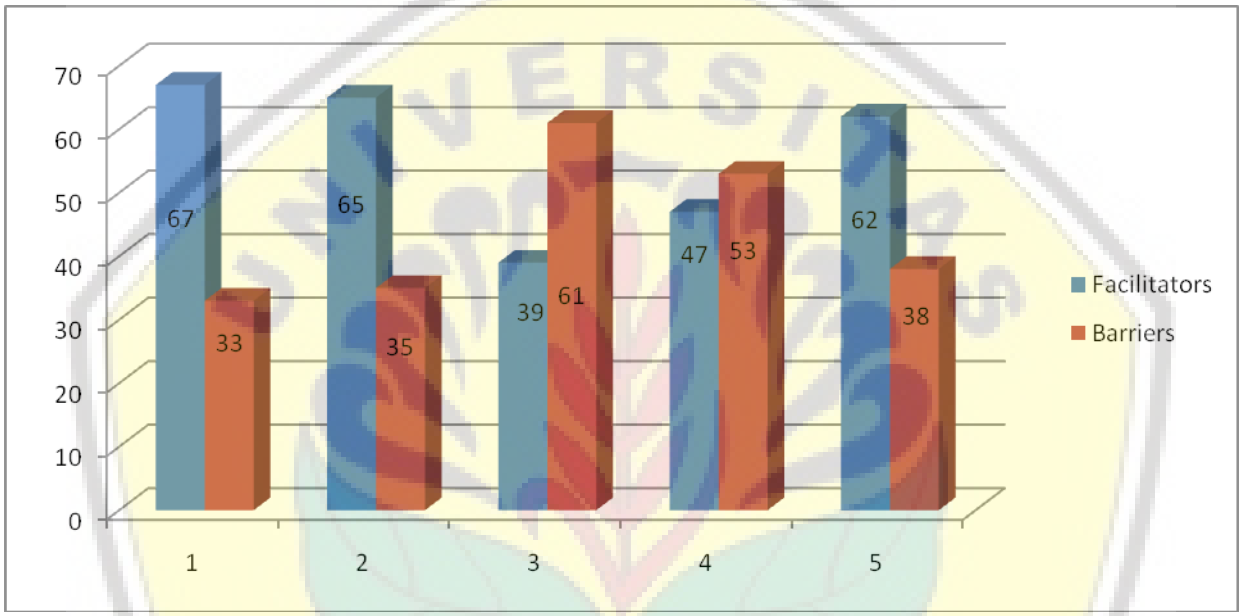
1. 69 number of people are having the task appreciation on added advantage of increase exercises.
2. 57 number of people feel group activity is a good option for home programs.
3. 59 number of people feels friends and family support increases their interest in exercises.
4. 39 number of people feel that their exercises don't get affected while exercising.
5. 52 number of people feel that doing daily exercise makes them feel tired.
6. 57 number of people feel that doing daily exercises make them feel fresh.



Graph 5: This graph represents the professional support to Facilitators and Barriers to exercises in Physiotherapy practice.

Interpretation:

1. 70 number of people feel prescribed programs are easy to understand and perform at home.
2. 70 number of people feel prior training of exercises at physiotherapy department increases the quality of exercises and adherence.
3. 35 number of people feels quality and personality of physiotherapist affect exercise.
4. 66 number of people feels that the set goals by physiotherapist are achievable at home.
5. 52 number of people feel that the physiotherapist should discuss their set goals.
6. 69 number of people feel should explain the reason of all the HBE program.
7. 55 number of people feel that the physiotherapist should get involved in home based rehabilitation protocol,



Graph 6: This graph represents the infrastructure of Facilitators and Barriers to exercise in Physiotherapy practice

Interpretation:

1. 67 number of people feels that the required equipment are easily available for them.
2. 65 number of people prefer performing exercises at home then the physiotherapy department.
3. 39 number of people thinks that the environmental issues affect their exercise performance.
4. 47 number of people have a limited space at home which is the problem to perform daily prescribed exercises.
5. 62 number of people don't have fear of damage of infrastructure at home that limits their exercise program.

Discussion

This study was done to find the awareness among the people regarding the facilitators and barriers that they come across when they perform exercises at home. There were many of them who were aware of the facilitators and barriers that they were facing in their daily life schedule. The study had helped to upgrade and promote occupational health at those set ups by proper evaluation of risk factors at work and provided a better treatment goals and fasten recovery. The study had helped to increase the knowledge regarding HBPT-exercises and helped in improving the confidence. The study helped in increasing the level of patients adherence towards exercises and a physically active lifestyle.

In this study Self-Perception gave a comment that there are 4 components which act as facilitators and have a positive outcome. Like there are people who like to do the prescribed, then there are some who do self-monitoring exercises. Some of them think time availability is the important factor to do home based exercises, some have family members who spent time with them while doing exercises. There are 2 components in which act as the facilitators and people feel that while doing exercises at home they don't have fear of fall or fear of injury and some of them feel that they don't require supervision while performing exercises at home.

In this study Social Support had outcome measures in which the 4 components are facilitators and have a positive effect. When people perform exercisestask appreciation on completion of the set goals add advantage in increasing the exercise volume, whereas some of them think that group activity is a good option for home exercises. Some of them think that the family and friends support increases their interest in exercises at home,some feel that doing daily exercises make them feel fresh. There are 2 components in which people have feeling that their ADL's don't affect their exercise program and some of them feel that daily exercises makes them feel tired.

In this study the Professional Support gave outcome that there are 6 components are facilitators and a positive effect. There are many number of people who think prescribed programs are easy to understand, some think prior training in the physiotherapy department is necessary, some think that the set goals by the therapist are easily achievable at home, some have the feeling that the physiotherapist should discuss the set goals for training, where else some think that they should know the reason of advantages of all the exercises and some of them feel that the therapist should be more clear and should get involved in home based rehabilitation protocol. There is only 1 component that says the quality and personality of the therapist don't affect their exercises quality.

In this study Infrastructure gave a comment that there are 2 components in which the people feel that the equipment required at home for exercises in easily available and some of the feel performing exercises at home is then at doing them at department. There are 3 components in which people have a feeling that the environmental issue does not affect their exercises at home, some of them feel that limited space is not the issue for doing the prescribed exercise at home and some of them think that fare of damage of modalities and infrastructure does not limit their exercising at home.

This study was done by Selina M. Parry had discussed in his study that the largest body of research synthesised to date on this topic we have identified that the barriers to PA for survivors of critical illness are diverse and span five major: (1) patient physical and psychological influences; (2) safety influences; (3) culture and team influences; (4) motivations and beliefs regarding the benefits and risks of PA; and (5) environmental influences. Our review is unique in that we have examined this issue across the care pathway from ICU to community. Many of the barriers and enablers identified were consistent across both quantitative and qualitative study design and across different geographical settings worldwide, thus improving the generalizability of findings[10].

According to the study the most of the people were well known about the facilitators and barriers they face while performing the told exercises at home and many of them tried to modify their exercises.

Conclusion

This study concluded that there were participants who were able to do prescribed exercises at home and were also able to do exercises with self-monitoring. They also had no fear of injury or aggravation of problems while exercising. Some of them didn't have a feeling of supervision of the home programs. Some thought time availability was an important factor, where else some felt that family members who spent time with them helped in increasing the quality of exercises.

This study also concluded that the task appreciation on completion had added advantages in increasing exercise volume, on the other hand some felt that group activity was a good option for a home based exercises. Some of the participants felt that friends and family support increased their interest in exercising and some felt that their ADL's don't affect their exercise programs. For some participants exercising is tiring and for some it was refreshing.

Conflict of Interest: No

Funding Source: Self Funding

Ethical Clearance: Taken from institutional sub ethics committe of Dr. D.Y. Patil college of physiotherapy.

Informed written consent taken from each participant.

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Effect of Quality of Sleep on Agility in Young Collegiate Cricket Players

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Abstract

Introduction: Sleep is a strategy that contributes to significant recovery from multiple fatiguing events, including both cognitive and physiological tasks and is an influential factor in avoiding overtraining. Sleep deprivation leads to poor performance, reduced motivation and arousal levels and reduced cognitive processes leading to poor attention and concentration and heightened levels of perceived exertion and pain perception; limitations to physiological processes include disrupted glucose metabolism and neuroendocrine functioning, a compromised immune system and reduction in cardiovascular performance.

Approach: Male Cricketers aged between 20 – 30 years having normal body mass index (BMI) were selected for the study. Pitts Burgh Sleep Quality Index (PSQI)was administered and Zig-Zag test was performed for agility testing.

Result: Statistical analysis was done by using SPSS software, Version 20. Pearson's coefficient of correlation was used to find out the effect of quality of sleep on agility in young cricketers. The data analysis shows that there is no correlation exists between the sleep quality and agility.

Conclusion: Our study suggests that there was no significant effect of quality of sleep on agility in young cricketers. So, with our study we can conclude that sleep doesn't have any effect on agility performance and in turn to the physical performance in cricket.

Keywords: *Quality of Sleep, Agility, Cricketers, Male.*

Introduction

Sleep is defined as an altered state of consciousness[1]. It contributes to significant recovery from fatiguing events, including both cognitive and physiological tasks and is one of the important factors in avoiding overtraining. Poor sleep quality leads to poor performance, reduced motivation, poor attention and concentration and reduced cognition. Sleep deprivation is considered common amongst athletes, where sleep duration and quality is often neglected when optimizing recovery and competition performance. This alludes to the need for greater athlete education surrounding this subject because subsequently, sleep deprivation leads to disruption of training intensity and performance at competition.[2]

Sleep is very important for athletes as it provides an opportunity for the body to recover from training and to prepare for competition day. General recommendations suggest that 7 to 9 hours of sleep is adequate for psychological (ability to learn, motivation and memory) and physiological (metabolism and inflammation) recovery. Additionally, it has been suggested that athletes require a greater quantity of sleep to recover sufficiently from injury, intense training periods and competition.

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High-performance team-sport athletes endure numerous physiological, psychological and neuromuscular stressors during training and competition[3]. Logically, these athletes balance these stressors with appropriate recovery to maximize performance and adaptation, while also minimizing injury risks[4]. A crucial part of this stress-recovery balance is the management of an athlete's sleep, especially during intense training and competition[5]. Three key factors determine the recuperative outcome of sleep: duration (total sleep time), quality and phase (circadian timing) of sleep[6].

Agility is the ability to move and change direction and position of the body quickly and effectively while under control[7]. This ability is a determinant of performance in the field and court games, evidenced by time-motion analysis and coaching analyses for various team sports. This is an important component of many sports training programs. Improved agility can mean better performance, faster response and give athletes an edge over their competition[8]. A sports person requires it when actions are to be combined or when a movement has to be performed by changed and unaccustomed conditions. It is required to a great extent in cricket involving efficient footwork and quick changes in body position.[9]

Cricket is one of the most popular sports within ex-British Colonial countries around the world. The physical demands of cricket involve short sharp periods of intense activity, characterised by explosive actions such as bowling, batting and fielding. Many scholars have considered the ability to change direction quickly as an integral part of athletic performance. More specifically, the ability to change the body's position quickly and effectively in response to a stimulus is crucial in almost all sports. Within cricket, high agility levels and quick reaction times are key concepts held by most players who excel at their skills. Indeed, clear advantages can be seen by performers who have high fitness levels and physiological health profiles[10].

Methodology

The present study was conducted in Sports Ground, Jamia Hamdard, New Delhi. A screening list was administered and only those subjects were considered for the study that fulfilled the inclusion and exclusion criteria. Using a sample of convenience, 40 male cricket players aged 20-30 years, having normal BMI were included in the present study. Subjects having any sort of visual or motor impairment, amputees, any recent treatment for neck, thoracic and lumbar disorders, any sort of neurological disorders and any sort of psychiatric disorders were excluded from the study. Subjects were asked to sign an informed consent. The exclusion criterion was ruled out one by one by taking the subject's history.

The agility of the subjects was tested using the Zig-Zag test. In the Zig-Zag test, a rectangle of 10 x 16 feet was made with four cones and one cone is placed at the centre of the rectangle. Subjects have to complete one circuit of the course in the shortest possible time, starting and finishing from start and finish cone respectively. The time taken by subjects to perform the test was recorded.

Sleep Quality assessment was done by administrating Pitts Burgh Sleep Quality Index (PSQI). PSQI has seven components namely, subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, sleep medication and daytime dysfunction. The score of component ranges from 0 to 3 and are added to obtain a total score which ranges from 0 to 21. The total score is obtained by adding a score of all seven components. A higher score indicates poor sleep quality.

Data Analysis: Data analysis was done using Pearson Correlation test to find the effect of quality of sleep on agility in young to find out the effect of quality of sleep on agility in young collegiate cricket players. A statistically significant difference was defined as a p-value of less than 0.05.

Result

Table 1: Descriptive Statistics

	Mean	Standard Deviation	N
Age	21.85	3.062	40
Height	172.5	5.27	40
Weight	65.95	7.91	40
BMI	22.07	2.19	40
PSQI	4.43	2.31	40
Agility	7.99	0.77	40

Table 2: Correlation between sleep quality and agility

	Agility		
	Correlation Coefficient	N	Sig.
PSQI	0.028	40	0.862

A total of 40 male subjects participated in the study. Their demographic data were analyzed by comparing means of descriptive analysis. Their age, height, weight and BMI was recorded (Table 1). The mean age (in years) was 21.85±3.06. Table 1 gives details of the mean and standard deviation of these data. The Mean value of sleep quality was 4.43±2.31 and agility was 7.99±0.77. A statistically non-significant difference exists between sleep quality and agility in young collegiate male cricketers (Table 2).

Discussion

The objective of the present study was to find the effect of sleep quality on agility in young collegiate cricketers. The data analysis shows that no correlation exists between sleep quality and agility. Various factors affect agility with Body Mass Index being one of them. The result of our study is in continuation with the study done by Shafizadeh (2010) who evaluated the relationship between anthropometric parameters and individual skills in young school football players[11]. The results demonstrate that an inverse relationship exists between body weight and running skill, which means higher the body mass index, less is the running speed and weaker is the sport performance. Taghinejad found that there is an inverse relationship between body composition and performance in soccer[12,13]. Since subjects in our study have a normal body mass index therefore, no correlation with agility was obtained. Rahul et al did a comparative study of fitness variable of junior and senior cricket players. He founded that senior cricketers have better agility performance in comparison to junior cricketers[14]. Since we have included young cricketers in our research study so this explains why we have obtained this result.

Various pieces of literature have shown that plyometric training has a significant effect on improving agility. Miller et al did a study to find the effect of plyometric training on agility in six weeks. Their results demonstrated a significant improvement of agility in the experimental group throughout six weeks[15]. Most of our subjects did not undergo any plyometric training programme hence, no significant result was obtained.

During the off-season, cricketers have ample time to plan and execute individual programs to improve their desired physical qualities to improve performance [16, 17]. Strength and power are the qualities which are majorly considered[18]. The same programme is adopted by subjects in our study and so no improvement in agility is obtained. Various studies have shown that batsmen have better agility as compared to bowlers[19]. It is because of the medium body structure of batsmen as compared to bowlers. They can move their body very fast and easily [20]. Hence, there exists a significant difference between batsmen and bowlers on physical fitness variable agility.

Conclusion

To conclude, our study suggests that there was no significant effect of quality of sleep on agility in young collegiate cricketers. So with our study, we can conclude that sleep doesn't have any effect on agility performance and in turn to the physical performance in cricket.

Future Research: Future researches can be done by correlating sleep with other factors affecting sports performance and various age groups of cricketers can be compared to find out the correlation of sleep with agility.

Source of Funding: Self

Conflict of Interest: There is no conflict of interest related to this manuscript

Ethical Clearance: All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000 (5). Informed consent was taken from the subjects prior to the study.

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A Peek into Contributing Factors and Impact of Voice Problems among Teachers in Chennai: A Bio Psychosocial Perspective

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Abstract

Background: Compromised vocal health in teachers affects their quality of life. Magnitude of voice problem varies depending individuals' perception and their adaption to existing condition. This study focused on analyzing the contributing factors of voice problems from a bio-psychosocial perspective (using WHO, ICF framework) and its impact on teachers.

Method: A vocal health questionnaire that included sections on personal factors, voice use, vocal symptoms, activity limitations and environmental factors was developed and administered on 105 teachers. Frequency analysis and odds-ratio was used to report the presence of voice problems, contributing factors and its impact on daily situation.

Findings: Teachers faced considerable impairment in body function (such as tiredness after speaking, throat pain, & feeling upset). As a result, it posed significant limitation in communication with family/friends and engaging in social/religious ceremonies. Though teachers had positive support from their colleagues and society,noisy classrooms and tropical weather had an adverse consequence on the quality of life of teachers. These details are vital to design and implement vocal hygiene programs. They could also serve as prognostic indicators in vocal habilitation.

Keywords: *Teachers, vocal health, participation restriction, contextual factors.*

Introduction

A voice disorder exists when the vocal functioning of an individual no longer meets the voicing requirements[1]. Voice problems are more common in teachers[2–4] and the severity may vary based on occupational demand. For instance, a teacher with hyperfunctional voice disorder may face limitation while lecturing in the presence of increased noise. However, he/she may have minimal difficulty while speaking in a quiet room. Persistent voice problem may result in reduced work performance, altered/impaired social life, absenteeism and financial loss[3,5–7] Though voice disorders are not fatal, its impact on teachers is found to be parallel to impact from life threating conditions[8]. Therefore, it is essential to understand voice problems from the teachers' perspective.

Subjective vocal symptoms and its impact on their day to daily life can be best obtained by patient self-reports. Several such patient related outcome measures (PROMs) have been developed to understand the impact of voice problems from an individuals' perspective[9].

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The Voice Disorder Outcome Profile was developed (in Kannada & Tamil) as a culture specific tool to address the quality of life for individuals with voice disorders in India[10,11]. Profiling of the vocal symptoms were done using Voice Symptom Questionnaire (2003) and Screening Index for Voice Disorders in teachers (2013). Voice Activity and Participation (2001) and Work Productivity Activity Impairment Questionnaire (2014) provide information on activity/participation restriction. In addition to the reported symptoms and activity limitation, it is also essential to understand the role of contributing environmental factors (that acts as a barrier & support) for voice use in teachers. This study aimed to understand self-perception of voice problem and the impact of contributing factors from a bio-psychosocial perspectivein school teachers using the WHOs-International Classification of Functioning, Disability and Health (ICF) framework as a guide.

Method

The study was approved by the institutional ethical committee of Sri Ramachandra Medical College & Research Institute (Reference number: IEC-NI/13/AUG/35/64).

Development of vocal health questionnaire: The vocal health questionnaire for teachers was developed based on previous literature and the components of ICF framework. ICF codes under body functions, activities limitation/participation restriction and environmental factors relevant to voice disorders were included. The experts (three speech pathologists and one otolaryngologist with expertise in voice care) were instructed to indicate how relevant each ICF code was with respect to the voice disorder in teachers. Relevance of each code were rated between 'not relevant' (score 0) and 'very relevant' (score 4). Codes which were scored greater than or equal to 3 by 80% of experts were considered and the remaining codes that were not relevant were excluded. Based on the response of the expert team, the vocal health questionnaire was constructed with the following sections.

I. **Personal factors & general health:** Demographic information, educational qualification, total years of teaching, grades taught and details on health related issue

II. **General questions related to voice use:** Open ended questions related to awareness of their voice problem and voice use were included. Frequency of throat clearing, cough, whisper, mimicry and screaming/shouting was documented using a likert scale.

III. **Concept of vocal health and non-vocal practices:** Description of vocal health was included to understand the knowledge and idea of teachers regarding vocal health. This section also included details on non-vocal practices followed by the teachers.

IV. **Vocal symptoms related to body functions:** This section documented the presence and absence of vocal symptoms reported by the teacher.

V. **Vocal functions related to activity limitations/ participation restriction:** The impact of voice problem on day to day activities and participation restriction were included. Section V was divided into environmental factors as barriers and supporting elements for voice use.

Administration of vocal health questionnaire: The questionnaire was distributed to teachers from various schools (from 15 political zones) of Chennai. Informed consent was obtained from the participants. Out of the 150 questionnaires distributed, response was obtained from 105 school teachers (70% response). Frequency analysis was carried out to estimate vocal demand, presence of voice problem, vocal and non-vocal practices, activity/participation in daily situation and contributing environmental factors. Chi-square test was used to estimate the differences in response across sections. Odds ratio was calculated to estimate the risk of developing voice problems consequent to vocal and non-vocal practices, to understand the impact of voice problems and contributing environmental factors on quality of life.

Results

Ninety nine (94.3%) female teachers and six (5.7%) male teachers participated. Teachers ranged from 22 to 65 years with a mean age of 41.05 years (±9.96). They had a wide teaching experience that ranged from 2 to 35 years (mean=10.49 years, SD=8.24). Seventy five teachers (71.4%) did not report of any health issues. of the remaining, fifteen teachers (14.2%) reported of thyroid problem and 18 (17.1%) encountered symptoms of acidity (burp, & burning sensation in the chest region). Teachers who reported of acidity were 4.214 times likely to develop voice problems. Pulmonary/respiratory related disease were reported by six teachers (5.7%).

Vocal symptoms reported by teachers: Compromised vocal health impacts the body functions resulting in vocal symptoms (Table 1). Vocal fatigue was the major voice symptom followed by a voice change and throat pain. Teachers who reported of voice problems were 9.068 and 3.581 times likely to have vocal fatigue and changes in voice respectively. Teachers who reported of voice problems were 3.598 times facing difficulty to speak soft and 3.182 times expected to have struggle for breath while speaking. Teachers who reported to have sticky sensation in the throat reported of intake of lozenges. Voice symptoms resulted in sleep disturbances and psychologically impacted the emotional state by making them upset & less confident. Teachers who reported of voice problems were 2.614 times likely to be irritable and 2.500 times likely to feel upset.

Impact of voice problem on activity limitation/ participation restriction: Teachers who reported voice problems experienced limitations in executing activities and restricted their participation in daily life (Table 2). They faced difficulty in talking over telephone and while interacting with strangers, friends and family members. Teachers were prone to have difficulty in handling stress at home (odds ratio:3.598) and at work (odds ratio:5.714). As a result, teachers who reported of struggle for breath while speaking were 2.630 & 3.533 times likely to avoid social ceremonies (like marriages) and religious ceremonies (like poojas & prayers that involved reciting religious hymns) respectively. Teachersfaced difficulty in maintaining their job and earning sufficient income creating a financial burden. These indicated that voice problems in teachers had a negative influence on communication, emotional state and personal/social life.

Contributing factors for maintaining vocal health: Environmental factors that facilitate (support) or hinder (serve as a barrier) vocal health in teachers are presented in table 3 and table 4 respectively. Speaking in the presence of noise was a major barrier for teachers with voice problems (odds ratio:7.241). In India, intake of certain foods like citric fruits, cold drinks & sour food items (odds ratio:3.340), teaching in presence of chalk-dust and environmental pollutants (odd ratio:7.917) were the major barriers for voice use in teachers. Factors that facilitated vocal health in teachers is profiled in table 5. The role and involvement of family and friends had a positive effect on teachers. Though, they felt that the attitudes of their colleagues, friends and family were supportive. However, they did not have support for undergoing treatment due to personal and logistic issues.

Table 1: Voice symptoms related to body functions

Symptoms	Impairment			p-value
	Present (%)	Absent (%)	NA (%)	
Reserved/irritable/moody	32.38	47.62	20.00	0.37
Tiredness after speaking	78.09	15.24	06.66	1.26
Sleep disturbances	33.33	52.38	14.29	0.89
Feeling upset	53.33	38.09	08.57	0.00*
Throat pain	62.85	29.52	07.61	9.81
Voice change	63.81	25.71	10.48	15.45
Clenching	53.33	33.33	13.33	17.18
Voice breaks	52.38	38.10	09.52	7.68
Inability to speak softly/shout/sing	54.28	36.19	09.52	7.89
Struggling for breath	37.14	48.57	14.28	6.57
Heart burn	43.80	41.90	14.28	3.43
Sticky sensation/discomfort in the throat	44.76	42.85	12.38	5.21

NA – not applicable; *p-value < 0.05

Table 2: Impact of voice problem on activities limitation/participation restriction

Activities	Limitation/restriction			p - value
	Present (%)	Absent (%)	NA (%)	
Talking with others	60.01	30.47	09.52	0.13
Telephone conversation	57.14	30.47	12.38	0.03*
Taking care of health	62.86	28.57	08.57	0.01*
Interacting with friends	59.05	31.43	09.52	1.78
Interacting with family	53.33	37.15	09.52	2.31
Maintaining a job	56.19	33.33	10.48	0.01*
Earning sufficient income	60.00	28.57	11.43	5.14
Engaging in social ceremonies	60.01	31.32	08.57	0.59
Engaging in religious ceremonies	61.90	30.48	07.62	2.94
Handling stress at home & at work	55.24	36.19	08.57	7.66

NA – not applicable; *p value < 0.05

Table 3: Environmental factors as a barrier for voice use

Activities	Barrier			p-value
	Present (%)	Absent (%)	NA (%)	
Eating certain foods	60.95	31.43	07.62	0.06
Use of communication devices	40.01	50.48	09.51	0.13
Use of educational materials	67.62	30.48	01.90	3.21
Use of building products	37.14	56.19	06.67	3.36
Climate and seasonal changes	75.24	23.80	00.95	0.19
Talking in noisy environment	70.47	27.62	01.91	1.26
Talking in quiet environment	15.24	78.10	06.66	0.30
Dust, smell and smoke in the environment	78.09	20.01	01.90	1.26

NA – not applicable; *p value < 0.05

Table 4: Environmental factors as supporting factors for voice

Activities	Support			p-value
	Present (%)	Absent (%)	NA* (%)	
Taking medicines	19.05	67.62	13.33	1.11
Telecommunication	23.81	72.38	03.81	1.81
Availability of medical facilities	27.62	62.86	09.52	7.66
Educational systems	35.24	59.04	05.72	0.58
Attitudes of your family and friends	31.43	62.85	05.72	1.46
Attitudes of colleagues	32.38	63.81	03.81	2.41
Attitudes of your society	31.43	64.76	03.81	0.23

*NA – not applicable

Discussion

Teachers are often forced to use continuous loud voice to meet professional demand that in turn affects vocal health[3,12] voice-demanding activities, family history of voice disorders and children at home. Voice problems in teachers have a significant impact on their quality of life[12] voice-demanding activities, family history of voice disorders and children at home thus escalating it as an occupational safety/public health issue[6]. The present study aimed to understand the impacts of voice problem

in teachers from a bio-psychosocial perspective. School teachers from various parts of Chennai participated. Similar to previous literature, a majority of the responses were from female teachers[3,13] Teachers reported a wide range of teaching experience making them vulnerable to develop voice problems[2]. Teachers who encountered symptoms of acidity were at risk of developing voice problems[14]. They consumed lozenges (which is proven it to be an unhealthy practice to vocal health)to get an immediate relief.

Voice symptoms related to body functions and its impact on activity/participation restriction: A variety of impaired body function such as vocal fatigue, changes in voice quality, pain in throat, inability to speak soft and voice breaks were faced by the teachers[15,16]. In addition to these organic symptoms, teachers reported of sleep disturbance that made them upset. As a result of compromised vocal functioning, they reported limitation/restriction in using telephone and personal interaction with other people. In this era of mobile technology and interactive voice response (IVR) world, people interacting with computerized systems and long distance communication is part of a work ease/culture. However, teachers restrict the use of these technologies due to their voice problems. During pooja (act of worshiping) and religious ceremonies, people tend to experience dry throat, cough and changes in voice as a result of reciting prayers for a long time and inhaling fumes from the homam (Hindu ceremonial ritual)[17]. Since these factors aggravate the voice related problems, teachers limited their participation in religious and social ceremonies[18]identifying etiologic factors of dysphonia, voice symptoms, vocal qualities and laryngeal lesions. Eighty teachers were divided into two groups: GI (without or sporadic symptoms, 40.

In India, the salary for teachers in private school is comparatively less than in government schools[19] and they don't have the provision for pension after retirement. This creates a dissatisfaction among teachers that they are unable to meet their basic needs[20] and they engage in private coaching/tuition for additional earnings[3]. Therefore, teachers tend to use their voice continuously after school hours to meet their financial demands. When teachers are unable to meet their occupational demand, they tend to avail sick leave or quit their profession.

Contextual factors for voice problems in teachers: Environmental and personal factors may either hinder or promote voice health in teachers.[15] Teaching in the presence of background noise (that increased the vocal load) and exposure to chalk dust were inevitable barriers in Indian scenario. As a result, teachers developed the habit of throat clearing which in turn would increase the strain in the laryngeal mechanism further leading to voice problems in teachers. Teachers reported a positive effect and support from friends and family indicating that they were not isolated/deprived of jobs/ roles despite noticeable voice issues. Teachers tend to accept voice problems as a part of their profession and tend to cope/sort to home remedies as a first line of treatment[3]. Restriction in availing leave, requirement to complete the curriculum, involvement in additional coaching/training, dearth of awareness about voice-care professionals, lack of support for child care, travel and financial constraints for seeking treatment could restrict them from availing treatment. These details are essential for implementing vocal-hygiene program for teachers in Indian scenario.

Conclusion

Vocal health is multi factorial. The effect of compromised vocal health in teachers is not restricted to the functioning of the vocal system. It extends its impact on the functioning of the individual in everyday situation which can be supported or hindered by environmental factors. This study enlisted the contributing factors and helped realize the impacts of voice problems on quality of life in teachers.

Conflict of Interest: No

Source of Funded: Self

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Socio-demographic Determinants of Fertility and Under-five Mortality: A Cross-sectional Study on the Oraons of Alipurduar District, West Bengal, India

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Abstract

Background: In India, population diversity plays a major role to create variation in socio-demographic, cultural and lifestyle factors which contribute to unique demographic scenario among populations. However, not much emphasis has been given to investigate the relationship of socio-demographic factors with fertility and mortality scenario among indigenous groups of northern West Bengal. Objectives: Study attempted to see the effect of socio-demographic factors on women's fertility and under-five mortality among the Oraons. Materials and Method: Data on socio-demographic characteristics, fertility and mortality were collected from 445 ever-married women. Descriptive statistics, binary logistic regression and Cox proportion hazard analysis were performed. Results: Total fertility rate in the study group was 3.19 live births per woman and under-five mortality rate was 9.77 death per 100 live births. Educational status of women (p=0.002), household size (p<0.001), age (p=0.001) and marital age of women (p=0.020) significantly determined women's fertility. Educational status of women (p=0.034), women's practice of defecation (p=0.014), Marital age of women (p=0.046) and birth order of the child (p=0.031) significantly determined under-five mortality. Conclusion: Study highlighted that women married before 18 years and with no institutional education were more likely to experience high fertility and high under-five mortality. Absence of pit latrine in household and child's birth order also significantly determined under-five mortality.

Keywords: *Child death, Fertility differentials, Indigenous population, Survival analysis, Cox regression.*

Introduction

Sustainability and well-being of a population reflects on its' demographic measures like fertility and mortality.[1,2] These demographic measures show a complex causal-effect relationship with both genetic and non-genetic factors[3-7] among which socio-demographic factors play key roles.[6,7] Current scientific knowledge showed that variation in socio-demographic factors among populations results in fertility and mortality differentials.[8-15] In the case of India, socio-demographic variation is huge due to enormous population diversity. The country accounts for one-fifth share of world's total birth and also largest share of under-five mortality while it is currently lagging behind to reach the Millennium Development Goals (MDG) and Sustainable Development Goals (SDG).[1,16,17]

Despite a considerable number of demographic studies in India[18-22] there is a dearth of knowledge about the determinants of demographic measures among the indigenous groups of northern West Bengal, living in poverty. [23-25] It is necessary to bring forth unidentified contributing factors that are likely to influence their fertility and child mortality. [26] In this context, present study attempted to explore the socio-demographic

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determinants of women's fertility and under-five mortality among the Oraons of northern West Bengal, India.

Materials and Method

Before conducting the research, ethical clearance was obtained from the 'Ethical Committee for the Protection of Research Risks to Humans' of Indian Statistical Institute (Ethical Clearance number: ISI-IEC/2018/10/01). The present cross-sectional study was conducted during Mar-Apr, 2018 in a rural tea garden area named 'Tasati' under Falakata block of Alipurduar district, West Bengal. It included study participants only from Oraons in order to eliminate the genetic/ethnic effect (s) in the data. A list of all adult ever-married Oraon women were made before survey.

Total enumeration was aimed in order to include all the adult women (Aged 18 and above). Initially, a total of 532 healthy adult ever-married women (Who attended menopause, widowed or separated and reported sterilization through operation) were informed properly about the purpose of the study and approached to participate. Finally, 445 ever-married women voluntarily agreed to participate. The informed consent was signed by them and in case of non-literate women, thumb impressions were obtained. All the data were collected by a single investigator. Data on socio-demographic characteristics were collected using a pre-tested schedule [13]. Study participants were asked to provide information on age, number of pregnancies, live birth of child and corresponding age of mother, birth order and detailed information of the child, number of miscarriages and still-births, survival status of child (Dead/Alive) and deceased child's age at death (in month). Age of women was taken either from existing records and/or referring to important local events. Rest of the data include educational status, occupational status, age at marriage, household size and women's practice of defecation. Under-five mortality was considered as the death of a child under 60 months.

Binary logistic regression was performed to calculate the odds ratio (OR) to find out the effect of socio-demographic characteristics on women's fertility. 'Fertility' was considered as binary dependent variable ('Low' and 'High'). Lastly, cox proportional hazard analysis was performed to calculate the hazard ratio (HR) to find out the effect of socio-demographic characteristics on under-five mortality. The dependent variable was 'Survival time' (Deceased child's age at death) and independent variables were educational status, occupational status, household size, presence/ absence of pit latrine, age at marriage, age at child birth, sex of child and birth order of child. All the statistical analyses were performed in PASW 18.0.

Table 1. Binary logistic regression analysis on fertility in respect of socio-demographic characteristics of ever-married Oraon women

Independent variables		Binary logistic regression			
		Enter		Stepwise (Model IV)	
		OR (95% CI)	p	OR (95% CI)	p
Educational status	Non-literate	3.060 (1.175-7.973)	0.002*	3.230 (1.264-8.257)	0.014*
	Primary	1.623 (0.424-6.217)	0.480	1.836(0.492-6.851)	0.366
	Secondary	Reference group			
Occupational status	Homemaker	0.663 (0.393-1.112)	0.119		
	Laborer	Reference group			
Household size	Smaller	0.192 (0.106-0.306)	0.000*	0.189 (0.108-0.322)	0.000*
	Larger	Reference group			
Age at marriage (yrs.)	<18	1.994 (1.117-3.561)	0.020*	1.933 (1.085-3.443)	0.025*
	≥18	Reference group			
Age (each additional year)		1.123 (1.094-1.152)	0.001*	1.121 (1.093-1.150)	0.001*
Nagelkerke R^2		0.520		0.515	
Model correctly predicted (%)		79.8		79.3	

*Significant

Table 2. Cox proportion hazards model of under-five mortality in respect of socio-demographic characteristics of ever-married Oraon women

Independent variables		Cox proportional hazard			
		Enter		Stepwise (Model VI)	
		HR (95% CI)	p	HR (95% CI)	p
Educational status	Non-literate	2.188 (1.060-4.515)	0.034*	2.186(1.600-4.484)	0.046*
	Primary	1.577 (0.584-4.256)	0.369	1.524 (0.570-4.073)	0.401
	Secondary	Reference group			
Occupational status	Homemaker	1.129 (0.818-1.558)	0.462		
	Laborer	Reference group			
Household size	Smaller	1.004 (0.697-1.446)	0.984		
	Larger	Reference group			
Women's practice of defecation	Use pit-latrine	1.846(1.134-3.005)	0.014*	1.918 (1.186-3.101)	0.008*
	Open defecation	Reference group			
Age at marriage (yrs.)	<18	1.304 (0.916-1.857)	0.140	1.403 (1.005-1.957)	0.046*
	≥18	Reference group			
Age at child birth (yrs.)	<20	1.419 (0.662-3.043)	0.369		
	20-29	1.142 (0.740-1.762)	0.550		
	30+	Reference group			
Birth order of child	1st	0.970 (0.595-1.580)	0.902	1.133 (0.765-1.677)	0.534
	2nd	1.422 (0.944-2.143)	0.092	1.521 (1.040-2.225)	0.031*
	3 rd or later	Reference group			
Sex of the child	Female	1.180 (0.859-1.622)	0.307		
	Male	Reference group			

*Significant

Findings: Present study tried to find out the socio-demographic determinants on women's fertility among the Oraons. Table 1 presented binary logistic regression analysis on women's fertility in respect of selected socio-demographic characteristics. Results indicated that women who were 'non-literate' (OR=3.060, 95% CI: 1.175-7.973) or married under 18 years (OR=1.994, 95 & CI: 1.117-3.561) were more likely to show high fertility compared to their counterparts. Women showed higher chance of high fertility with increasing age (OR=1.123, 95% CI: 1.094-1.152). A negative association was found between high fertility and 'low' household size (OR=0.192, 95% CI: 0.106-0.306). Also in the Model IV (Nagelkerke R^2 = 0.515) of 'Stepwise' method, educational status, age of women at marriage, age of women and household size significantly predicted women's fertility.

Results of cox proportion hazards regression of under-five mortality in respect of selected socio-demographic characteristics is presented in table 2. Result indicated that children of both 'non-literate' women (HR = 2.188; 95% CI: 1.060-4.515) and women married under 18 years (HR = 1.304, 95% CI: 0.916-1.857) were at greater risk of under-five mortality. Women who practiced open defecation had a greater risk of children's under-five mortality (HR = 1.846, 95% CI: 1.134-3.005). Also in Model VI of 'Stepwise' method, traits like educational status, women's practice of defecation, age of women at marriage and birth order of child significantly predicted the risk of under-five mortality.

Discussion

In India, demographic measures maintain a complex causal-effect relationship with biological and socio-cultural factors due to enormous population variation.[27,28] However, not much emphasis was given to indigenous groups of northern West Bengal to understand such relationship. Present study aimed to understand the relationship of fertility and under-

five mortality with socio-demographic characteristics. Findings are highlighted subsequently in this section.

The total fertility rate among the Oraons was higher than the fertility rate in West Bengal (1.80) and India (2.20). Similarly, the under-five mortality rate among them was also higher than the rate in West Bengal (3.20) and India (5.00).[29] It indicates that the group is nowhere near the SDG goals[17] (<25 under-five deaths per 1000 live births).

'Non-literacy' in women was a significant determining factor of fertility and under-five mortality among the Oraons where non-literate women showed a higher chance of high fertility compared to women with primary or secondary level of education. Previously, Moursund et al. and Bongaarts found similar results.[22,30] In the late 90, Caldwell postulated that limited degree to educational exposure cannot alter reproductive norms in indigenous groups.[31] However, Basu (2002) in his review on why education lowers fertility, proposed that in educated women the freedom of decision-making in domestic and reproductive matters and prolonged exposure to education reduces the chance of getting into pregnancy compared to uneducated women.[10] Perhaps in present study group, higher educational exposure of the women have simultaneously reduced their chance of co-habitation and pregnancy.

Regarding under-five mortality, children of non-literate women were at greater risk of experiencing it. This finding validates other pieces of literatures who proposed that parental illiteracy leads to poor knowledge on child-rearing, poor nutritional care and poor access to health care facilities for children which makes them vulnerable to death.[14,32-34]

Study found no effect of occupation of women on their fertility unlike Begall et al.[35] who showed that occupation determined fertility in women. Women from the smaller households in the study group showed lower chance of high fertility similar to the finding of Malakar and Roy (2016) who opined that psycho-social pressure from the family members act as a mediator for pregnancies in women.[13]

The practice of underage (<18 years) marriage in present study group also played a major role in determining fertility and under-five mortality in the study group. It enhanced the chance of high fertility giving women a longer period of exposure for pregnancy.[36] Additionally, underage marriage was found to increase the chance of under-five mortality in present study group. A large cross-sectional study also found that children born to women married below 18 years of age were susceptible to malnutrition and hence exposed to early death.[37]

Under-five mortality was more common to mothers who practised open defecation due to absence of pit latrine in the household. This scenario were consistent with two studies conducted in Nepal and Ethiopia.[7,15] The finding emphasizes that the practice of open defecation may have led to widespread of infections that affected children's health. Nevertheless, association between use of sanitation facilities and under-five mortality was not found by Woldmicael[38] who clearly understood that sanitation practice is a part of complex household aspects and can determine child mortality more prominently with certain other household characteristics like practice of hand-washing, resource of water, etc.

In present study, higher birth order decreased the risk of under-five mortality unlike the findings of Bhandari et al.[19] A further notable result was the absence of sexual preferences on neonatal care in present study findings, since the sex of the child did not influence the risk of under-five mortality. Perhaps, both males and females in adulthood participates in labour force (In some cases, females are preferred) in the tea garden and contribute to household earning.[39] However, Bourne et al.[18] found that neonatal girls in the Indian population were the recipient of less food and treatment than boys which makes them vulnerable to death.

In sum, present study highlighted that education and underage marriage were the responsible factors for both high fertility and high under-five mortality among the Oraon women. The risk of a child's death under five years increased with the open defecation practice of mothers. The study suggests to promote adequate educational exposure and improved sanitary habits in the study population in order to reach the SDG goals. Since the nature of our study was cross-sectional, we limit ourselves to draw any strong conclusion. However, small-scale studies in future with a larger sample size and longitudinal approach may fill the lacuna to get better insights on the present more prominently.

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Social Skills Enhancement in Children with Autism– A Way Forward towards Inclusive Society

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Abstract

Social skills are an important element in developing an individual's personality. Any ailment restricts one's social ability, inhibits relationship with self and others. Social skills pave way in making and having new friends, discovering and developing new skill set from others for personal enhancement. Social skills encompasses skills ranging from play skills, conversation skills, emotional skills, problem solving skills and handling conflicts and decision making skills. This skill is specifically deficient in Children with Autism. Children with Autism may usually appear withdrawn, may appear indifferent to other children and people, the child with (ASD) may prefer to play alone, may approach other children but in an indifferent way. Children with Autism may find it difficult to know how other people may be feeling. Their beliefs, feelings, interests, experiences may be different than that of others. Trying to understand other people may be difficult, exhausting and stressful for children with autism. Many research studies on developing social skills in children with autism have been conducted. This review article has explored research articles which yield solutions to parents and special educators in enhancing social skills in children with autism. The strategies include social skills training, socialization using computer, technology, music therapy, comic strip conversations, applied behavioural therapy (ABA), emotion –based social skills training (EBSST) and visual prompts. Arriving with suitable social skill intervention for these children will aid in successful inclusion of special category within the normal group which in turn will yield our dream inclusive society.

Keywords: *Social Skills, Children with Autism, Skill Enhancement, Inclusion*

Introduction

Social skills are an important element in developing an individual's personality. Social skills encompasses a range of play skills, conversation skills, emotional skills, problem solving skills and handling conflicts and decision making skills. Social skills pave way in making and having new friends, discovering and developing new skill set from others for personal enhancement. This social skill set is naturally developed by the common population without any major supervision. Children develop these skills by observing and imitating parents, peers and siblings.

The process of Socialization includes managing life tasks, cordial relationship with the community and abiding cultural expectations [(1).] It also involves the regular interaction of biological, socio – cultural and developmental mechanisms [(2)]. Social Competence which emphasize on an impact of individuals behavior in the social situation is a core factor in socialization [(3)]. Few of these specific socialization skills are taught in school and other religious places. Deficit in these social skills in children may guide to more dependency, poor acceptance and Psychological problems.

There is a group of children named Autistic who show considerable difficulties in the areas of social skills.

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Autism is a common developmental disability. Autism spectrum disorders (ASD) is characterized by deficits in social communication and social interaction; restricted repetitive patterns of behavior, interests and activities[4]. It is categorized under pervasive developmental disorders as defined in the International Classification of Diseases and Related Health Problems, 10th edition (ICD-10) (WHO 2010) and the Diagnostic and Statistical Manual of Mental Disorders IV, text Revision (DSM-IV-TR) (APA 2000). On focusing on the prevalence of autistic children it is estimated that one in sixty-eight children are diagnosed with an ASD[5], where males are almost five times higher than females.

Though Children with autism are said to have deficits in Communication and socialization, it is commonly found nearly 25 – 70% of children with autism are diagnosed with Poor Intellectual functioning which in turn affects their cognitive and socio-emotional functioning [6]. Among that female children diagnosed with autism are found to have intellectual disability that male children diagnosed with autism [7]. Difficulties in social gaze, joint attention, imitation and speech are commonly found in first year of life of children with autism

Interacting with others in any social occasion, communicating needs/ideas, establishing eye contact, understanding others feelings, interest, emotions are the areas of stress for any child with autism. They appear to be withdrawn and approach others for their need in an unusual way. Children with autism may also react sensitive to certain common sensory stimulus. The above peculiar characteristics of children with autism affects their day to day routine in activities of daily living, education and social life. Thus Autism spectrum disorder not only complicates the life of that particular individual but also the persons associated with them every day.

Autism Spectrum Disorder as a common budding disability has gained the attention of many research scholars and related medical professionals in comprehending their characteristics, its underlying causes and identifying suitable remedial strategies. Though many tailormade strategies are adopted to inculcate specific skills, there are many other concrete research studies on innovative intervention strategies for children with autism.

Upcoming creative training programs, interventions and research studies should yield way to the successful inclusion of children with autism which is an ultimate result of any rehabilitative program. Successful inclusion can be achieved only through two key element ie. Social Integration and Peer Interaction [8].

This review article has explored research studies on interventions which yield solutions to parents and special educators in enhancing social skills in children with autism which in turn results in an inclusive society.

Social Skill Enhancement in Children with Autism

Peer Tutoring: Peer tutoring is a method where students of same age group or friends act as tutors to others. This method is found to be effective in developing social skills among children and adults with Autism Spectrum Disorder.

Training the peers and siblings to assist children with autism to show appropriate social skills through modelling and reinforcement has found an increased social communication in many children and preschoolers with autism and they have also been found to generalize the same over time in other settings thus making peer tutoring an effective model in developing social communication [9,10,11, 12].

Two studies to evaluate the feasibility and efficacy of peer-mediated school-based discrete trial training (DTT) for students with autism spectrum disorder (ASD) was conducted [13]. Results of the study proved that peer-mediated DTT may showed significant progress in both academic skills and inclusion with peers.

A study was conducted to find the effectives of peer mediated Pivotal Response Training with elementary school aged children with autism. The study resulted in increased social skills in children with autism in initiating interactions and turn taking.[14].

Video Modeling: Video Modeling is a visual teaching method where a target behavior or skill is modeled in a video and the learner watch the video and learn the skill through imitation. Video modeling has been found as one of the secure method in enhancing social skills in children with autism.[15,16,17] Video modeling as a best method in teaching and generalizing perspective taking skill in children with autism

A study on teaching social language during play for children with autism using video modeling was conducted and it was found as an effective method in developing social language in children with autism.[18]

Social Stories: Social stories is one of the method where short stories on social situations are formed and children with autism are guided and provided direction in responding to those social situations. These stories are meant to teach social expectations and social behavior. This method was developed by Carol Gray in 1990.

It is found that social stories assist children with autism to prevent maladaptive behavior by providing clear picture and mind map about a social situation, its events and other communicative exchanges [19].

It is found that social stories were effective in developing Initiating conversation skill in children with autism [20].

Various individual studies have proved the efficacy of social stories in developing social skill behavior[21,22], responding to communication [23], recognition of emotion [24], appropriate play behavior[25] and in changing maladaptive behaviors.[26]

Social Skill Training (SST)

Social skill training is a therapeutic intervention in assisting individuals who have problem in relating with others. It is also defined as child centered social or behavioral learning where children are trained in establishing eye contact, initiating conversations and other cooperative skills

SST is found as a suitable method to reduce behavior problems and to promote communication skills in children with autism[27]. Improvement in social skills is observed after SST irrespective of parental involvement and size of the intervention group.[28] Majority of 10 studies has come out with the positive outcome in SST especially in children with high functioning autism.

Though positive review of this training has been documented recommendation are also provided for further research in generalization of skills in social situations outside the therapeutic settings.

Family Based Intervention Models: Historically family based intervention are found to have an impact in the early intervention and rehabilitation of children with autism as they spend most of the time with the family in the early years of development.

Research Evidences has shown young children learn most of their social skills from their family members[29]. They gain most of the learning experience and opportunities in early years of life from the family/ Home Environment.

Parents play a major role in promoting social skills through direct teaching, modeling and by providing opportunities to explore new situations[30]. Siblings presence increased social competence in children with autism due to their proximity with them. Social learning like imitation, expectation of social encounters and regulation of negative emotions are achieved through sibling interaction [31].

Social Skill Enhancement and Inclusion of Children with Autism: Inclusion is meant to provide opportunity to people with disabilities to live a life of their choice irrespective of any information, attitudinal and physical barriers. It also means to respect individual differences rather than ignoring the defects and disabilities. Inclusive education should not intend to replace any of the specialized training and support needs of people with autism. It should rather focus on facilitating early identification and training procedures which will aid in successful mainstreaming of children with autism in the later stage with the normal society. Inclusive society/education should create an ambience where children with autism are provided chances to learn at their best capacity with all accommodative facilities provided.

It is stated that an fully inclusive classroom are perfect location for social and behavioural interventions due to the availability of peers to interact in natural setting. Intervention in regular classrooms has resulted in increased maintenance, generalization and overall success in children with autism. [32]. Apart from regular classroom training regardless of the intervention method early intervention training has proved to more successful.

Studies have also reported children with autism do not get sufficient social skill training and intervention in regular school. This in turn leads to more frustration among the normal peers, regular teachers and children with autism in handling their social skill deficits.

Thus full inclusion of children with autism is possible only when hindrances in regular classrooms are eliminated and alteration in education method, support services are made [33].

Conclusion

In the current scenario education is considered as

an individual's fundamental right irrespective of any disabilities and other restrictions. No two children are same, each one learn in their own style, pace and method. In such circumstances, to provide holistic education in inclusive environment for a child with disability or for children with autism requires an alteration in the existing framework of general education system. Suitable social and behavioral intervention should be made available to children with autism to learn effectively and relate with their normal peers. This requires a great deal of collaborative team work among various professionals. On focusing of social skill enhancement in children with autism no single intervention or management procedure is superior or inferior. Training procedures and interventions are to be tailor-made catering to needs, circumstances, severity of the condition and quality of life of an individual with autism. It is not the setting rather the overall learning environment that determines the successful growth of an individual. A non judgmental environment with supportive family members, competent teachers, acceptable peers and suitable support services can greatly yield to the success of the emerging concept "inclusive society".

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Use of Mobile Phone for Academic Purpose among Nursing Students: A Cross Sectional Study

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Abstract

Background: Technology has influenced the health care education of 21st century. Students depend more on their mobile phones than the books which allows them to access current evidence-based resources. There is a widespread use of mobile phones as reference and information management tools in health care as well as training of healthcare professionals.

Objectives: To know the perception regarding use of mobile phone for academic purpose by nursing students, to identify the pattern of usage and to identify the barriers regarding use of mobile phone as a learning tool.

Materials and Method: It was a cross sectional, questionnaire based study in which pre-designed, pre-tested structured questionnaire were used to collect data. A sample of 125 nursing students from a selected nursing institution were selected using stratified random sampling technique. Data were analyzed using descriptive statistics.

Result: The study results showed that majority (37.6%) of the study participants verbalized that mobile phones could be used for e - learning in nursing education. They were using mobile phone for social networking (80.8%), academic purposes (83.3%), entertainment purposes (82.4%), communication purposes (83.2%). Regarding academic use of mobile phones 85.6% uses for sharing notes and PPT, 58.4% uses for communication about the patients, 78.4% uses for sharing academic schedules, 68% uses to refer study materials, 76.8% uses for studying/learning and 75.2% uses for answering tests and submission of assignments. Majority (99.8%) had a positive perception towards use of mobile phone for academic purpose.

Conclusion: The study concluded that nursing students had a positive perception towards using mobile phone for academic purpose and were using various features of mobile phone for academic purpose.

Keywords: *Mobile phone, Nursing students, Academic purpose Perception, Pattern of usage.*

Introduction

The changing trend of usage of mobile phone for multitasking is increasing day by day among adolescents and adults.[1] Mobile phonehas brought a lot of technological advances to the footstep of mankind. It may be the entertainment, communication, shopping, day to day activities or the educational purpose and so on. Mobile technology is one of the most new technological innovations that can be integrated into medical education. m-learning has been used as a complementary resource for interaction between students and instructors for motivation and learning.[2]

An increasing number of physicians, residents and medical students currently use mobile devices such as smart phones, i Pads and table ts for education and use in clinical environments. The move toward more

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learner-centered education facilitates using instructional strategies that engage students in identifying and comprehending key concepts, receiving feedback in the course of the student's learning process and applying concepts to relevant situations. [3]In nursing practice also, the computer literacy has become a survival skill for the profession.[4] Having the support and agreement of the leadership of the hospitals and health institutions, the nurse community is starting to use this technology in many different areas.[5]

A health survey has showed that 65% of nurses are using mobile devices for professional purposes at work at least 30 min per day, while 20% use them for 2 hour or more. 60% use social media to follow healthcare issues at work and 86% follow healthcare issues on social media outside of work. Within the 95% who responded that they access health information at work, 48% of them said that their healthcare institutions encourage nurses to access online resources; 41% allow for occasional use; and 5% only as a last resort. These data suggests that the use of mHealth apps is becoming one of the common activities of the nurses.[6]

A study has reported that mobile app is a promising teaching tool that can be blended with traditional teaching for dental students.[7]The current generation health care professionals feels that mobile phones could increase job efficiency and promote improvement of health care delivery. Mobile phones have become handy tools which assist in learning, interactive instruction, as a self-study education resource or during live formal lectures, laboratory sessions and self- assessments similar to the automated response system[8].

It is observed that nursing professionals also use mobile phones at their workplace. A study has found that 80% of nurse practitioners inclinical practice use smartphone applications (apps) for pharmacology information[9]. In many nursing educational institutions e learning has been introduced and successfully used teaching learning and evaluation and students actively participate in this. It was found that minority andlower-income nursing students are less likely to have internet access at home, but they are likely toown smartphones[10]. Most nursingstudents are adept at the use of mobile phones and find them to be convenient in the clinical setting fordecision-making[11] . The present study was conducted to know the perception of students regarding use of mobile phonein nursing education, identify pattern of usage and to identify barriers regarding use of mobile phone as a learning tool among students.

Materials and Method

It was a Cross-sectional, questionnaire based study conducted at selected nursing institute . Ethical Clearance was obtained from institutional ethics committee and formal permission was obtained from institutional authorities. A questionnaire was prepared by reviewing the literature and got it validated by the subject experts. The questionnaire was pre tested and found reliable (r=0.86). Using stratified random sampling technique, 125 nursing students both under graduate and post graduate, were selected as study participants. All the participating students in this study were explained clearly about the purpose and nature of the study in the language they can understand. They were enrolled in the study only after obtaining a written informed consent. After taking their consent, the data was collected by providing a self-administrated pre-designed questionnaire. The questionnaire consisted of two sections. Demographic proforma and the perception scale. The perception scale consisted of :a) A Likert scale to assess the student's perception regarding use of mobile phone for academic purpose. It was a 5 point Likert scale which has to be rated from strongly agree (5) to strongly disagree (1). The maximum possible score was 90. b) A checklist on use of various features of mobile phones by the students, c)A check list on students use of mobile phone for educational purpose, d) A check list on barriers of mobile use. The collected data was analyzed using descriptive statistics.

Result

The study findings showed that majority (74.4%) of the study participants were using smart phone, majority (76%) own only one mobile phone, majority (36%) were using the mobile phone for 2 to 3 years, majority (51.2%) uses cellular data to access internet in the mobile, majority (25.6%) said that they use internet for other purposes than academic for 1-2 hours, majority (36.8%) says that mobile phone can be probably used as an educational tool, majority (37.6%) said that mobile phones could be probably used for e-learning in nursing education.

It was also seen that majority of the study participants strongly agreed that smart phone are helpful in learning different aspects of nursing (68.8%), smart phones allow students to learn at their own time and place (48.8%), mobile phones promote self directed learning in students (44%), mobile phone usages should be done along with traditional teaching to improve the educational outcomes

(52.8%), smart phones are very useful in clinical for learning unknown technologies, disease condition, treatment modalities etc..(48.8%), smart phones are handy tools for drug dose calculations (48.0%), smart phones can be used to share information's relevant to patient care among the members of health team (45.6%), Smart phone can be used as a guide for reference related to medications literature information's, medical calculations etc. in providing comprehensive care to the clients (49.2%), Use of smart phones may cause some behavioural problem in students (40.0%), Students are at risk for internet addiction (38.4%), Students need guidance towards wise use of smart phone (36.0%). Majority agreed that Smart phone provide a best base for group communication that is useful in effective administration (41.6%), Students using mobile phone may cause financial burden for family (40.8%) and Students of nursing profession should be allowed to use smart phones for academic purpose (44.8%). Majority disagreed that Smart phone reduce the importance of traditional texture and learning from clinical posting (40.8%). Majority strongly disagreed that Smart phones will distract the students from studies (40.0%), Students may find it difficult to control the use of smart phones (42.4%), Smart phones have become a basic need for students and they find difficult to live without it (42.4%).

Table 1: Frequency and percentage of use of various features of mobile phone by the students

Sl. No.	Features	f (%)
1	Call	122(97.6)
2	SMS	113(90.4)
3	Camera	119(95.2)
4	MP3 Player	101(80.8)
5	Movies	114(91.2)
6	Voice recorder	95(76)
7	Video recorder	98(78.4)
8	Multimedia	90(72)
9	Games	89(71.2)
10	News	109(87.2)
11	Whatsapp	108(86.4)
12	Face book	103(82.4)
13	Twitter	56(44.8)
14	Blog	46(36.8)
15	e-mail	106(84.8)
16	Instagram	62(49.6)

Table 2: Frequency and percentage of use of mobile features for educational purpose n=125

Sl. No	Features	f(%)
1	Use for dictionary	113(90.4)
2	Use for encyclopedia	90(72)
3	Use for voice recorder	96(76.8)
4	Use for camera	118(94.4)
5	Looking out for course time table	115(92)
6	Looking out for any circulars/ announcement	106(84.8)
7	Surf the web for study material	113(90.4)
8	Send picture of my work to friends/ colleges	114(91.2)
9	e-mail friends registered subject matter	107(85.6)
10	Read lecture notes	112(89.6)
11	Share lecture note	114(91.2)
12	Library/literature research	109(87.2)
13	Watch instructional videos/movies	103(82.4)
14	Watch movie/video of lectures	110(88)
15	Make video/movie of my work	95(76)
16	Use for any other apps - NCS BN Flash card APP, Epocrates, Medscape	75(60)

Table 3: Frequency and percentage of barriers to use mobile phones n=125

Sl. No.	Features	f(%)
1	Small screen	91(72.8)
2	Lack of time	76(60.8)
3	Lack of institutional support	74(59.2)
4	Financial burden	72(57.6)
5	Everything available in text book	69(55.2)
6	Lack of interest	76(60.8)
7	Ignorance	71(56.8)
8	Limited or restricted access	83(66.4)
9	Not knowing what resources are available	86(68.8)
10	Any others -Net work problem, Output problem, Inefficient User Interface (UI), Environmental factor, Battery life is short)	53(42.4)

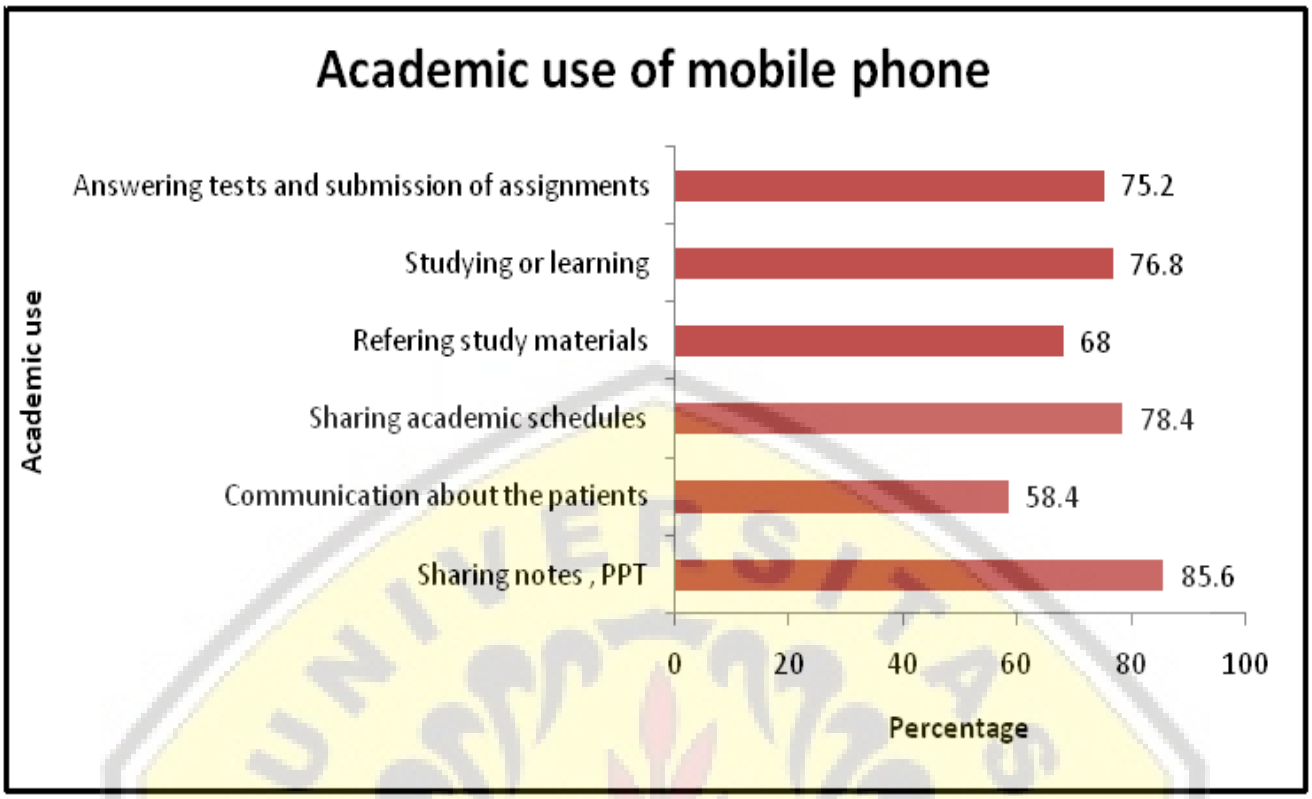

Fig 1: Bar diagram showing the academic use of mobile phone by students

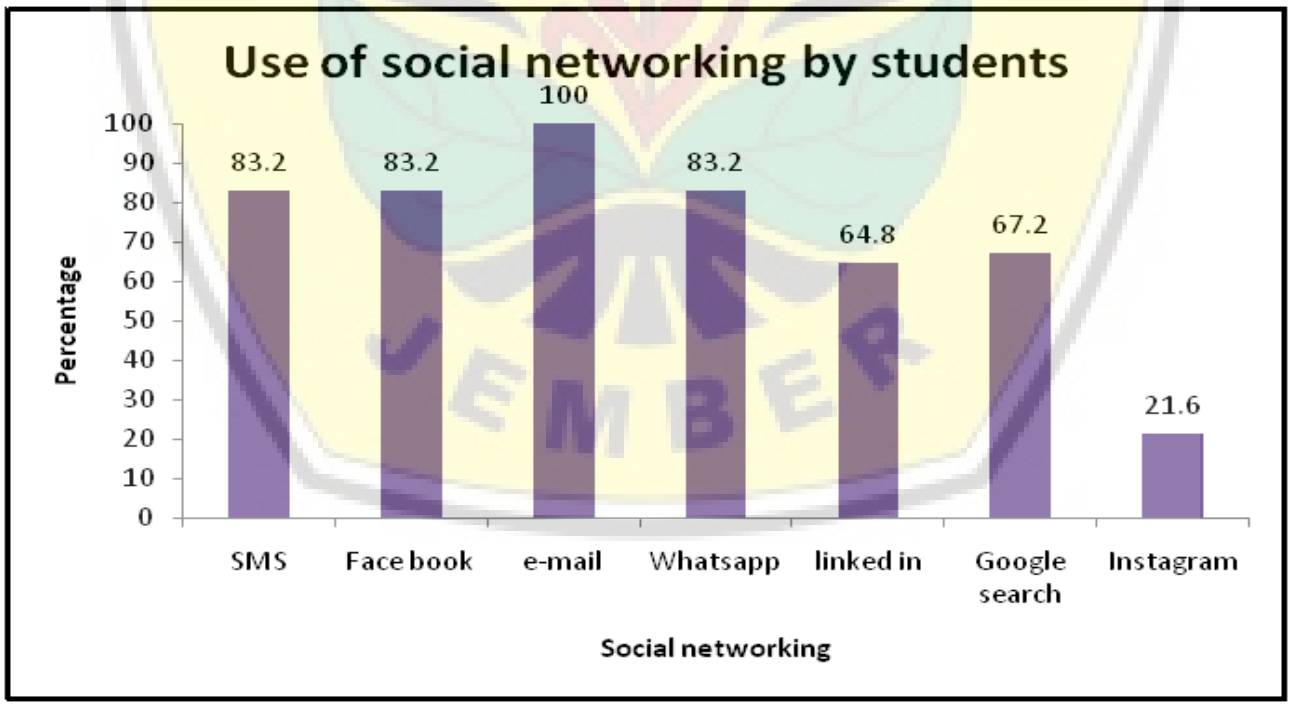

Fig 2: Bar diagram showing the use of social networking by students

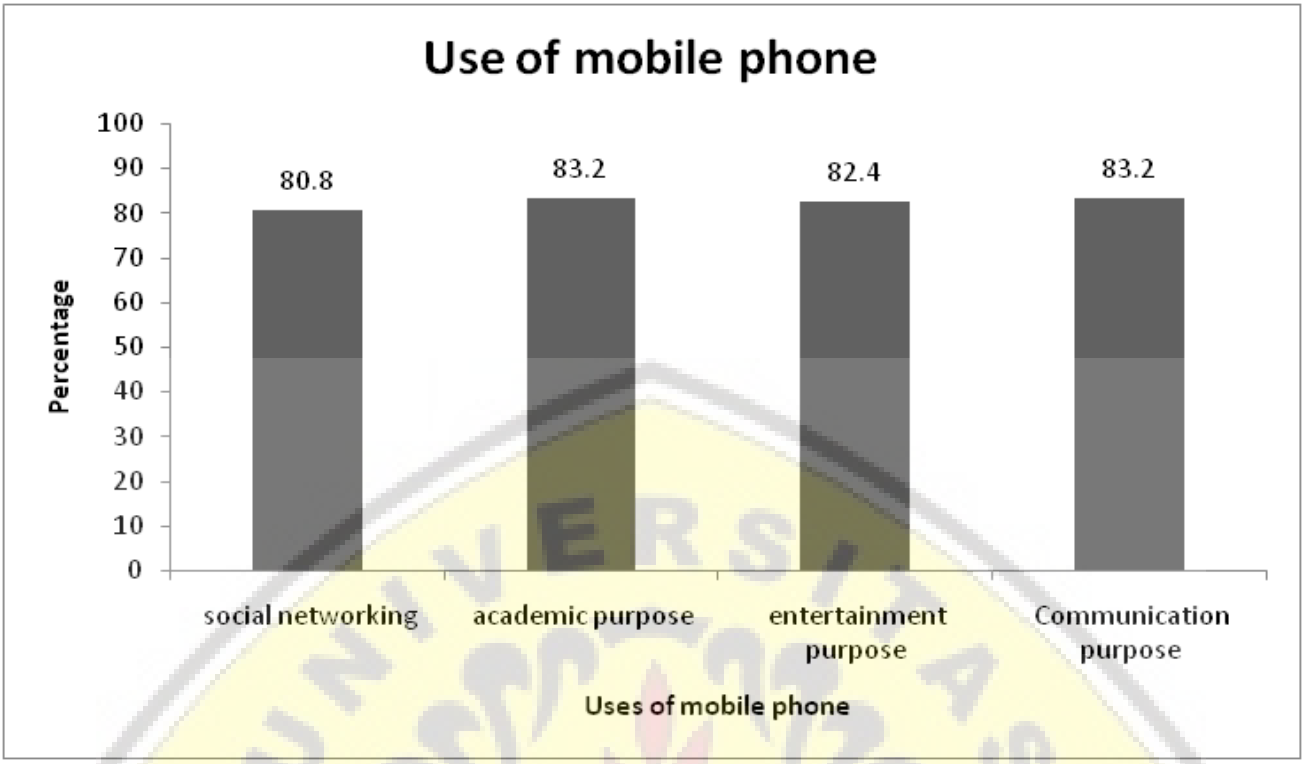

Fig 3: Bar diagram showing the uses of mobile phones for the students

Discussion

With the rapid development of advanced technology, there is an increasing amount of information available in medicine today and use of many portable devices help in quick access to medical information and also plays a major role in quality patient care.[12]

In the current study it is seen that among the study participants majority (74.4%) were using smart phones which is slightly lower than the results shown in a study[13] where the 96.7% students were using smart phones. It was reported in a study[14] that majority of study participants were using iphone, but in the present study Google based android phone is very much commonly utilized. It might because of iPhone are quite costly and cannot afford by students of developing country like India. The use of internet in terms of cellular data or wifi is quite more as seen in a study[13] yet another study reported that students use of internet was less.[15]

. Present study findings showed that majority strongly agreed that mobile phones are helpful in learning different aspects of nursing (68.8%), smart phones allow students to learn at their own time and place (48.8%), mobile phone usages should be done along with traditional teaching to improve the educational outcomes (52.8%), smart phones are very useful in clinical for learning unknown technologies, disease condition, treatment modalities etc.(48.8%). These findings are supported by a study where all the students felt that mobile apps should be used along –with traditional teaching to improve the educational outcomes. However nearly 20% of students showed their concern that apps reduce the importance of traditional lecture and clinical posting.[16]

In the present study majority study participants were using most of the mobile features which is in line with a study finding where majority students were found using the features to call (98%), SMS (74.13%), camera (92.04%), mp3 player (85.82%), voice record (52.74%), video recorder (68,66%), reading (64.52%), multimedia (59.90%), games (61.95%).[17] This study shows that majority of students are using mobile phone for educational purpose,90.4% of them are using dictionaries,72.0% of them using encyclopaedia,76.8% them using for voice recorder, 94.4% of them using for camera. The study result are supported by a study conducted to assess the perception of students regarding feasibility and use of mobile phone dictionaries 43%, encyclopedia 46%, voice recorder 0.7%, camera 43%.[17]

It is seen that the students widely use the mobile phone for academic as well as entertainment purposes. On the other hand, insufficient security, requirement for change, costs, poorly designed packages, inadequate technology, lack of skills, time intensive nature of e-learning, computer anxiety and lack of institutional support are some of the identified barriers [18,19]

The present study was limited to the students using mobile phonein a selected nursing institution in a single geographical area and the students of mobile phone was not observed, only verbal response from the students collected.

Conclusion

Many of the health care institutions have implemented e learning for the students where use of mobile phone plays a important role in their learning process. Sometimes due to ignorance students may misuse the mobile phone and may become addicted to internet or games etc. Therefore it is the responsibilities of the teachers to guide and mentor them regarding the wise use of mobile phones.

Conflict of Interest: None stated

Source of Funding: Nil

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The Effectiveness of Reality Orientation Therapy on Cognitive Level of Patient with Dementia at Selected Rehabilitation Center in Pune City

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Abstract

Background and Objective: Dementia, is a group of symptoms associated with a progressive loss of brain functioning. The word "dementia" comes from "de" (without) and "mentia" (mind). Dementia is a syndrome, caused by a variety of brain illnesses that affect memory, thinking, behavior and ability to perform everyday activities. Reality orientation on affective components of mental state, its effect on interpersonal communications and its benefits to formal and informal carers. In some situations, reality orientation can be an effective psychological therapy for people with dementia. Our objective was to assess the effectiveness of Reality Orientation Therapy on Cognitive Level of Patient with Dementia[1].

Research Methodology: Qualitative approach was used. Pre experimental one group Pre-test-post-test research design was used to assess the Effectiveness of Reality Orientation Therapy on Cognitive level of Patient with Dementia at Selected Rehabilitation Centre in Pune City. Cognitive level was assessed with the help of standardized Montreal Cognitive Assessment tool.

40 samples who met the inclusion criteria, by using the non-probability purposive sampling technique. The intervention of Reality Orientation Therapy included the 7 sessions along with various activities in a period of 4 weeks.

Result and Summary: The t_{stat} value for forty sample has been obtained as 1.935. The critical value obtained from t table for a significance level of 0.05 is $t_{cv} = 1.684$. It can be observed that $t_{stat} > t_{cv}$. Hence null hypothesis is rejected & research hypothesis is accepted. Hence it can be concluded that there is a significant difference in the pre-test and post-test MoCA(Montreal Cognitive Assessment) score and the intervention shows effect towards the improvement in the MoCA score which further proves the effectiveness of the intervention of Reality Orientation Therapy.

Religion was found to have significant association with Cognitive level of Patient with Dementia.

Conclusion: The most important part of Patient with Dementia is the declining in Cognitive level. This study suggested that the Reality Orientation Therapy is helpful in improving the Cognitive level of Patient with Dementia.

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Keywords: *Cognitive level, Patient with Dementia, Reality Orientation Therapy, Effectiveness.*

Introduction

Dementia, is a group of symptoms associated with a progressive loss of brain functioning. The word

"dementia" comes from "de" (without) and "mentia" (mind). Dementia is a syndrome, usually of a chronic or progressive nature, caused by a variety of brain illnesses that affect memory, thinking, behavior and ability to perform everyday activities[1]. Dementia mainly affects older people, although there is growing awareness of cases that start before the age of 65. After age 65, the likelihood of developing dementia roughly doubles every five years. In last year's World Alzheimer Report, Alzheimer's disease International estimated that there are 35.6 million people living with Dementia worldwide in 2010, increasing to 65.7 million by 2030 and 115.4 million by 2050,[2]nearly two-thirds live in low and middle income countries. The stages of dementia are used when a progressive dementia has been diagnosed, it include:

- Stage 1: No impairment. The patient has no problem.
- Stage 2: Questionable impairment. The patient begins to have some difficulty nut can still function independently
- Stage 3: Mild impairment. The patient has obvious, but still mild difficulty with daily activities.
- Stage 4: Moderate impairment. The patient needs help with caring for him or herself as well as with carrying out daily activities.
- Stage 5: Severe impairment; patients are unable to function independently.

Reality Orientation (RO) was first described by Folsom 1966 as a technique to improve the quality of life of confused elderly people, although its origins lie in an attempt to rehabilitate severely disturbed war veterans, not in geriatric work. It operates through the presentation of orientation information (e.g. time, place and person-related) which is thought to provide the person with a greater understanding of their surroundings, possibly resulting in an improved sense of control and self-esteem. RO can be of a continuous 24 hour type, whereby staff orientate the patients to reality at all times, or of a 'classroom' type, where groups of elderly people meet on a regular basis to engage in orientation related activities. A prominent focus of classroom RO is often the 'RO board', which typically displays information such as the day, date, weather, name of next meal and location[3].

Material and Method

A Pre Experimental study design with quantitative approach was used, as this study was aimed, the approach was found to be most appropriate. Experimental group was given intervention of Reality Orientation Therapy (14 different sessions for 4 weeks). This study was conducted in selected Rehabilitation center of Pune city. The selection was based on easy accessibility, cooperation and availability of samples. Total 40 Patients with Dementia of selected Rehabilitation center, Pune city who met the inclusion criteria were selected. Tool used for the collection of data was a standardized tool (Montreal Cognitive Assessment Tool Kit). Findings: The analysis and interpretation of the data collected to determine the Effectiveness of Reality Orientation Therapy on Cognitive Level of Patient with Dementiais carried out based on objectives set by the researcher taking the level of significance as 0.05.

Table No. 1: Effectiveness of Reality Orientation Therapy on Cognitive Level of Patient with Dementia, Pre-test and Post-test comparison n=40

Cognitive Level	Pre-test		Post-test	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Mild (22-25)	14	35	23	57.5
Moderate (17-22)	26	65	17	42.5

Table No. 2: Paired t test for the effectiveness of Reality Orientation Therapy on Cognitive level in Patient with Dementia at Selected Rehabilitation centre in Pune city n=40

	Mean	SD	df (N-1)	p value	t_{stat}
Pre-test	21.300	2.4931	39	0.004	1.935
Post-test	22.150	2.3702			
Difference between two sample	0.85	3.22			

Discussion

Metitiericonducted study to evaluate the impact of continued Reality Orientation Therapy (ROT) in delaying the outcomes of dementia progression. Retrospective study. Data collection was based on review of clinical charts and on telephone interviews performed with patients or primary caregivers. This study analyzed the time to the occurrence of any of the following: cognitive decline on Mini-Mental State Examination scores, urinary incontinence as an index of functional decline, institutionalization and Data on a 30-month period after the first ROT session were analyzed. We compared 46 patients (treatment group) who completed from 2 to 10 ROT cycles (corresponding to 8–40 weeks of training; mean = 15.48) with 28 patients (control group) who completed only one ROT cycle (4 weeks)[4]

In present study done on Cognitive level of mild & moderate Patient with Dementia. Sample size was 40 & intervention (Reality Orientation Therapy) given for four weeks in 7 different sessions. Tool used to assess the cognitive level of Patient with Dementia is MoCA (Montreal Cognitive Assessment). Out of 40 sample in pretest, 35% of Patient with Dementia had mild cognitive impairment and 65% of them had moderate cognitive impairment in pretest. In posttest, 57.5% of Patient with Dementia had mild Cognitive impairment and 42.5% of them had moderate cognitive

Conclusion

The following interpretation can be done from the findings of the study. The analysis of the data reveals that the Effectiveness of Reality Orientation Therapy on Cognitive Level of Patient with Dementia at Selected Rehabilitation Center in Pune city.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Obtained from Institutional Research Committee.

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Risk Factors on Severity of Blood Pressure among Pregnant Women with Pregnancy Induced Hypertension (PIH) in Hilly areas of Uttarakhand

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Abstract

Introduction: Pregnancy Induced Hypertension, a life threatening complication of pregnancy is a condition that typically starts after 20th week of pregnancy and is related to increased blood pressure and protein in mother's urine. Finding the factors about increasing the severity of blood pressure among PIH womens is very important to reduce the maternal and newborn morbidity mortality.

Material and Method: Quantitative approach with Non experimental – descriptive research design was used to estimate the risk factors contributing to increase the severity of blood pressure among pregnant women with PIH. Pregnant women who diagnosed with PIH, belongs to hilly area and primigravida were included in the study. Pregnant women with convulsion and coma, with other chronic medical disorders were excluded from the study. Hundred and six (106) women with PIH were selected for study by using purposive sampling technique. Women with PIH were classified in to two groups i.e 1. women with mild BP (140/90 – <160/110) & 2. women with severe BP (≥ 160/110)[2]. The tools used to collect the data were 1. Demographic questionnaire, 2. Questionnaire to assess the determinants or risk factors contributing to increase the severity of Blood pressure of PIH.

Results: Logistic regression Odds ratio statistics revealed that Contraceptive use (β=1.9), underwent infertility treatment (β=1.1), Family history of PIH (β= 2.0), family history of hypertension (β=2.9), physical activity (β=1.2), Sleeping hours (β=1.6), type of diet (β=1.5) and HB level (β=1.2) were the statistically proven causes for worsening of the blood pressure among PIH women.

Conclusion: There are individual and multi-factors (i.e contraceptive use, infertility treatment, family history of PIH, family history of hypertension, normal activity, less sleeping hours, vegetarian and low Hb level)caused to increase the severity of blood pressure among pregnant women with PIH in Hilly Areas.

Keywords: *Blood Pressure, Pregnancy Induced Hypertesnsion, Pregnant women, Risk Factors.*

Introduction

Pregnancy is considered as a normal physiological event and is typically, a time of joy and anticipation. But sometimes occurrence of risk or complications shatters the dreams of pregnant women and her family.[1, 2]

Every minute of every day, somewhere in the world, a woman dies from complications related to pregnancy or childbirth. That is, 3,58,000 women, at a minimum, dying every year worldwide. Most of these deaths occur in developing countries, making maternal mortality the health statistic with the largest disparity between developed and developing countries. In India,

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one woman dies in every 5 minutes from a pregnancy related cause.[3]

Hypertension is one of the common medical complications of pregnancy and contributes significantly to maternal and perinatal morbidity and mortality. Hypertension is a sign of an underlying pathology which may be pre-existing or appears for the first time during pregnancy. [2]

PIH, a life threatening complication of pregnancy is a condition that typically starts after 20th week of pregnancy and is related to increased blood pressure (BP ≥140/90 mm Hg) and protein in mother's urine (urinary albumin protein ≥ 300 mg/24 h).[1,2]

Agarwal S, Walia GK (2014) stated the prevalence of PIH in various regions of India and showed that almost one-third of the respondents (n=11362; 28.7%) reported symptoms suggestive of pre-eclampsia. Rural-urban and marked geographic variation were found with rates for pre-eclampsia ranging from as low as 18.5% (Haryana) to 49.4% (Tripura). According to him, Uttarakhand holds the 1st place in the prevalence of PIH in the northern region of India and also it holds 5th place in all over the India.[4]

Till now no study has been conducted to assess the risk factors of severity of blood pressure among PIH mothers in hilly area. Identifying the risk factors contributing to increase the severity of blood pressure among pregnant women with PIH in hilly area will help to screen the high risk cases at booking. It will help the health professionals to plan the suitable surveillance routine to detect preeclampsia for the rest of the pregnancy.

Materials and Method

Quantitative approach with Non experimental–descriptive research design was used to estimate the risk factors contributing to increase the severity of blood pressure among pregnant women with Pregnancy Induced Hypertension (PIH) in hilly area. Pregnant women who diagnosed with Pregnancy Induced Hypertension and registered in respective study centre, belongs to hilly area, primigravida, gestational age between 26 – 30 weeks, willing to give written consent for the study & can understand and speak the Hindi language were included in the study. Pregnant women with convulsion and coma, with other chronic medical disorders were excluded from the study. After taking permission from the ethical committee and administrative authorities. Hundred and six (106) women with PIH were selected for study by using purposive sampling technique. Women with Pregnancy Induced Hypertension were classified in to two groups i.e 1. women with mild BP (140/90 – <160/110) & 2. women with severe BP (≥ 160/110)[2]. The tools used to collect the data were 1. Demographic questionnaire, 2. Questionnaire to assess the determinants or risk factors contributing to increase the severity of Blood pressure of PIH. Informed written consent was taken from each participant before collecting the data. The data analyzed by using descriptive and inferential statistics.

Findings: Frequency & percentage wise distribution of demographic variables of study participants. Highest and almost similar percentages of the women had secondary education (30.2%) & graduate and above (31.1%). Most (88.68%) of the women were housewives whereas, only 11.32% of the women were working. Among 11.32% of the working women, three fourth (75%) of the women were skilled worker and one fourth (25%) of the women were non skilled worker. One third (32.1%) of women belongs to the monthly family income of Rs. 9,249 - 13,873. Two third (65.1%) of the women belongs to the joint family and rural area residence were 70.8%.

Table No. 1: Comparison of risk factors of severity on blood pressure on pregnant women with Pregnancy Induced Hypertension (PIH). N=106

S. No.	Risk Factors	Mild BP (140/90 – <160/110)	Severe BP (≥ 160/110)	Chi Squire	p value	Odds ratio	Confidence Interval	
1	**Maternal age**							
	< 30 years	48 (45.28%)	16(15.09%)	3.969	0.046	0.316	0.097	1.023
	≥30 years	38 (35.85%)	4 (3.78%)					
2	**Age of menarche**							
	< 14 years	25(23.58%)	17 (16.03%)	0.021	0.884	0.943	0.426	2.087
	≥14 years	39(36.79%)	25(23.58%)					

S. No.	Risk Factors	Mild BP (140/90 – <160/110)	Severe BP (≥ 160/110)	Chi Squire	p value	Odds ratio	Confidence Interval	
3	**Contraceptive use**							
	Yes	10 (9.43%)	24(22.64%)	2.182	0.025	1.920	0.803	4.592
	No	40 (37.73%)	32 (30.18%)					
4	**Infertility Treatment**							
	Yes	11 (10.37%)	19 (17.92%)	0.153	0.001	1.190	0.497	2.846
	No	45 (42.45%)	31 (29.24%)					
5	**Family H/O PIH**							
	Yes	1(0.94%)	3(2.83%)	0.372	0.0001	2.016	0.203	20.062
	No	61(57.55%)	41(38.68%)					
6	**Family H/O HTN**							
	Yes	4 (3.77%)	15 (14.15%)	3.337	0.0001	2.908	0.892	9.478
	No	49 (46.22%)	38 (35.84%)					
7	**Type of pregnancy**							
	Singleton	60 (56.60%)	40 (37.73%)	0.105	0.746	0.750	0.131	4.290
	Twin	4 (3.77%)	2 (1.88%)					
8	**Physical activity**							
	Normal	10 (9.43%)	54 (50.94%)	0.211	0.005	1.271	0.456	3.537
	Severe	34 (32.08)	08(7.54%)					
9	**Sleeping Hours**							
	≥7 hours	20(18.86%)	22(20.75%)	1.414	0.004	1.608	0.734	3.523
	< 7 hours	26(24.52%)	38(35.84%)					
10	**BMI**							
	Normal	57 (53.77%)	40 (37.73%)	1.245	0.265	0.407	0.080	2.063
	Increased	7(6.60%)	2(1.88%)					
11	**Weight gain**							
	< 11	40 (37.73%)	33(31.13%)	3.055	0.080	0.455	0.186	1.111
	≥11	9(8.49%)	24(22.64%)					
12	**Type of diet**							
	Vegetarian	17 (16.03%)	33(31.13%)	1.251	0.035	1.565	0.023	3.440
	Non Veg.	31 (29.24%)	25(23.58%)					
13	**Hb level**							
	Normal	35(33.01%)	21(19.81%)	0.224	0.001	1.207	0.003	2.632
	Anemic	21(19.81%)	29(27.36%)					
14	**H/O UTI**							
	Had infection	17 (16.03%)	07(6.60%)	1.418	0.234	0.553	0.207	1.478
	No infection	35(33.01%)	47(44.34%)					

Table No. 1 depicts the factors proceeding increasing blood pressure (severity) among pregnancy induced hypertension mothers. Factors like Age of the mother (0.046), Using contraceptives (0.025), Underwent infertility treatment (0.001), Family history of pregnancy induced hypertension (0.0001), Family history hypertension (0.0001), Physical activity (0.005), sleeping hours (0.004), Type of diet (0.035) and Hemoglobin level (0.001) had shown significant ($p \leq 0.05$) association with severity of increased blood pressure among pregnant women with pregnancy induced hypertension. Logistic regression Odds ratio statitics shows that Contraceptive use (β=1.9), underwent infertility treatment (β=1.1), Family history of Pregnancy induced hypertension (β= 2.0), family history of hypertension (β=2.9), physical activity

(β=1.2), Sleeping hours (β=1.6), type of diet (β=1.5) and HB level (β=1.2) were the statistically proven causes for worsening of the blood pressure among pregnancy induced hypertensive mothers.

Discussion

Pregnancy-induced hypertension (PIH) is a state of high blood pressure in a pregnant women after pregnancy and it was reported 7-10% among Indian mothers. This study result shows that Contraceptive use, infertility treatment, family history of PIH, family history of hypertension, physical activity, sleeping hours, type of diet and Hb level were associated in the development severe blood pressure among Pregnancy Induced Hypertensive mothers.

These study findings were consistant with study done by Dalmáz CA, Santos KGD, Botton MR, Roisenberg I that risk factors for hypertensive disorders of pregnancy in Southern Brazilthat family and previous history of PE, high BMI, nulliparity, diabetes, chronic hypertension were reported as a risk factors of hypertensive disorders of pregnancy. Family history of preeclampsia (p = 0.001; OR = 3.88; 95% CI = 1.77-8.46), diabetes (p = 0.021; OR = 3.87; 95% CI = 1.22-12.27) and chronic hypertension (p = 0.002; OR = 7.05; 95% CI = 1.99-24.93) were associated in the development of PIH.[8]

Also, another study done by Agarwal S, Walia GK reported that pre-eclampsia was higher among women with twin pregnancy (OR:1.53; CI:1.12-2.09), terminated pregnancy (OR:1.38; CI:1.30-1.48), women with severe to mild anemia (OR ranges from 1.08 to 1.32), tobacco smoking (OR:1.91; CI:1.19-1.91), diabetes (OR:1.89; CI:1.44-2.49), asthma (OR:2.05; CI:1.59-2.65), consuming fruits weekly/occasionally, eggs daily, fish weekly.[4]

Hirpara S, Ghevariya R, Ghadia P, Hada T, Pandit N mentioned in his study that past history of PIH had strong association with current PIH for women who are multigravida (OR-3.7 95% CI- 1.1 to 12.5 p=0.03). Also there was interesting observation that vegetarian had higher chance of getting PIH then mixed diet pattern (OR-4.3 95% CI- 1.8 to 10.4 p=0.0009). Thus the protein intake has relation. Vegetarian diet population has smaller protein intake compare to mixed type of diet. Other risk factors like family history of hypertension, family history of diabetes mellitus and menstrual cycle history had no association with PIH in present study.[9]

Pandey S, Pandey Ridentified major risk factors in his study were pre pregnancy body mass index (BMI >25) (OR=11.27), history of hypertension (OR=8.65), history of diabetes mellitus (OR=11.0), history of renal disorders (OR=7.98), familial history of hypertension (OR=5.4), history of PIH in earlier pregnancy (OR=9.63) and twin pregnancy (OR=4.85). As per multiple logistic regression analysis the pre-pregnancy BMI of >25 (OR=7.56), history of hypertension (OR=6.69), history of diabetes mellitus (OR=8.66), history of renal disease (OR=5.6), family history of hypertension (OR=5.48) and twin pregnancy (OR=5.73).[10]

Conclusion:

Pregnancy induced hypertension with PE and eclampsia still remain a major problem in developed countries especially in very remote and hilly areas. There are individual and multi-factors (i.e contraceptive use, infertility treatment, family history of PIH, family history of hypertension, normal activity, less sleeping hours, vegetarian and low Hb level)caused to increase the severity of blood pressure among pregnant women with PIH in Hilly Areas. Awareness regarding risk factors for PIH shall be helpful in reducing the PIH related morbidity and mortality. These factors and the symptoms underlying evidence base can be used to assess risk of women belongs to hilly area at booking. High quality antenatal care should be provided in order to minimize the complications of pre-eclampsia both for the mother and the fetus.

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Ethical Clearance: Ethical Clearance obtained from the Institutional Ethical Committee of respective Institute. Informed written consent was taken from the study participants..

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A Study on Socio–Demographical Factors among Granite Industrial Workers of a District in India

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Abstract

Background: Preventive medicine and occupational health have same aim–the prevention of disease and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations. Quarrying operations have deleterious effects on both environment and human health.

Aims: To assess the Socio-Demographical factors among workers of granite industry.

Settings & Design: Study Design: Cross-sectional study. Study area: This research was conducted in Khammam town, Khammam. Telangana.

Study Period: 1st December 2015 to 31st November 2016. Study population: Granite industrial workers in Khammam town. Method & Material: Ethical Clearance was obtained from institutional ethical committee and prior permission was sought from the General Manager, District industries centre, Khammam district. The data was collected by Interview technique using validated, semi-structured, pre-tested (pilot tested), proforma developed by the International Union against Tuberculosis & Lung Diseases (IUATLD Questionnaire). Statistical Analysis: It was analysed using SPSS Version 20.0. To test for the difference in the proportion between different variables, Z test/chi-square test was employed. The statistical significance level was fixed at $P < 0.05$. Results: A total of 402 granite workers from the age group of 23 to 57 years participated in the study, of them 290 (72.1%) were males and 112(27.9%) were females. Majority of the workers i.e. 258 (64.2%) belonged to Class III Socio-economic status. Among the total workers, 128 (31.8%) of them were smokers. Conclusion: There is a need to evaluate the health status of quarry workers at regular intervals to provide appropriate preventive measures.

Keywords: *Granite industry workers, smoking, Alcohol, quarrying, socio-demographical.*

Introduction

India with its diverse work has 90% of the workforce belonging to informal sector where the work and working conditions are variable and insecure in nature. This coupled with poverty has pushed them to take up hazardous and precarious employment in the informal economy. For these workers, any employment is acceptable as long as it meets their hunger and poverty. Just like home, the place of work is also an important environment for an earning person. Such a person spends nearly 6 – 8 hours a day [1]. Added to this, extended working hours, labor exploitation, poor wages coupled with employer's apathy towards Health & Safety of these workers, adds to the Occupational hazards and risks at workplaces. Lack of implementation of Health & Safety legislation among unorganized sector is another challenge to be addressed[2]. Preventive medicine and

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occupational health have same aim – the prevention of disease and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations[3]. Quarrying being one such informal sector constitutes 8% of the unorganized sector[4]. Quarrying operations have deleterious effects on both environment and human health. National Institute for Occupational Safety and Health (NIOSH) reports dusts generated from granite quarrying contains 71 percent silica[5].

Despite the above said health impacts of quarrying on health especially on respiratory system, Many studies have focused on Sandstone quarrying. Hence was the need for designing and carrying out this study.

Aim and Objective: To assess the Socio-Demographical factors among workers of granite industry.

Material and Method

Study Design: Cross-sectional study

Study Area: This research was conducted in Khammam town, Khammam. Telangana.

Study Period: 1st December 2015 to 31st November 2016.

Study population: Granite industrial workers in Khammam town.

Inclusion Criteria: All the individuals working in granite factories of Khammam town were included in the study.

Exclusion Criteria: Individuals not willing to participate in the study.

Sample Size Estimation: Sample size was calculated by taking Confidence interval (CI) at: 95%

Alpha error (α): 5%

Allowable error (L): 20% of p

Assumed prevalence (P): 20%

The basis for the estimation of sample size for the present study was Comparison of respiratory morbidity between present and ex-workers of quartz crushing units: Healthy workers' effect by Tiwari RR et.al [6])

Sample Size Calculation (n): $4PQ/L^2 = 4 X 20 X 80/(4 X 4) = 400$

Sample size for our study was 400.

Method of Data Collection: Ethical Clearance was obtained from institutional ethical committee and prior permission was sought from the General Manager, District industries center, Khammam district before the commencement of the study. After acquiring approval letter from the District Labour Officer, Khammam, Preliminary enquiries as to number of granite factories in the town, names of the factories, its owners and members who were working in granite quarries were made and Individuals took part in the study voluntarily and were permitted by their employer from their unit for the evaluation. We visited different study sites, discussed the intention of the study with the individuals. The purpose of the study was explained to the owners and all the workers and their consent was taken in this regard. The data was collected by Interview technique using validated, semi-structured, pre-tested (pilot tested), proforma developed by the International Union against Tuberculosis & Lung Diseases (IUATLD Questionnaire) [7]. It included Socio-demographic details on age, sex, educational status, marital status, socio-economic status and duration of present stay in the residence. Known confounding variables that were considered in the study included history of smoking, consumption of smokeless tobacco and alcohol.

Statistical Method: The data was entered onto a computerized Excel (Microsoft Excel 2010) spreadsheet. Subsequently it was analyzed using SPSS (Statistical Package for Social Sciences) Version 20.0 Data were tabulated according to frequency distribution tables . Quantitative Variables such as age, duration of working etc. were summarized through mean, median etc. To understand the variation in the data, SD was calculated. To test for the difference in the proportion between different variables, Z test/chi-square test was employed. The statistical significance level was fixed at $P < 0.05$.

Observations and Results

A total of 402 granite workers from the age group of 23 to 57 years participated in the study. Majority of the individual in the study consisted of males 290 (72.1%) and only 112(27.9%) constituted females.

It was observed that 360 (89.6%) of the granite workers were married at the time of interview. This distribution was followed by widow/er individuals, constituting 41(10.2%) granite workers.

Table 1: Age distribution of the study population

Age (Years)	Males n = 290	Females n = 112	Total n = 402
20 – 29	42(14.5%)	19(17.0%)	61(15.1%)
30 – 39	110(38.0%)	51(45.5%)	161(40.0%)
40 – 49	102(35.0%)	39(34.8%)	141(35.1%)
50 – 59	36(12.5%)	3(2.7%)	39(9.8%)
Total	290(100.0%)	112(100.0%)	402(100.0%)

Note: Figures in parenthesis indicates column percentages

Figure 1: Distribution of study population according to educational status

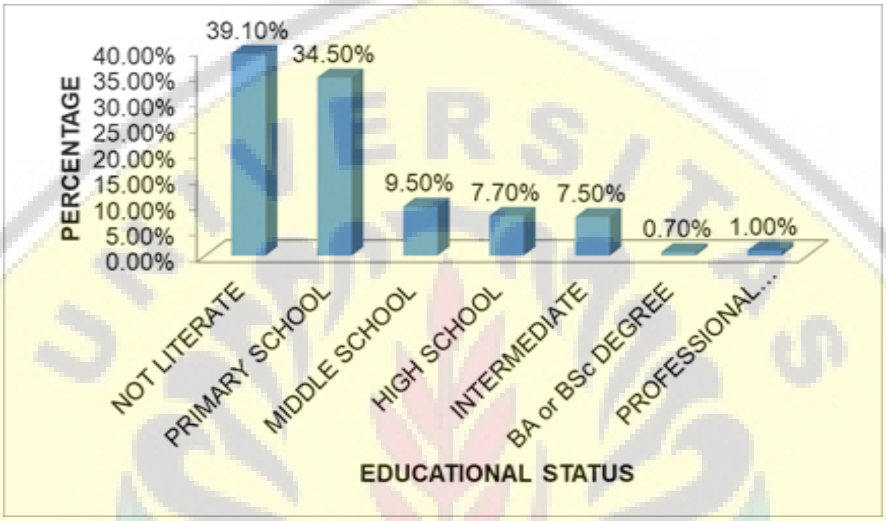

Figure 2: Distribution of study population according to socio economic status (According to Modified B G Prasad's classification)

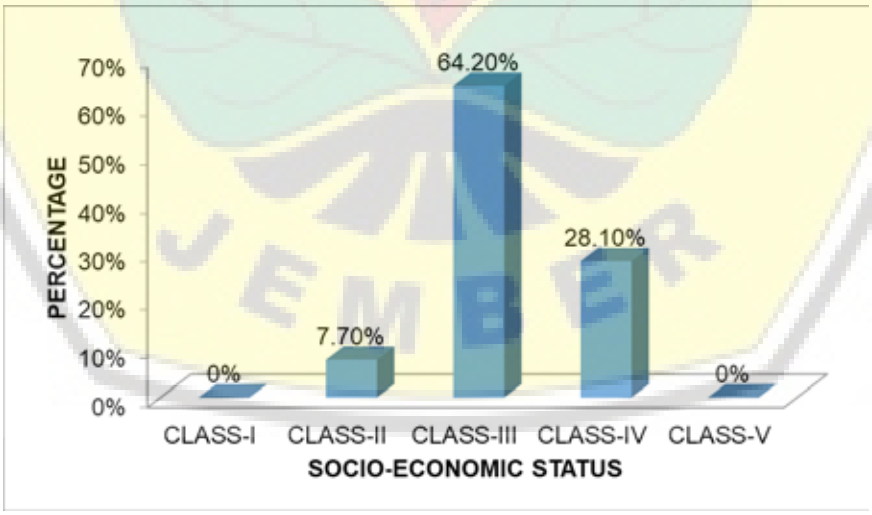

Table 2: Distribution of Study population according to history of Smoking

Smoking History	Males n = 290	Females n = 112	Total n = 402
Smokers	124(42.8%)	4(3.6%)	128(31.8%)
Non-Smokers	166(57.2%)	108(96.4%)	274(68.2%)
Total	290(100%)	112(100%)	402(100%)

X^2= 57.170, df = 1, P = 0.00001 ($p < 0.05$)

The association between smoking and gender was found to be statistically significant (P< 0.05) as shown in Table 2.

Table 3: Distribution of Study Population by consumption of smokeless tobacco

Smokeless Tobacco Consumption	Males n = 290	Females n = 112	Total n = 402
Consumed	119(41.0%)	16(14.3%)	135(33.6%)
Did not consume	171(59.0%)	96(85.7%)	267(66.4%)
Total	290(100%)	112(100%)	402(100%)

X^2= 25.918, df = 1, P = 0.00001 (p < 0.05)

Thus, a higher consumption of smokeless tobacco was prevalent among male workers as compared to female workers and this association was found to be statistically Significant (P< 0.05) as shown in Table 3.

Table 4: Distribution of the Study population according to consumption of alcohol

Alcohol Consumption	Males n = 290	Females n = 112	Total n = 402
Consumed	225(77.6%)	8(7.2%)	233(58.0%)
Did Not Consume	65(22.4%)	104(92.8%)	169(42.0%)
Total	290(100.0%)	112(100.0%)	402(100%)

X^2 = 164.54, df = 1, P = 0.00001 (p <0.05)

The association between alcohol consumption and gender was found to be statistically significant (P<0.05) (Table 4).

Discussion

A total of 402 granite workers from the age group of 23 to 57 years participated in the study, of them 290 (72.1%) were males and 112(27.9%) were females (Table 1). Considering the strenuous nature of the job, not many female individuals were employed in the field and most of the employed female's job restricted to labour job and not into crushing and polishing process. A study by Tiwari et al [6] in Godhara among 253 quartz stone workers and 102 slate pencil workers found 191 (75.5%) males and 62 (24.5%) females among the study group. A study done by Manish A Prasad et. Al [8], to assess health status of stone quarry workers in Wardha district, Central India, found that 138 (92%) workers were males and 12 (8%) were females. Among the study population, 302 (75.1%) individuals were in the age group of 30 to 49 years followed by 61 (15.1%) between 20 to 29 years and 39 (9.8%) in the age group of 50 to 59 yrs. Hence, majority of the study population comprised of middle aged individuals aged less than 50 years. And Mean ± SD age of the study population to be 38.06 ± 7.77 years. Another cross sectional study by Tiwari et al carried out among 136 quartz stone grinders with the objective to study the peak expiratory flow (PEF) and the epidemiological factors associated with it found that the mean age for male was 33.18 ± 10.39 years while that for female was 30.10 ± 9.3 years and for the whole group was 31.77 ± 9.99 years [9]. Present study revealed that 360 (89.6%) of the granite workers were married at the time of interview. This distribution was followed by widow/er individuals, constituting 41(10.2%) granite workers (Table 3). A cross- sectional study done by Narkhede V et.al [10] with objective of respiratory morbidity among stone crusher workers found that 243 (84.67%) workers were married followed by 44 (15.33%) unmarried workers. A study done by A. N. Nwibo, E. I. Ugwuja et al [11] in which majority of workers are married with a percentage of 58.3% and 41.7% workers were unmarried. Education is considered as an important factor for empowerment of the work force to appreciate ones rights and to protect themselves from the hazards in the industry. This concurs with the fact that the most vulnerable individuals are the ones who are least equipped with the knowledge and skills to protect themselves from the hazards and constitute the target groups for focused interventions while promoting occupational health and safety as owing to their lack of education, most workers in the "developing" world are unaware of the hazards of their occupations. Majority of the workers i.e. 258 (64.2%) belonged to Class III

Socio-economic status, 113(28.1%) workers belonged to class-IV Socio-economic status. Since most quarry workers belonged to lower middle and upper middle socioeconomic class, their affordability and accessibility to quality occupational health services both in the private and public health sectors may be variable and may be compromised. This justifies the need to organize and deliver comprehensive occupational health services within and allied health systems. Vilanilam et al [12], in their paper on historical and socioeconomic analysis of occupational safety and health in India, highlight the fact that low socio-economic status of the workers, contributes a great deal to their general backwardness in sanitation and nutrition that often aggravate diseases contracted from the work environment. Among the total workers, 128 (31.8%) of them were smokers, 274 (68.2%) were non-smokers. Tiwari et al showed that among the 253 quartz stone workers, 38.7% were smokers and 61.3% were nonsmokers [9]. Surveys in India have revealed that 29.4% of males and 2.5% of females are current smokers. However, in those 30 years of age and above, the prevalence of smoking in India is 40.9% for males and 3.9% for females [13]. The present study showed that, 135 (33.6%) were chewing one or other form of smokeless tobacco. A study done by Manish A Prasad et. Al [8] to assess health status of stone quarry workers in Wardha district, Central India, found that 78 (52%) workers were chewing smokeless tobacco in the form of pan masala and gutkha. Among the workers, 233(58.0%) consumed alcohol and 169(142.0%) did not consume. The difference on the alcohol consumption between males and females was found to be statistically significant ($P<0.05$) (Table 8). The probable reason for high consumption of alcohol among the male workers could be referable to the type of work they are engaged into. Male workers are involved in strenuous job for a period of 8 hours a day and most of the months in a year. So in order to relax in between their working hours, they could be consuming more amount of alcohol. The same could be explained for high consumption of tobacco among them as compared to female workers.

A study done by Manish A Prasad et. Al [8] to assess health status of stone quarry workers in Wardha district, Central India, found that only 4 (2.77%) workers were consuming alcohol.

Conclusion

The present research has also revealed that continuing the occupation of quarrying for ≥ 10 years may add to the development of several respiratory morbidities namely hemoptysis, bronchial asthma, atopy and chronic bronchitis which will in turn have deleterious effect on the health status of the population more so with respiratory morbidity.

There is a need to evaluate the health status of quarry workers at regular intervals to provide appropriate preventive measures.

Conflicts of Interest: None

Source of Funding: Self

Clearance from ethical committee: Taken

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Assessment of Bowel Habits among Selected Community Adult Population

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Abstract

Background: Defining bowel habit it's an important human body function. Stool frequency and consistency normally change person to person. Bowel habits are formed early in life. So they may have poor habits and developing the problems. Many people don't know that they have poor bowel habits or problems. Without treatment, these could lead to faecal incontinence (leakage from the bowel) in later life.

Objectives: To assess the bowel habits (Characteristics, Pattern and Control) among adult population and to find the association with selected demographic variables. Material and Method; a descriptive study to assess the bowel habits among adult among population. The non probability, Convenient sampling technique was followed and 106 adult in selected community who met inclusion criteria were selected Standardized Victoria Bowel Performance Scale were used to assess the bowel habits among adult population. The collected data were formulated and analyzed by using descriptive and inferential statistics.

Result: Shows, that majority of adult 45.28% were in the age group of 30 - 39, 66.03% were in female, 42.22% had primary education, 98.11% got married, 52.83% had unemployed, 95.28% have been taken fibre rich diet, 45.28% were spending the time of exercise 15 to 30 minutes, 60.37% taken water in evening time, 90.56% does not having smoking and 88.67% does not drinking alcohol and there is no significant association between the bowel habits with selected demographic variables Hence, the null hypothesis is accepted.

Keywords: *Assessment, Bowel habit, Adult.*

Introduction

Defining normal bowel habit is important when evaluating diarrhea or constipation. Normal stool frequency and consistency vary from person to person and in different populations due to several factors including dietary habit, quantity of fiber intake and difference in gut transit time Misconception regarding bowel habit is common among general population.

Define constipation according to stool frequency patients define this problem as a multi-symptom disorder such as infrequent bowel movements, hard/lumpy stool, straining, bloating and feeling of incomplete evacuation a bowel movement and abdominal discomfort. Constipation has multitude of causes with higher prevalence among females, older age group, low education and economic group. Therefore, it is not surprising that they represent one of the least understood aspects of human behavior. In the past, most knowledge of bowel habits was drawn from limited data on small groups of subjects (nurses, jail prisoners, elderly people

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and students). More recently, studies aimed generically at investigating functional gastrointestinal disorders have large number of people.(1)

Defecation is a basic body function that affects the quality of life. Dietary intake and gastrointestinal motility functions are important in critically-illpatients. However, scant attention has been given to motility disorders of lower gastrointestinal tract and problems of failure to defecate in critically ill patients. Constipation is a common complaint among critically ill patients. Poor dietary and fluid intake, impaired mobility leads to decreased muscle tone and decreased peristalsis, thus, contributing to development of constipation. Hospitalized critically-ill patients receiving opioids, sedatives, anticonvulsants and many others drugs are more likely to develop lower gastrointestinal motility disorders. However, a study revealed that motility disorder is common problem among persons receiving sedatives. (2)

Defining normal bowel habit is important when evaluating diarrhea or constipation. Normal stool frequency and consistency vary from person to person and in different populations due to several factors including dietary habit, quantity of fiber intake and difference in gut transit time. Studies showed that 98% normal persons had bowel movement ranging between three stools per day and three per week and Some degree of urgency, straining and incomplete evacuation should be considered normal.(3)

Constipation is a major public health issue because of its high prevalence, economic cost and adverse effects on quality of life and health status. It is not a specific disease but a general term that describes a wide range of symptoms associated with straining, hard stools, incomplete evacuation, anorectal obstruction, manual maneuvers or infrequent stools.(4)

Constipation affects multiple aspects of a person's health, including health-related quality of life. It is one of the most frequently reported functional gastrointestinal disorders. The purpose of this integrative review of the literature was to identify research findings pertaining to the prevalence of constipation and factors are associated with constipation in the general population. (5)

Method and Material

A descriptive study was conducted to assessment of bowel habits among selected in community adult population selected Kanchipuram District, Tamil Nadu, India. A quantitative research approach was considered appropriate for the study. Research design selected present study was descriptive cross sectional design. The population of the present study include demographic variable aged 30 to 60 years .the researcher obtained ethical clearance from IHFC and permission from concern authority. The study conducted in pooncheri and paiyanur village the people cooperation for the study. The 106 sample were selected through non probability convenient sampling technique as per the sampling criteria. The necessary data collected from the record in the present study research tool demographic variable like defecation, constipation and diarrohea it's also developed vectoria bowel tool. The data collection was done. Tabulated and analyzed in term of objective of the study byusing descriptive and inferential statistics.

Result

The result shows that majority of adult 45.28% were in the age group of 30 - 39, 66.03% were in female, 42.22% had primary education, 98.11% got married, 52.83% had unemployed, 95.28% have been taken fibre rich diet, 45.28% were spending the time of exercise 15 to 30 minutes, 60.37% taken water in evening time, 90.56% does not having smoking and 88.67% does not drinking alcohol and there is no significant association between the bowel habits with selected demographic variables Hence, the null hypothesis is accepted.

Table 1: Frequency Percentage distribution of assessment of bowel habits among adult population N=106

S.No	Variable	Constipation		Normal		Diarrhea	
		No.	%	No.	%	No.	%
1	Characteristics	15	14.15	86	81.13	5	4.71
2	Pattern	10	9.43	92	86.79	4	3.77
3	Control	15	14.15	88	83.01	3	2.83

The Table 1 shows regarding Characteristics 15% of people had constipation, regarding pattern 10% of people had constipation and regarding 15% of people had constipation.

Conclusion

The study result show majority of adult bowel habits normal 81.4%, constipation 14.15% and diarrohea 4.71%. The purpose of this study was used to assess the bowel habits among adult population. From the above findings shows the adult had constipation, normal and diarrrhea. On the whole, carrying out of the present study was really an enriching experience to the investigator. It also helped a great deal to explore and improve the health.

Ethical Clearance: Chettinad Academy of Research & Education - Institution Human Ethics Committee.

Source of Funding: Self

Conflict of Interest: Nil

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To Assess the Perceived Factors Influencing Work Place Violence among Nurses in Selected Hospitals, Mangaluru: A Descriptive Study

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Abstract

Background: Work place violence has become an endemic problem for health care worker (HCW) worldwide. The staff nurses are the most vulnerable. The study conducted with the aim to assess the frequency of violence and perceived factors responsible for violence.[6]

Objective: To assess the perceived factors influencing work place violence among nurses. To find out association between the perceived factors influence work place violence and demographical variables.

Materials and Method: It was descriptive study, questionnaire based in which test re-test self administered rating scale used to collect data. A sample of 100 staff nurses from selected hospitals. Non-probability purposive sampling technique used . Data analyzed using inferential statistics.

Result: The study revealed that Majority 91(91%) of staff nurse belongs to 21 – 30 years, subject 82 (82%) females, 78 (78%) staff nurses working in the ward, 45 (45%) staff nurses below 2 years, 61 (61%) GNM, staff nurses 77 (77%) nuclear family, 84 (84%) designation of the staff nurses, 80 (80%) staff nurses single, 93(93%) staff nurses reported their interaction with others during work shifts, staff nurses 86(86%) had direct physical contact (washing, turning, lifting) with the patient, 59 (59%) of them worked with female patient and 50(50%) of them worked with 3-4 staff nurses.

The study shows that majority (48.8%) of the staff nurses agree that social factors are influencing work place violence whereas, (6.2%) strongly disagrees. Most of the (43.36%) staff nurses believe job related factors influencing the work place violence and (6%) states that not influencing. Majority (44.2%) of the staff nurses agree that psychological factors influence work place violence whereas, (6.4%) states not influencing . The staff nurses (45%) reports educational factors influencing the work place violence and (5.8%) strongly disagree. Majority (46%) of the nurses agree that economic factors are influencing work place violence whereas, (7%) staff nurses disagree.

Conclusion: The finding of the study most of the perceived factors associated with work place violence.

Keywords: *Perceived factors, work place violence, nurses.*

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Introduction

The work place violence is an aggressive behaviour aimed at harming the people. Workplace violence is defined as an incident where staff members are abused and threatened at their workplace. Workplace violence is regarded as a problematic and significant issue for the nursing profession worldwide [1].

There are main five perceived factors which influencing work place violence such as social factors; those are religion, life style culture. Educational factors are illiterate, literate, knowledge. Job related factors skill, experience and work ability. Psychological factors stress, emotions and other factors family, communication and economic status.

Materials and Method

It was a descriptive study, self administered rating scale based study conducted in selected hospitals . Ethical Clearance was obtained from institutional ethics committee and formal permission was obtained from institutional authorities. A questionnaire was prepared by reviewing the literature and got it validated by the subject experts. The questionnaire test re-test found reliable (r=0.86). Using non- probability purposive sampling technique, 100 nursing staffs, were selected as study participants. All the participating nursing staffs in this study were explained clearly about the purpose and nature of the study in the language they can understand. They were enrolled in the study only after obtaining a written informed consent. After taking their consent, the data was collected by providing a self-administrated structured questionnaire. The questionnaire consisted of two sections. Demographic proforma and the rating scale. The rating scale consisted of to assess the perceived factors influencing work place violence among staff nurses . It was a 4 point scale which has to be rated from strongly agree (4) to strongly disagree (1). The maximum possible score was 120.

Result

The study findings showed majority (91%) of staff nurses belongs to 21-30 years, majority of subject (82%) were females, majority (78%) staff nurses were working in the ward, majority (45%) staff nurses were below 2 years, majority (61%) GNM, majority staff nurses were (77%) nuclear family, majority (84%) were designation of the staff nurses, majority (80%) staff nurses were single, majority (93%) of the staff nurses reported their interaction with others during work shifts, majority of staff nurses (86%) had direct physical contact (washing, turning, lifting) with the patient, (59%) of them worked with female patient and (50%) of them worked with 3-4 staff nurses.

The study shows that majority (48.8%) of the staff nurses agree that social factors are influencing work place violence whereas, (6.2%) strongly disagrees about social factors influence on work place violence. Most of the (43.36%) staff nurses believe job related factors influencing the work place violence and (6%) states that job related factors are not influencing for work place violence. Majority (44.2%) of the staff nurses agree that psychological factors influence work place violence whereas, (6.4%) states psychological factors are not influencing work place violence. The staff nurses (45%) reports educational factors influencing the work place violence and (5.8%) strongly disagree that the educational factors influence the work place violence. Majority (46%) of the nurses agree that economic factors are influencing work place violence whereas, (7%) staff nurses disagree with economic factors influencing work place violence.

Bar diagram shows perceived factors work place violence:

Table No. 1: Area wise perceived factors influencing work place violence

Sl.No.	Factors	Strongly Agree	Agree	Disagree	Strongly Disagree
1.	Social factors	26%	48.8%	19%	6.2%
2.	Job related factors	30.18%	43.36%	20.45%	6%
3.	Psychological factors	28%	44.2%	21.4%	6.4%
4.	Educational factors	26%	45%	23.2%	5.8%
5.	Economical factors	30.5%	46%	16.5%	7%

Discussion

In this chapter finding of the study has been discussed with reference to objectives and in relation with the findings of the previous study.

This chapter deals with the discussion of the study with appropriate literature review. Statistical analysis and findings of the study based on objective of the study. The aim of the present study was to assess the perceived factor influencing work place violence among the staff nurses in Yenepoya Medical College hospital Mangaluru. The total of 100 staff nurses from Yenepoya Medical College Hospital Mangaluru. Were selected for the study by Non probability purposive sampling method. The findings are discussed under the demographic characteristics and objectives.

- To Assess the perceived factors influencing work place violence among the nurses.
- To find out Association between the perceived factors influence work place violence and selected demographical variable.

The following study is discussed under the following parts.

Section 1: Demographic variables of staff nurses

Section 2: Perceived factors influencing work place violence

Section 3: Association between the perceived factors and demographic variable.

Section 1: Demographic variables of staff nurses: Majority 91(91%) of staff nurse belongs to 21 – 30 years, Majority subject 82 (82%) were females, Majority 78 (78%) staff nurses are working in the ward, majority 45 (45%) staff nurses are below 2 years, majority 61 (61%) GNM, majority staff nurses are 77 (77%) are nuclear family, majority 84 (84%) are designation of the staff nurses, majority 80 (80%) staff nurses are single, majority 93(93%) of the staff nurses reported their interaction with others during work shifts, majority of staff nurses 86(86%) had direct physical contact (washing, turning, lifting) with the patient, 59 (59%) of them worked with female patient and 50(50%) of them worked with 3- 4 staff nurses.

Similar findings were also found in a study where (50%) of participant were married and less than 2% were divorced or widowed. Most participants (80%) were employed by the government. [14]

Comparable results were also seen in a study where (75%) of the nurses of age group 36-40 years were found to be more exposed to work place violence. The separated/divorced (0.5%) and single (45%) nurses were found more exposed to work place violence than married nurses. The nurses less than 10 years of experience (65.1%) hand experienced more work place violence. Part time nurses (80%) were exposed to work place violence. The majority of the nurses who worked at the time of 6pm to 7 am (75%) and in the intensive care unit (84.6%) hand experienced more work place violence.[1]

Section 2: Perceived factors influencing work place violence: The study revealed that majority (48.8%) of the staff nurses agree that social factors are influencing work place violence whereas, (6.2%) strongly disagrees about social factors influence on work place violence. Most of the (43.36%) staff nurses believe job related factors influencing the work place violence and (6%) states that job related factors are not influencing for work place violence. Majority (44.2%) of the staff nurses agree that psychological factors influence work place violence whereas, (6.4%) states psychological factors are not influencing work place violence. The staff nurses (45%) reports educational factors influencing the work place violence and (5.8%) strongly disagree that the educational factors influence the work place violence. Majority (46%) of the nurses agree that economic factors are influencing work place violence whereas, (7%) staff nurses disagree with economic factors influencing work place violence.

In the study work place was reported 59.7% of health care workers. Verbal violence was the most reported (58.2%), compare to physical violence (15.7%), the most report reason for violence were waiting time and that patient and family expectations not met. Only (29%) of health care workers who experienced verbal violence and (23.8%) of experienced physical violence reported it to hospital authority about (75%) of health care workers through that work place violence could be prevented.[16]

Section 3: Association between the perceived factors and demographic variable: Association between the perceived factors and demographic variable that is age (χ^2=.079, P=0.05), gender (χ^2=.826, P=0.05), area of work (χ^2=.026, P=0.05) working experience (χ^2=.924, P=0.05), education qualification (χ^2=.175, P=0.05), type of family (χ^2=.540, P=0.05), designation

(χ^2=.536, P=0.05), marital status (χ^2=.032, P=0.05), do you interact with any one during your work place (χ^2=.598, P=0.05), do you have direct physical contact (washing, running, lifting) with patient (χ^2=.424 P=0.05), the gender of patient you most frequently work with are (χ^2=.026, P=0.05), the number of staff present in the same work setting with you during most of your work time is (χ^2=.603, P =0.05).

A study conducted among physician and nurses on violence exposure among healthcare professionals public hospitals of capital city of Riyadh in Saudi Arabia, reported that nurses were more that nurses were more predisposed to the acts of violence as compared to their doctor colleagues. Verbal abuse was total noted to be the most frequently occurring act of violence and the reason cited for the same were the unmet needs of patients along with long waiting hours. This study found the relatives to be the most common perpetrators. [20]

Summary: The chapter deals with the major findings and discussion of study in the light of the review of literature. There are some studies from review of literature that has supported to this study. Other studies reveals that they had been factors influencing work place violence.

Conclusion

The work place violence are more commonly happens in health care settings. The preventions of work place violence is necessary. The prevention of violence is not easy.

Conflict of Interest: None stated

Source of Funding: Self

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A Comparitive Study to Assess the Level of Distress Among Patients with Cancer Undergoing Chemotherapy and Radiation Therapy in Selected Oncology Centers Mangaluru

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Abstract

Objectives: To determine the level of distress among patients with cancer undergoing radiation therapy, to determine the level of distress among patients with cancer undergoing chemotherapy, to compare the level of distress among patients undergoing radiation therapy and chemotherapy, to determine the association between the level of distress and selected demographic variables.

Method: The research design selected for the study was a descriptive survey design. In the present study, the sample consisted of 100 cancer patients who were selected based on the inclusion criteria.

Result: The mean percentage of distress was 50% of both chemotherapy and radiation therapy or there is equal distress in both groups (chemotherapy and radiation therapy) irrespective of treatment, cancer patients have distress. so there is no significant association was found between distress score with demographic variables.

Conclusion: The overall findings of the study revealed that distress is common for all cancer patients and the treatment modalities (chemotherapy and radiation therapy) have no relation with the distress.

Keywords: *Distress, cancer, chemotherapy, radiation therapy.*

Introduction

Cancer is the second most cause of death in the developed world and similar trend has emerged in the developing countries too[1]. Cancer is a large family of disease that involves abnormal cell growth which the potential to invade spread to other part of the body. [2]

In our society, the people who have cancer have a great risk of getting distressed, distress is nothing it is a kind of unhappiness or pain which affect the whole body and mind.[3] A certain amount of distress is normal for a patient with cancer but in some patients the distress level is too high.[4] These kind of distress needs proper assessment and treatment. The predisposing factors for distress are chemotherapy and radiation therapy. Chemotherapy is a drug or medication that is used to treat cancer, the main purpose of chemotherapy is to cure, control and palliates cancer.[5] The distress is mainly seen in patients as a result of the of the side effects of chemotherapy. The second choice of treatment in cancer is “Radiation therapy”. The radiation therapy is a treatment used against cancer and less commonly, thyroid disease, blood disorders and noncancerous growths. The radiation therapy is also sometimes used for nonmalignant cancer. The exact

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mechanism of action of radiation therapy is unknown. But in a simple description, it breaks up the DNA of cancer cells. To disrupt their growth and division and even kill them.[6]

The major side effects are mainly [fatigue or lethargy, local irritation to the skin, hair loss and urinary problem]. These are the possibilities to increase the distress among patients with cancer. As a whole, we can say that the main reason for distress in cancer patients may be the result of chemotherapy and radiation therapy treatment.

This research study provides a strategy to assess the distress among patients with cancer undergoing chemotherapy and radiation therapy.[7] Finally, we highlight some of the points that remain to be addressed and propose several directions for future research efforts.

Material and Method

A nonexperimental descriptive design was adopted for this study. The nonprobability convenient sampling technique was adopted to select 100 samples of cancer patients. A standardized scale was used to collect data from cancer patients.

Findings:

Section I: Distribution of sample according to the distress level

Table 1: Distribution of sample according to the distress level

Variables	Radiation Therapy	Chemotherapy
Distress level		
0 – 4	24(46.2%)	28(53.8%)
5 – 7	18(56.3%)	14(43.8%)
8 – 10	8(50%)	8(50%)

Table 1 shows that patients facing distress which are well under control are more seen in chemotherapy, which is found to be 53.8% and seen less in radiation therapy and which constitutes 46.2%. The patients experiencing some distress are more found in radiation therapy (56.3%) than chemotherapy (43.8%). The patients experiencing high levels of distress are found to be equal in both radiation therapy and chemotherapy. All of a total the distress level is the same in patients receiving radiation therapy and chemotherapy.

Section II: Association between distress level and selected demographic variables

H_1: There will be a significant association between the level of distress and selected demographic variables.

Table 2. Frequency and percentage distribution showing the level of distress among chemotherapy and radiation therapy patients according to different demographic variables. N=100

Variables		Radiation Therapy			Chemotherapy		
		0-4	5-7	8-10	0-4	5-7	8-10
Age	19-30	1(100%)	0(0%)	0(0%)	5(50%)	5(50%)	0(0%)
	31-40	3(75%)	1(25%)	0(0%)	5(100%)	0(0%)	0(0%0
	41-50	4(40%)	4(40%)	2(2%)	3(37.5%)	2(25%)	3(37.5%)
	>50	16(45.7%)	13(37.1%)	6(17.1%)	15(55.6%)	7(75.9%)	5(18.5%)
Gender	Male	17(48.6%)	12(34.3%)	6(17.1%)	13(52%)	9(36%)	3(12%)
	Female	7(46.7%)	6(40%)	2(13.3%)	15(60%)	5(20%)	5(20%)
Marital Status	Married	23(48.9%)	16(34%)	8(17%)	26(63.4%)	10(24.4%)	5(12.2%)
	Unmarried	1(50%)	1(50%)	0(0%)	2(28.6%)	4(57.1%)	1(14.3%)
	Widow/widower	0(0%)	1(100%)	0(0%)	0(0%)	0(0%)	2(100%)
Educational Qualification	No formal Education	13(54.2%)	10(41.7%)	1(4.2%)	15(65.2%)	5(25.7%)	3(13.2%)
	Primary Education	5(41.7%)	6(50%)	1(8.3%)	5(55.6%)	3(33.3%)	1(11.1%)
	Secondary Education	3(27.3%)	2(18.2%)	6(54.5%)	4(44.4%)	3(33.3%)	2(22.2%)
	PUC	3(100%)	0(0%)	0(0%)	4(50%)	2(25%)	2(25%)
	Degree & Above	Nil	Nil	Nil	0(0%)	1(100%)	0(0%)

Variables		Radiation Therapy			Chemotherapy		
		0-4	5-7	8-10	0-4	5-7	8-10
Occupation	Private Employee	4(100%)	0(0%)	0(0%)	Nil	Nil	Nil
	Government Employee	1(50%)	0(0%)	1(50%)	0(0%)	0(0%)	1(100%)
	Homemaker	4(50%)	3(37.5%)	1(12.5%)	9(64.3%)	3(21.4%)	2(14.3%)
	Agriculture	5(35.7%)	5(37.5%)	4(28.6%)	11(68.8%)	2(12.5%)	3(18.8%)
	Coolie Worker	10(45.5%)	10(45.5%)	2(9.1%)	6(37.5%)	8(60%)	2(12.5%)
	Unemployed	Nil	Nil	Nil	2(66.7%)	1(33.3%)	0(0%)
Type of Cancer	Head and Neck	10(50%)	49(23.5%)	3(17.6%)	5(62.5%)	1(12.5%)	2(25%)
	Esophageal Cancer	4(80%)	1(20%)	0(0%)	4(80%)	1(20%)	0(0%)
	Lung Cancer	1(20%)	3(60%)	1(20%)	Nil	Nil	Nil
	Breast Cancer	2(50%)	1(25%)	1(25%)	Nil	Nil	Nil
	Cervical Cancer	1(33.3%)	2(66.7%)	0(0%)	2(40%)	1(20%)	2(40%)
	Colon Cancer	1(33.3%)	2(66.7%)	0(0%)	2(66.7%)	1(33.3%)	0(0%)
	Stomach Cancer	0(0%)	1(50%)	1(50%)	1(33.3%)	2(66.7%)	0(0%)
	Any other(specify)	5(45.5%)	4(36.4%)	2(18.2%)	9(52.9%)	7(41.2%)	1(5.9%)
Stages of Cancer	First Stage	7(36.8%)	8(42.1%)	4(21.1%)	12(66.7%)	4(22.2%)	2(11.1%)
	Second Stage	15(65.2%)	5(21.7%)	3(13%)	11(52.4%)	4(19%)	6(28.6%)
	Third Stage	2(25%)	5(62.5%)	1(12.5%)	4(57.1%)	3(42.9%)	0(0%)
	Fourth Stage	Nil	Nil	Nil	1(25%)	3(75%)	0(0%)
Duration of Disease	<3 months	10(71.4%)	2(14.3%)	2(14.3%)	17(63%)	5(18.5%)	5(18.5%)
	3 months to 1year	14(45.2%)	13(41.9%)	4(12.9%)	7(63.6%)	4(36.4%)	0(0%)
	1-2 years	0(0%)	0(0%)	2(100%)	3(37.5%)	2(25%)	3(37.5%)
	More than 2 years	0(0%)	3(100%)	0(0%)	1(25%)	3(75%)	0(0%)
Type of Treatment	Chemotherapy	1(100%)	0(0%)	0(0%)	28(56%)	14(28%)	8(16%)
	Radiation Therapy	23(46.9%)	18(36.7%)	8(16.3%)	Nil	Nil	Nil

Table 2 shows that there is no significant association between distress level and any demographic variables.

Discussion

Section 1: Demographic characteristics of the samples

Section 2: Distribution of sample according to the distress level.

Section 3: Association between the level of distress and selected demographic variables.

Section 1: Demographic characteristics of the sample: The results showed that the maximum percentage of the patients who receive radiation therapy and chemotherapy are >50 years of age and it is found to be 67.9% and 54% respectively. Almost 66% are males who receive radiation therapy and both males and females equally receive chemotherapy (25%).

A comparative study was conducted to assess the distress among chemotherapy patients based on gender. The majority of patients are women (64%) and men (36%). The mean age was 54.7 years men, women 54.5.[18]

A descriptive study conducted on patients reported distress in head and neck cancer patients receiving t radiation therapy cancer patients. The majority of people in the age group of 23-93 years old with a median of 67 years. In that majority are male (82.2%) female (17.8%) patients.[23]

Section 2: Distribution of sample according to the distress level: The patients facing distress which is well under control is more seen in chemotherapy, which is found to be 53.8% and seen less in radiation therapy and which constitutes 46.2%. The patients experiencing some distress are more found in radiation therapy (56.3%) than chemotherapy (43.8%). The patients experiencing a high level of distress are found to be equal in both radiation therapy and chemotherapy.

The study which was conducted in brazil reached to a conclusion that both genders the incidence of distress decreased over the course of an assessment. Comparatively, the incidence was higher among women (64%). They also reported problems in physical, family, emotional and spiritual domains. [18]

In the study which was conducted to assess the distress among head and neck cancer patients undergoing radiation therapy, a retrospective review was to identify patterns in patients who reported distress. The mean distress score ranged from 1.44-2.83.[23]

Section 3: Association between the level of distress and selected demographic variables.

There is no association between level of distress and selected demographical variables such as age, gender, marital status, educational qualification, occupation, type of cancer, stages of cancer, how long have you been suffering from this disease, type of treatment undergoing at present.

Conclusion

The overall findings of the study revealed that distress is common for all cancer patients and the treatment modalities (chemotherapy and radiation therapy) have no relation with the distress.

Ethical Clearance: Yenepoya Ethics Committee-1 approved our study protocol number 2018/056 titled "A comparative study to assess the level of distress among patients with cancer undergoing chemotherapy and radiation therapy in selected oncology centers Mangaluru on 28/5/2018 under the chairmanship of Dr. Vikram Shetty.

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Total Elimination of Causes of Death in EAG and Non-EAG States of India

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Abstract

Cause-specific mortality indicators give an insight into the public health scenario prevailing in the population. Reportedly a shifting pattern of causes of death has been witnessed in the past decades. Thus estimating gains in life expectancy after total elimination of specific causes of death will furnish sufficient evidence to prioritize according to the severity of these causes of death, in order to plan health policies. In this paper an attempt has been made to calculate percentage gain in life expectancy after total elimination of some selected causes of death in EAG and Non-EAG States of India for the periods 2001-2003 and 2010-2013. Results shows that over the study period effect of communicable diseases have reduced unlike non-communicable diseases.

Keywords: *EAG (Empowered Action Group)States, total elimination, cardiovascular diseases, diarrheal diseases, percentage gain in life expectancy.*

Introduction

Data on mortality by age, sex and cause are primary inputs for assessing population health status and a cornerstone of the evidence base for health policy in combination with other epidemiological and socio-economic information[1]. Time and again several studies conducted with a view to inspect the pace of several diseases that challenges an individual's vitality, reveals some of the facts which took shape in the recent decades that mortality rates related to non-communicable diseases like cardiovascular diseases (CVD), coronary heart diseases, diabetes and stroke have increased rapidly in the last decade with CVD having a major share[2]. From these studies, it has also been observed that the deaths due to infectious and parasitic diseases have drastically gone down during the last few decades[3]. Reportedly, communicable diseases have shown major declining trend but diarrheal diseases (DD) still remains a leading cause of death in the developing countries like India, claiming lives especially among children under five even though the deaths among children under-5 years have declined, the proportional mortality accounted by DD still remains high[4].

Estimates of the number of life years to be gained by elimination of specific causes of death provide an easy to grasp and powerful summary of the relative importance of these causes of death, as well as the potential benefits of intervention programmes[5]. Thus a comparison between the life expectancies obtained from the life table for all causes combined with those life expectancies obtained after total elimination of a specific cause of death will clearly reveal the severity of that particular cause of death as compared to other causes of death[6].

India is a vast country with vivid geographical and tropical conditions. Although it is a developing nation, the achievements and amendments in health and socio-economic conditions are not uniform within its states. India's Ministry of Health and Family Welfare has defined eight states as Empowered Action Group (EAG) states (Bihar, Jharkhand, Madhya Pradesh, Chhattisgarh, Uttar Pradesh, Uttarakhand, Odisha and Rajasthan) to facilitate focused effort to promote the reproductive and child health program. EAG states are those with high fertility rates and weak socio-demographic indicators[7]. Moreover, Assam has similar socioeconomic and demographic characteristics with respect to the EAG states[8]. The phenomenal increase in population has great impact not only on the demographic composition of the region but also has serious socio-economic consequences which gets reflected in political

turmoil and consequent conflicts witnessed in the entire region[9]. So, there is first need to study most vulnerable section of the country[8].

Therefore we set our objectives as follows: To estimate the percentage gain in life expectancy after total elimination for CVD and DD in EAG States including Assam and Other (Non-EAG) States (remaining major states) for the period 2001-2003 and 2010-2013 for both males and females.

Material and Method

For this study we used the data collected under Special Survey of Deaths (SSD)for the year 2001-2003 and 2010-2013[10]. We have also used the age specific death rates based on Sample Registration System (SRS)2001 and 2011, to construct general life tables for the year 2001-2003 and 2010-2013 for EAG States and Assam and Non-EAG States[11].

In the present study, we take into account two causes of death, namely, DD and CVD belonging to major categories of death, Communicable, maternal, perinatal and nutritional conditions (Group-I) and Non-communicable diseases (NCD) (Group-II) respectively in order to analyse the effect of elimination of these two causes of death on probability of death and human longevity. The remaining causes of death have been clubbed into one and classified as 'Other Causes of Deaths'.

Here for the construction of general life tables we have used the software MORTPAK-4. These life tables provide the total decrements ($_nd_{x,+}$) and probability of death ($_nq_x$) from all causes combined for each age group. Then we go for computing ratio ($_nr_{x,\alpha}$) of the observed deaths from the cause 'c_α' to all deaths in each age interval (x, x+n).

$$_nr_{x,\alpha} = \frac{_nD_{x,\alpha}}{_nD_{x,+}}$$

With this ratios and the total life table decrements $_nd_{x,+}$ already estimated, the distribution of life table deaths for each cause 'c_α' have been computed for each sex separately for the years 2001-2003 and 2010-2013 by using the approximation.

$$_nd_{x,\alpha} = {}_nr_{x,\alpha} \times {}_nd_{x,+}$$

Finally, we estimate the probability of death [$_nq_{x,(-\alpha)}$] after the cause of death 'c_α' being eliminated, by using the probability model given by Namboodari and Suchindran[6]

$$\frac{\bar{l}_\alpha(x+n)}{\bar{l}_\alpha(x)} = \left[\frac{l(x+n)}{(l(x))}\right]^R$$

Where $\bar{l}_\alpha(x)$ is the survival probability when the only effective cause of death is $C\alpha$

and $R = \frac{_nD_{x,\alpha}}{_nD_{x,+}}$

Then $_nq_{x,(-\alpha)}$ is given by

$$_nq_{x,(-\alpha)} = 1 - \left[\frac{l(x+n)}{(l(x))}\right]^R$$

We then construct life tables using '$_nq_{x,(-\alpha)}$' values for all other causes except the cause 'c_α' by the usual life table technique for males and females separately. These life tables provide the probable values of life expectancy denoted by $\overset{0}{e}_{x,(-\alpha)}$, that would be attained if the specified cause of death 'c_α' could be eliminated. The difference between $\overset{0}{e}_{x,(-\alpha)}$ and $\overset{0}{e}_x$, the expectation of life attained under the effect of all causes combined, would provide the gain in expectation of life after total elimination of the cause 'c_α'. The percentage gain in life expectancy is calculated by

$$\frac{\overset{0}{e}_{x,(-\alpha)}}{\overset{0}{e}_x} \times 100$$

Findings: The amount of increase in the life expectancy in different age groups after total elimination of various causes of death would obviously reveal the intensity of effect of those causes of death. Thetable 1 contains the percentage gain in life expectancyafter total elimination of CVDand DD for India, EAG States and Assam and Non-EAG States for both male (M) and female (F) for the periods 2001-2003 and 2010-2013.

Table 1: Percentage gain in life expectancy after total elimination of CVD and DD in EAG States and Assam and Non-EAG States for the periods 2001-2003 and 2010-2013

	EAG and Assam,2001-2003				EAG and Assam,2010-2013				Non-EAG,2001-2003				Non-EAG,2010-2013			
	CVD		DD		CVD		DD		CVD		DD		CVD		DD	
Age	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
0-1	4.14	3.61	3.09	4.52	4.30	3.18	1.81	2.60	5.52	4.06	1.34	1.79	6.56	4.72	0.62	0.87
1-4	4.21	3.66	3.06	4.50	4.36	3.22	1.80	2.59	5.60	4.12	1.33	1.77	6.65	4.79	0.61	0.87
5-9	4.48	3.89	1.80	2.79	4.64	3.41	1.17	1.78	5.98	4.34	0.70	1.02	7.06	5.06	0.42	0.58
10-14	4.88	4.23	1.76	2.69	5.03	3.69	1.13	1.85	6.50	4.69	0.67	1.00	7.64	5.44	0.43	0.59
15-19	5.34	4.61	1.84	2.83	5.49	4.01	1.19	1.94	7.11	5.11	0.70	1.04	8.33	5.89	0.45	0.62
20-24	5.66	4.90	1.94	2.95	5.81	4.31	1.25	2.08	7.53	5.49	0.75	1.10	8.88	6.34	0.45	0.63
25-29	6.29	5.39	2.08	3.14	6.03	4.61	1.22	2.26	8.35	6.03	0.87	1.26	9.29	6.82	0.45	0.64
30-34	6.83	5.75	2.27	3.37	6.76	5.11	1.34	2.48	9.02	6.42	0.95	1.36	10.36	7.52	0.49	0.70
35-39	7.30	6.25	2.46	3.69	7.28	5.47	1.47	2.75	9.41	6.83	1.02	1.46	11.14	8.13	0.54	0.77
40-44	8.04	6.92	2.75	4.12	7.88	5.95	1.62	3.11	10.21	7.55	1.14	1.64	11.98	8.92	0.61	0.87
45-49	8.17	7.09	2.91	4.35	8.36	6.20	1.79	3.42	10.23	7.68	1.22	1.74	12.74	9.43	0.71	0.98
50-54	9.23	8.12	3.37	5.04	8.98	6.74	2.03	3.98	11.21	8.67	1.40	2.01	13.67	10.42	0.84	1.14
55-59	10.07	8.35	3.87	5.46	9.89	7.05	2.40	4.64	11.91	9.00	1.62	2.23	14.89	11.28	1.04	1.34
60-64	11.15	9.54	4.61	6.50	10.2	7.63	2.87	5.70	12.95	10.1	1.96	2.65	15.69	12.41	1.34	1.66
65-69	12.92	11.4	5.86	8.22	10.2	7.93	3.65	7.13	13.91	11.8	2.49	3.35	15.89	13.27	1.85	2.18
70+	18.48	16.1	9.08	12.1	8.97	8.24	5.14	8.51	18.01	16.7	3.80	5.08	14.97	14.62	2.88	3.26

From table 1, it is seen that the overall percentage gain in life expectancy for both the study periods, the CVD have the maximum percentage gain in life expectancy followed by DD. It is observed that the elimination of the CVD would result in a good amount of increase in expectation of life. During the study period, the percentage gain in life expectancy have an increasing trend which is an indicative towards the fact that deaths accounted to CVD have risen. CVD are clearly stated as life style diseases as specific behavioral disorders such as physical in-activeness, regular intake of intoxicants like tobacco and alcohol and also unhealthy dietary habits are seen to be prevalent in today's population. of the 57 million deaths that occurred globally in 2008, 36 million – almost two thirds – were due to NCDs, comprising mainly CVD, cancers, diabetes and chronic lung diseases[12]. The combined burden of these diseases is rising fastest among lower-income countries, populations and communities, where they impose large, avoidable costs in human, social and economic terms[12].

Regional Disparity: From the table 1it is seen that in 2001-2003, percentage gain in life expectancy after total elimination of CVD in more than DD in case of Non-EAG states but its percentage gain in life expectancy is comparatively more than the EAG states. The difference in economic and population growth rates between the EAG states and other Indian states sharpened over the 1990s and since population growth in the EAG states was much higher than the Indian average in this period, the income disparity between the EAG states and India as a whole also increased[9]. Thus due to income disparity, people residing in EAG States and Assam might be less prone to the factors (as mentioned in the previous section) effecting CVD's unlike other states. In 2010-2013 similar trend is seen but percentage gain in life expectancy is more than the period 2001-2003 thus proving again that the severity of CVD has risen in the last decades.

Opposite pattern in results is witnessed in 2001-2003 for DD which is possibly the heath care facilities, proper sanitation or overall hygienic conditions are not at par in the EAG states and Assam as compared to the Non-EAG States. Unlike CVD, the percentage gain in life expectancy is less for DD in EAG states and Assam and also in Non-EAG states during the period 2010-2013 and these gains are less than the period 2001-2003. According to 2001 census[13] literacy rate of India was 64.83 percent which increased by nearly 10 percent (74.04 percent) during the 2011 census[14]. As the overall literacy rate increased it could be possible to make people aware about the vulnerability of the infectious disease like DD and its respective preventive measures.

Age Disparity: It is seen that if the CVD can be eliminated completely, the maximum percentage gain in life expectancy could be attained after age 40 for males and after age 50 for females. In Western countries where CVD is considered to be a disease of the aged, 23 percent of CVD deaths occur above 70 years of age while in India 52 percent of CVD deaths occur below 70 years of age[2]. It is noticed that the elimination of DD would increase on an average about 1 to 2 years gain in life expectancy at birth for both the male and female. The percentage gain in life expectancy after total elimination is more in the age groups 0-1 and 1-5 and also more in the age groups after age 50+.

Gender Disparity: Women experience a higher level of morbidity with acute diseases which are non-fatal and on the other hand, men experience higher rate of mortality with diseases that are life threatening and chronic[15]. During the study period 2001-2003 and 2010-2013 the sex differences in the results is quite evident as the percentage gain in life expectancy after total elimination of CVD is higher in males than females which is opposite for DD. This apparent gender bias may be enacted via parents being less likely to immunize, seek medical attention and/or being less likely to use appropriate antibiotic therapy for their sick female children[15].

Gender differences in the exposure to acquired risks can arise in several ways: (a) through differential exposure to hazardous activities related to one's job, adventurous activity etc; (b) through differential access to food and medical care; (c) through risk-prone health habits such as smoking, drinking, using drugs, rough driving and others[15]. Thus males being more prone to CVD might be due to differences in behavioral traits as compared to their female counterparts, males are supposed to be more exposed to intoxicants intake than females.

Conclusion

The prevalence of diseases might have changed as it seen that over the study period the percentage gain in life expectancy after total elimination of CVD is more in 2010-2013 than in 2001-2003. The casualties from DD might have diminished as the percentage gain in life expectancy is less in 2010-2013 than in 2001-2003. So it can be asserted that possibly the importance of Group-II causes of death has increased as compared to Group-I causes of death over the study period.

India has made steady progress in reducing deaths in children younger than 5 years, with total deaths declining from 2.5 million in 2001 to 1.5 million in 2012[16]. This remarkable reduction was possible due to the inception and success of many universal programs like widely practiced government aided programs on immunization, program for the control of DD, tuberculosis control programme,etc. Even though the deaths among children under-5 years have declined, the proportional mortality accounted by DD still remains high. DD is the third most common cause of death in under-five children, responsible for 13% deaths in this age-group, killing an estimated 300,000 children in India each year[17]. There would have been almost an increasing trend in gains in expectation of life at birth for males, had the causes of death CVD been eliminated completely. CVDs are the number 1 cause of death globally: more people die annually from CVDs than from any other cause[18]. Most CVD can be prevented by addressing behavioural risk factors such as tobacco use, unhealthy diet and obesity, physical inactivity and harmful use of alcohol using population-wide strategies.

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Smartphones: An Appreciator or Depreciator in Youth Lives

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Abstract

Technology has shrunk the world to a great extent. The mobile phones in our hand is a boon to the human kingdom connecting the near and far in a tremendous way and impacting each ones life in a diversified manner. The smart phones have played the role of an appreciator as well as depreciator particularly in the lives of the youth population. Usage of Smartphone often results in varied problems ranging from anxiety, stress, depressive symptoms and being aloof from the normal social stream. Increase usage of smart phones by youngsters has trapped them into compulsive web surfing, obsessive viewing of cybersex, relationships which are virtual and not truthful, information overload, playing games which are highly risky to their lives and that which are not educative. Compulsion of online shopping has resulted in youth being bankrupt because of unnecessary use of credit/debit cards not realizing the value of saving and leading aunhealthy life-style. This review article is an attempt to understand the role of smart phones in the lives of youth.

Keywords: *Technology, Smartphone's, Youth, Addiction.*

Introduction

In today's world, technology has become inevitable. As human beings have revolutionized, technology has advanced all these years. Consequently, it has changed the mode of living, communicating, travelling, purchasing, learning and many more. The necessity of technology is increasing day by day. Presently we have various looming technologies to achieve definite chores. The landline phones used in olden days are no longer on demand in this centenary. Since simplicity and more functionality has become indispensable these days.

A cell phone is a portative gadget which operates on cellular network mechanization to make and receive calls. The term smart phone denotes a cell phone with more advanced features other than calls, SMS and basic organic software. The first economic economically available cell phone called the Dyna TAC 8000x worth of $3995 was advanced by Motorola between 1973 & 1983. This huge 28 ounce cell phone is almost vague when compared to the devices used contemporarily. Though technology was improvised by human, presently it has outsmarted the human intellect. The present day's pocket sized tools are no less than a mini computer.

It has engrossed the whole world and enslaved the people of all ages.

Mobile Phone Addiction: Mobile phone addiction is a dependence syndrome which leads to problematic behaviors including preoccupation with communication, excessive time spent on mobile phones, adverse effects on relationship and anxiety if separated. The new term which is prevailing for mobile phone addiction is NOMOPHOBIA– no mobile phone phobia which was abbreviated in a study [(1)].

A study [(2)]claim cell phone addiction to be impertinence and pragmatism, Captivation over material objects combating intellectual, spiritual and cultural values and the hysteric use of mobile phones has been compared to that of credit card misuse and compulsive buying.

With a comprehensive receptiveness of cell phones among the budding generations now, teenagers are especially vulnerable to cell phones on social media.

Review of Literature

Positive Effects of Mobile Phones: In a study [3] about the positive effects of mobile phone on children the author enlightens the people with a few important useful points of mobile phones which includes i) staying connected with extended family and friends. ii) learning and exploring new things iii) Enhancement of child's knowledge and exchange of ideas. iv) development of technical expertise and practical understanding. These small sized, lightweight and portable devices are being very much used in today's world. She concludes that the user should know the limits as to what extent it should be used.

A detailed study on the impacts of mobile phones on people's lives has furnished that two-third of the phone users find it "a lot'' easier to stay connected with people around the globe. They also feel that mobile phones make them plan their daily routine easily and use their available time productively. One-third of the respondents consider their mobile phones as a time-saving device rather than a time-waster. They agree to the statement that their phones "save their time because they can always access the information they needed.'' Finally he summarized that just like two sides of a coin, the mobile phone is a device which offers both positive and negative impacts to its users [4].

The study by an unknown author outlines the positive side of mobile phones. It explains the uses of mobile phones in areas like Studies, Business, Entertainment and Communication and in emergency situations. In today's competitive business world and technologically booming educational scenario, it has become unimaginable to live without a mobile phone. It means that the mobile phones have become an indispensible device to execute day-to-day activities in today's changing lifestyle. In the field of entertainment too, mobile phones play a major role in enabling the users utilize their free time in keeping themselves entertained through movies, music, videos, games, etc. It is indeed a stress buster which enhances their work-life balance with enthusiastic entertainment.

Technology has been developed to make humans lives smooth and modernized. It is not just a mean of composure and poise but also an utensil to bring into light our presence. About social media, it is said that that it helps people to improve themselves get rid of intricacy and promotes positive approach towards social life. One need not be a gadget worm to upgrade themselves with the available applications rather must know as to how to balance between the various needs of life [5].

A Study [6]on positive impact of mobile phone on young people's social life expresses that the reason behind the usage of mobile phones is for the performance and micro co-ordination of their social life. The teenagers tend to leap above the rules laid by the family and relatives and prefer to use smart phones to stay connected with their friends. Smart phones play an important role in interpersonal relationship and are more convenient than the age old telephones as they are handy, portable and much more useful than the telephones. This provides more resilience in the lives of phone users and helps them in creating a flexible culture.

A report says that smart phones serve as a source of entertainment to people of young age and also acts as a personal assistant. It helps us to browse about things instantly anytime and anywhere. It causes less worry for parents as their children get to know more about the unknown details and learn alot new things through the internet facility available in the smart phones. The parents can also monitor their children from being both inside and outside the house. They always stay connected with their parents and this makes them less tensed about their kids. The author adds that the mobile phones can also help us in emergency situations and has also mentioned some of the very useful ways in his study like finding out the lost person through tracking systems, informing immediately over the phone to the police or the ambulance in case of an emergency and many more. Thus the mobile phones help us out in various means [7].

The Adverse Effects of Mobile Phones: An elaborate study [8] on the effects of mobile phones on kids highlights the bad effects in major domains. They include i) health hazards such as non malignant tumors, cancer and disturbed brain activity ii) affecting academics through game addiction, over indulgence in social media such as what sapping, etc. that would lead to poor attention, concentration, memory and time management of studies. iii) develop inappropriate behavior such as accessing pornographic sites, criminal behavior, etc. Lastly iv) using mobile phones as an aid for malpractice in exams.

An article on negative effects of social media on children emphatically portrays that cyber bullying – the dangerous and potentially fatal one, access to unwanted obscene harmful graphic websites, social media

addictions, wastage of time and inability to develop real human connect as the negative impact of mobile phones among the younger generation. She makes an appeal to the parents to spend some quality time with their children and educate them about the pros and cons of social media[3].

The adverse effects of using mobile phones in class rooms and its impact on learning and emotion – regulation style were examined through a small test[9]. It enabled to access the student's level of obsessiveness, nomophobia and mindfulness. The results highlighted the performance of students whose phone were taken away and those who possessed their phones could not perform well in the tests conducted. However researchers have concluded that mobile phone usage in class rooms can optimize learning to a certain extent.

A study puts forth the state of addicted teens in social media and networking [10]. It claims that about 70% of teenagers are accessed to smart phones with internet connection which means they have an open door to all sorts of distractions like viewing pornographic websites. Today's youth's mentality is that their status depends on the number of likes they get and when they get low it leads to bullying and stress. And the worst part is that they also use their phones while in bathroom and restroom. He concludes his study that all these activities exclude the individual from their family and friends since they find their smart phones and the social networking sites more interesting.

An elaborate study on how mobile phones are related to the chemical changes in our body during its usage was conducted [11]. The study says that whenever a smart phone is used, the reward center (ventral tegmental area) of the brain is triggered which leads to production of Dopamine. The major factors which cause the activation of this part are the games and new applications and finally these chemicals leads to addiction. This has a dangerous impact on the self-esteem of mobile phone users. Apparently people of this new age opt for smart phones for communication rather than conversing face-to-face with people. The study discovered that when a mobile phone was taken away or evacuated from the user, they showed symptoms similar to those who were deprived of alcohol, nicotine, etc. and this shows that mobile phone usage has become an "addiction" now-a-days.

An evident research on mobile phone addiction among the 21st century generation highlights the adverse effects of smart phones on mental health and well being and its aftermath which includes stress, anxiety and depression. A validated psychometric test was conducted for individuals aged 16 and above and was analyzed using Structural Equation Modelling. The results indicated that mobile phone addiction is a problematic issue across all ages and both genders. The study was concluded that the affected individuals may benefit from awareness and prevention efforts[12].

A detailed study [13] proposes the negative impacts of mobile phones on human health which brings in some of the most vulnerable hazards like i) eye tautness due to constant texting, reading, playing and concentrating on small graphics which leads to potential vision problems. ii) stress and sleep problems in both men and women because the notifications, vibrations, pop messages, etc. keeps them on the urge and causes unwanted distractions and depressions. iii) Germ Infestation through indirect means.

A research study in 2011 furnished that one in six mobile phones were contaminated with faecal matter and E.coli bacteria. iv) social disconnect because of over indulgence in phones and results in hampered family life and strained mental health.

A study on the impacts of mobile phones on student's life claims that mobile phones have become an indispensible device in this modern world and has turned out to be a popular electronic communication tool. A survey was conducted between boys and girls in colleges with regard to this study to expose the impact of mobile phones on youth peer relationships, family relationship and the institution. Through this survey, they consummated that mobile phone usage varied among the group of boys and girls. Boys handled mobile and studies in an equitable manner while girls were not able to balance between the two[14].

Positive and Negative Impacts of Cell Phones: Percentage of adult cell mobile owners who say that their mobile has.

Impacts	A lot	Some Extent	Only a little	Not at all
Made it easier to stay in touch with the people you care about	65%	17%	11%	6%
Made it easier to plan and schedule your daily routine	28%	19%	20%	32%
Made it easier to be productive while you are doing things like sitting in traffic, waiting in line etc.	26%	22%	21%	31%
Made it harder to forget about work at home or on the weekends	9%	10%	15%	24%
Made it harder to give people your undivided attention	7%	14%	26%	53%
Made it harder to focus on single task without being distracted.	7%	12%	24%	57%

Source: Pew Research Centre's Internet & American Life Project, March 15-April 3, 2012.

Age Differences in the Impacts of Cell Phones: Percentage of cell owners who say that their phone has.

Conclusion

Every object has its own merits and demerits. We have reviewed the role of cell phones, its merits leading to a better and innovative world and its demerits leading to addiction and various health hazards like becoming a nomophobe. If used in a proper way it can be a lifeline where so many things can be attained in no time from any place whereas if not handled effectively it can be disappointing and annoying to the people around us. Unlike any addiction to substances this seems to be an invisible addiction. Whether some people consider it an addiction or not, it is slowly creeping into human's life as a cause of disturbance and stress rather than being a fruitful invention. This is a skyrocketing issue among people which has to be handled with utmost caution and care because a sudden deprival of mobile phones can lead to behavioral actions when done the same with alcohol and smoking. Moreover it is difficult to conduct study in this topic due to the similarity and complexity of terms related to it. Mostly all the studies conducted pertain to teens and youth. More researches have to be done on 'cell phone addiction in adults' too as of how it has become more or less like a contagious disease. Until then we cannot conclude how mobile phone plays a role as a vulnerable object to addiction.

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A Study to Assess the Effectiveness of Meditation on Stress among Patients with Cancer in Selected Hospital at Mangaluru

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Abstract

Objectives: The objectives of the study were to assess the level of stress among patients with cancer, to evaluate the effectiveness of meditation on stress among patients with cancer and to associate findings between pre-test level of stress and selected demographic variables.

Method: Quasi-experimental non randomized control group design and an evaluative research approachwere carried out on 58 patients with cancer selected by non probability purposive sampling technique to test effectiveness of meditation. The data was collected by using perceived stress scale consist 10 items.

Result: The result showed that in pre test, the control group 3 (10.3%) of them had mild stress, 7 (24.1%) of them had moderate stress and 19 (65.5%) of the subjects had severe stress. In experimental group, 2 (6.9%) of them had mild stress, 6(20.7%) of them had moderate stress and 21 (72.4%) of the subjects had severe stress. In post test, the control group 3 (10.3%) of them had mild stress, 6(20.7%) of them had moderate stress and 20 (69%) of the subjects had severe stress. In the experimental group 15 (51.7%) of them had mild stress and 14 (48.3%) of the subjects had moderate stress. In experimental group the mean difference was (13.35) and it was more than the difference of the control group (0.42). The obtained p values of chi-square and likelihood ratio test were >0.05. Between the groups there was a difference in mean stress level and meditation is effective in reducing stress among patients with cancer as well as there was no significant association between pre test level of stress and demographic variables.

Conclusion: Anapanasati meditation proved to be effective in reduction of stress among patients with cancer in selected hospital at Mangaluru.

Keywords: *Stress, meditation, patients with cancer.*

Introduction

Cancer is an abnormal growth of cells which tend to proliferate in an uncontrolled way and, in some cases, to metastasize. One of the leading causes of death in the world is cancer.[1] Stress is a physical, mental or emotional factor that causes physical or mental tension. People experience symptoms like headaches, muscle tension or pain, chest pain, fatigue, change in stress drive, stomach upset, phobias, sleep problems, anxiety, restlessness, lack of motivation or focus, feeling overwhelmed, irritability or anger, sadness or depression, over-eating or under-eating, drug or alcohol abuse, anger outbursts, tobacco use, social withdrawal and exercise less often during stressed. Stress kills brain cells; a calm and quite environment permits their growth.[2] Meditation is considered as a type of mind body complementary medicine. Meditation can results in very deep state of relaxation and a tranquil mind.[3] Meditation

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as a psychological, kinetic or hepatic intervention just as easily as a breath-related intervention for stress.[4] Patients with cancer those who regularly meditate have more clarity, insight and peace of mind which improves their overall well being and health. Meditation provides relaxation, balances nervous system activation, balances hormonal levels of body and increases brain coherence and as a result, body and mind no longer overreact to stressful stimuli. It also reduces the level of depression, anxiety and over-sensitivity and allows patients to cope with life in a better way and this is how the stress level comes down in patients with cancer.[5]

According to American Cancer Society, in the year 2017, there was an estimated 16,88,780 new cases of cancer have diagnosed and 6,00,920 cancer deaths in the US.[4] According to National institute of cancer prevention and research in India 2.5 million live with cancer, every year new cancer patients registered over 7 lakh and cancer related deaths are 5,56,400 in the year 2016. In Karnataka about 1.5 lakh cancer cases at any given time and about 35,000 new cancer cases are added to this pool each year.[6]

Materials and Method

The aim of the study was to assess the effectiveness of meditation on reduction of stress among patients with cancer in selected hospital. Evaluative approach and quasi-experimental non randomized control group design were adopted for the study. Fifty eight subjects were selected by Non-probability purposive sampling technique. The subjects were assigned to experimental and control group so as to include 29 subjects in each group. The level of stress was assessed by using perceived stress scale (PSS). Data were analyzed using descriptive and inferential statistics.

Findings:

Section I: Description of demographic characteristics of patients with cancer: This section deals with characteristics of 58 patients with cancer in terms of frequency and percentage. The sample characteristics are described under the headings of age, gender, religion, education, marital status, number of children, occupation, monthly income, presence of any habits, family history of cancer, type of treatment receiving for cancer and availing financial help.

The frequency and percentage distribution of demographic variables of patients with cancer showed that among 58 subjects, 27 (46%) belonged to the age 51-65 years and were female 30 (51.72%) and male 28 (48.27%). Majority 24 (41.37%) of them belongs to Hindu religion and had 21 (36.20%) primary school educational qualification. Majority 41 (70.68%) of them were married and had 30 (51.72%) more than 2 children. Most of the patients 27 (46.55%) were self employed and had 36(62.06%) 5000-10000 rupees of monthly income. Majority 24 (41.37%) of them were alcoholic and 23 (39.65%) of them were receiving radiation therapy treatment. Among 58 subjects, 29 (50%) of them had family history of cancer and 29 (50%) of them didn't have family history of cancer. Most of them 44 (75.86%) were receiving Govt insurance scheme for treatment as a financial help.

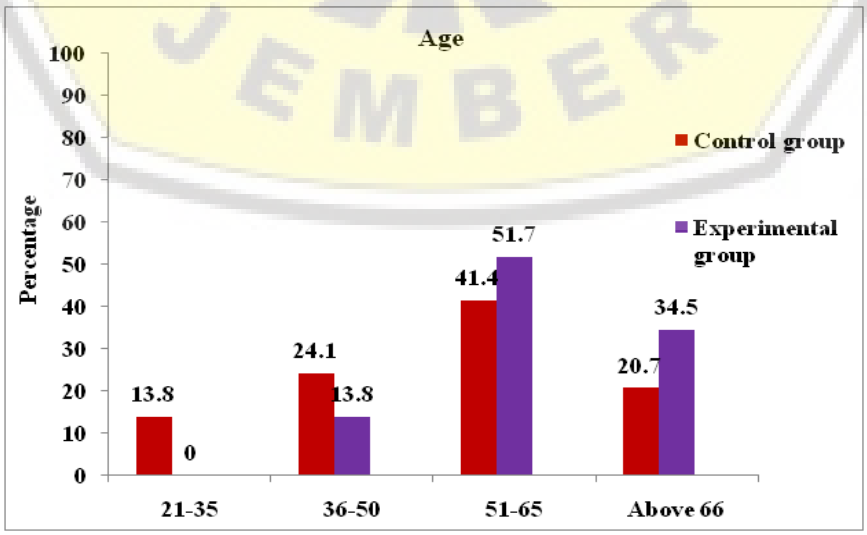

Figure 1: Bar diagram showing the age distribution of patients with cancer

Data presented in Figure 2 revealed that in control group majority of the patients belongs to 51-65 years that is 12 (41.4%), whereas minimum 4 (13.8%) belongs to 21-35 years. In experimental group majority of the patients belongs to 51-65 years that is 15 (51.7%), whereas minimum 4 (13.8%) belongs 36-50 years.

Section II: Comparison of pre test and post test level of stress in control and experimental group:

Table 1: Comparison of pre test and post test scores of stress in terms of frequency and percentage n=29+29

Level of stress	Pre test				Post test			
	Control Group		Experimental Group		Control Group		Experimental Group	
	f	%	f	%	f	%	f	%
Mild (0-13)	3	10.3	2	6.9	3	10.3	15	51.7
Moderate (14-26)	7	24.1	6	20.7	6	20.7	14	48.3
Severe (27-40)	19	65.5	21	72.4	20	69	-	-

Data presented in Table 2 shows that in pre test, the control group 3 (10.3%) of them had mild stress, 7 (24.1%) of them had moderate stress and 19 (65.5%) of the subjects had severe stress. In experimental group, 2 (6.9%) of them had mild stress, 6(20.7%) of them had moderate stress and 21 (72.4%) of the subjects had severe stress.

In post test, the control group 3 (10.3%) of them had mild stress, 6(20.7%) of them had moderate stress and 20 (69%) of the subjects had severe stress. In the experimental group 15 (51.7%) of them had mild stress and 14 (48.3%) of the subjects had moderate stress.

Section III: Effectiveness of meditation on reduction of stress among patient with cancer on pre test and post test level of each group:

Table 2: Effectiveness of meditation on pre test and post test level of each group in terms of mean, SD, paired‘t’ test and ‘p’ value n=29+29

Groups		Mean	SD	t	p value
Control group	Pre test	28.17	7.14	1.06	0.29
	Post test	27.75	6.81		
Experimental group	Pre test	29.31	6.27	13.11	0.001*
	Post test	15.96	5.72		

p <0.05 [*significant]df= 28

Paired “t” test was used to assess effectiveness of meditation on stress on pre test and post test level of each group. The above table 3 shows, in the experimental group, the mean post test score of stress among patients with cancer (15.96+5.72) was much less than the control group (27.75+6.81). Therefore H_{01} was rejected and H_1 was accepted, it indicates that meditation is effective in reducing the stress among patients with cancer.

Section IV: Effectiveness of meditation on reduction of stress between control and experimental group:

Table 3: Effectiveness of meditation on patients with cancer in terms of mean, SD, independent ‘t’ value and ‘p’ value obtained in experimental and control group n=29+29

Groups		Mean	SD	t	p value
Post test	Control group	27.75	6.81	7.13	0.001*
	Experimental group	15.96	5.72		

p<0.05 [*significant] df=56

Independent "t" test was used to compare the level of stress between control and experimental group. As per the table 4, in the experimental group, the mean post test score of level of stress among patients with cancer (15.96+-5.72) was much less than in control group, (27.75+6.81). In experimental group the mean difference was (13.35) and it was more than the difference of the control group (0.42). It indicates that between the groups there was a difference in mean stress level and meditation is effective in reducing stress among patients with cancer.

Section V: Association between pre test scores of stress and selected demographic variables: The present study obtained p values of chi-square and likelihood ratio test were >0.05 and itshows that there was no significant association between pre test level of stress and demographic variables. Hence H_{02} was accepted.

Conclusion

This study proved that stress is very common among patients with cancer especially 51-65 years of age. Most of the patients with cancer found with severe stress in selected hospital. There is a need for stress reduction by complementary therapies so that patients can live their life with happiness as much as possible. There is a need for health education to all patients with cancer as well as among general public to learn about complementary therapies and its effectiveness.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Yenepoya Ethics Committee-1 (YEC) approved my study protocol number 2018/098 titled "A study to assess the effectiveness of meditation on stress among patients with cancer in selected hospital at Mangaluru" On 05/06/2018 under the chairmanship of Dr. Vikram Shetty.

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Sodium Hyaluronate Injection in Grade 2 & 3 Osteoarthriticpatients: A Two Year Follow Up Study

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Abstract

Background & Aim: To analyse the long term (upto 2 years) clinical effect of viscosupplementation and diacerin administration in Osteoarthritic grade 2 & 3 patients in terms of physical function, stiffness, pain and adverse events.

Method: A retrospective analysis of patients having Osteoarthritis knee who underwent clinical routine protocol in the Department of Physical Medicine and Rehabilitation (PMR) of Dr. Ram Manohar Lohia (RML) hospital, New Delhi has been presented. The study incorporated 50 Osteoarthritis patients (28females, 22 males) having Osteoarthritis knee, grade 2 or 3 according to the Kellgren Lawrence Scale. Baseline Visual Analog Scale (VAS) and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) were recorded before the joint injection was given. The same were then recorded at 3 months, 6 months, 1 year and 2 years. Patients were injected with intra-articular injection of sodium hyaluronate, 90 mg/3 ml.

Results: The mean age of the patients was 65.4 years. The mean pain subscore, mean stiffness subscore and mean physical function subscore, all increased significantly between 0 to 3 months and 3 to 6 months (p value being 0.0001). However p value between 6 months to 1 year and 1 year to 2 years were statistically insignificant. There was no worsening of symptoms till 2 years.

Conclusion : In this study a single 3 ml/90 mg IA injection of Sodium hyaluronate was well tolerated and effective in providing statistically significant improvement from baseline in pain, stiffness and physical function subscore of WOMAC scale over 6 months period. However this improvement was not significant beyond 6 months upto 2 years follow up. But the knee in terms of pain, function and stiffness didn't worsen also, hence implying the condition remaining stable till 2 years after injection.

Keywords: *Osteoarthritis, Hyaluronic Acid, Viscosupplementation, Visual Analog Scale.*

Introduction

Osteoarthritis is one of the most common joint disease affecting the geriatric population apart from being the most common form of arthritis worldwide.[1] Most common joints involved are hips, knees, spine and interphalangeal joints. Out of all, knee is the most common joint to be involved causing significant disability and affecting quality of life. [2, 3]

The normal synovial fluid mainly contains hyaluronic acid, a nonsulfated glycosaminoglycan[4] which is primarily responsible for joint homeostasis and rheological properties. Osteoarthritis constitutes degenerative and repair processes in the articular cartilage and subchondral bone along with osteophyte formation. Both the molecular weight and concentration of hyaluronic acid is decreased in Osteoarthritis.[4] It is very much appropriate to consider local therapeutic modalities for the affected joints since clinically

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Osteoarthritis is usually monoarticular or oligoarticular. This would be helpful in avoiding adverse systemic effects.

In our study, we observed and analyzed the clinical effect of viscosupplementation along with diacerin on long term basis, until two years of follow up in 50 patients suffering from grade 2 or 3 Osteoarthriris according to the Kellgren Lawrence Classification of Osteoarthritis.

Aims and Objectives: To analyze the long term clinical effect of viscosupplementation and diacerin administration in Osteoarthritic grade 2 & 3 patients in terms of physical function, stiffness, pain and adverse events.

Material and Method

This was a prospective, nonrandomized, experimental pre-post efficacy study[4] conducted in a tertiary care hospital, in the Department of Physical Medicine & Rehabilitation in Dr. Ram Manohar Lohia Hospital, New Delhi.

Patients being diagnosed as having Osteoarthritis knee and fulfilling the American College of Rheumatology Criteria for diagnosis of Osteoarthritis were incorporated in the study. All the patients having Osteoarthritis Grade 2 or Grade 3 of target knee confirmed by an X ray and receiving viscosupplementation along with diacerin as treatment modality were incorporated in the study.

Patients who were more than 40 years of age and had Kellgren Lawrence Scale 2 or 3 were included in the study. Other inclusion critereas included, those being diagnosed with Primary Osteoarthritis of affected knee, having radiographic changes in tibiofemoral/ patellofemoral knee joint medially &/or laterally and not responding to conservative treatment modalities.

Patients excluded from the study were those having Secondary Osteoarthiritis of knee or having Kellgren Lawrence Grade of 1/Grade 4. Patients who have had surgery in the knee joint or any history of viscosupplementation were excluded from the study. Patients having either significant valgus/varus deformity of knee or ligamentous laxity or meniscal instability or sepsis in knee joint or chronic significant venous or lymphatic stasis in legs or clinically apparent tense effusion or hypersensitivity to components of Hyaluronic acid based injections in past 3 months were all excluded from the study.

Study Design: All eligible patients fulfilling the entry criteria described above were enrolled in the study after taking written informed consent from them.

Baseline routine investigations which comprised of Complete blood count, Random blood sugar, SGOT, SGPT, Blood urea, Serum Creatinine were conducted. This was a part of the basic protocol followed in our department. If patient did not have an X-ray of knee taken in the last 3 months, X-ray bilateral Knee (Antero posterior and Lateral views in the standing position) was taken as baseline. X-rays were analyzed by a single investigator to make the assessment of radiological joint space narrowing uniform.

Baseline VAS and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) were recorded before the joint injection was given.

For all patients the basic protocol of the department was followed which comprised of pharmacotherapy comprising of Diacerin 50mg once daily for a month followed by twice daily for two months, knee care, physical therapy and patient education.[5]

The study incorporated initial treatment phase with one intra-articular injection of sodium hyaluronate, 90 mg/3 ml, contained in a sterile prefilled syringe, from lateral approach. Before injecting the drug, joints were aspirated for any effusion. The part preparation comprised of preparing the knee with betadene followed by spirit. After an observation period of 30 minutes, patient was discharged on the same day. Following the injection, patients were asked to avoid excessive walking for 1 day and do ice fomentation over injection site. They were asked to report back immediately if any complication or adverse reactions occurred.

Next follow ups were conducted at 6 months,1 year and 2 years when both VAS and WOMAC were conducted.

Concomitant treatment in addition to medications were allowed except for chronic use of narcotics, systemic corticosteroids, local corticosteroids into any other joint, visco supplementation into any other joint other than knee.

Drugs that were allowed to be used by the patient were Paracetamol, Aceclofenac, Diacerin, Calcium Citrate & Calcium Carbonate, Glucosamine Sulphate with or without Chondroitin.

Statistical Test Applied: SPSS software was used for statistical analysis. Paired Student t-test was applied out to compare the mean differences in VAS and WOMAC scores. P <0.05 was considered statistically significant.

Findings: The study was conducted in 70 knees in 50 patients (who met the inclusion criteria) over a period of 2 years in the PMR department of Dr RML Hospital, New Delhi. Patients who had bilateral affection were 20 in number. Out of these, 22 patients were females. Hence Male: Female Ratio was 28:22. There were no confounding factors in demographic characteristics of the patients at baseline.

Mean age of patients was 65.4 years with a Basal Metabolic Index of 29. The mean deviation of knee osteoarthritis was 8.5 years. 40% of patients were bilaterally affected that is 20 patients. Most of the patients were having the disease for 2-3 years. There were total 22 patients having Kellgren Lawrence Scale 2, whereas 28 patients had Kellgren Lawrence Scale 3 Osteoarthritis.

Summary of results from Primary & Secondary outcomes assessment: In our sample population; the mean pain subscore (numeric rating scale = 0-20) of WOMAC was 13.24 at baseline. This became 7.00 at 3 months, followed by 5.50 at 6 months, 5.45 at 1 year and 5.35 at 2 years. The p value between 0 to 3 months and 3 to 6 months were statistically significant with p value being 0.0001. However paired difference between 6 months to 1 year and 1 year to 2 years were statistically insignificant.

The mean stiffness subscore was 4.10 at baseline followed by 3.11 at 3 months, 2.6 at 6 months, 2.7 at 1 year and 2.8 at 2 years. The p value between 0 to 3 months and 3 to 6 months were statistically significant with p value being 0.0001. However paired difference between 6 months to 1 year and 1 year to 2 years were statistically insignificant.

The mean physical function subscore was 35 at baseline, which increased significantly to 48 at 3 months. It became 49 at 6 months, 50.1 at 1 year and 50.24 at 2 years. The paired difference was statistically significant between baseline and 3 months and 3 to 6 months. Whereas the difference was insignificant between 6 months to 1 year and 1 year to 2 years.

Table 1: Change of WOMAC pain score from baseline.

	0 months	3 months	6 months	1 year	2 years
Mean ±SD	13.24 (2.26)	7.00(1.5)	5.50 (1.6)	5.45 (1.6)	5.35 (1.5)
P value		< 0.0001	< 0.0001	0.10	0.09

Table 2. Change of WOMAC Stiffness Score from baseline.

	0 months	3 months	6 months	1 year	2 years
Mean ±SD	4.10 (1.00)	3.11 (0.8)	2.6(0.8)	2.7 (0.8)	2.8(0.9)
P value		< 0.0001	< 0.0001	0.20	0.19

Table 3. Change of WOMAC Physical Function Score from baseline

	0 months	3 months	6 months	1 year	2 years
Mean ±SD	35 (4.7)	48 (4.00)	49 (4.1)	50.1 (4.00)	50.24 (3.5)
P value		< 0.0001	< 0.0001	< 0.0001	< 0.0001

Table 4. Related Adverse events.

	Grade II	Grade III
Allergic reaction	0	0
Pain at injection site	2	4
Arthralgia	0	2
Others	1	1

Discussion

For time immemorial people have been researching about hyaluronic acid. Animal studies on Hyaluronic acid were conducted in late 1960's by Rydellet al[7] for Osteoarthritis in horses after joint injuries. Hyaluronic acid was first used in human joints (Balazeet al[8], Rydell et[7] al, Hyren et al, Marshall et al) in Japan and Italy. In 1993, Balazeet al[8] expressed the term viscosupplementation for the first time. Hyaluronic acid, which is a copolymer of repeating disaccharide units of D- Glucuronic acid & N- acetyl D glucosamine has concentration in the joints of young adults of about 3.8 mg/ml. However over a period of 30 years it drops down to around 2.5 mg/ml. Hyaluronic acid is secreted by beta synovial cells lining the synovial tissue & the normal knee contains 1-2 ml of synovial fluid. In patients who have failed conservative nonpharmacological treatment, Hyaluronic acid injections are indicated as per FDA.[6]

In a Cochrane review, by Bellamy et al[9], it was suggested that viscosupplements have fewer systemic side effects and have more prolonged effects than intraarticular corticosteroids. This review also concluded that viscosupplementation has definite benefits on pain, function and patient global assessment, especially at 5 to 13 weeks period post injection. Balazs et al[8] first proposed the concept of viscosupplementation and stated that intra-articular injection of hyaluronic acid could restore the rheological properties of synovial fluid, promote synthesis of hyaluronan and hence help in regaining mobility and decreasing pain. Evidence of advantages of hyaluronic acid primarily comes from animal studies and in vitro studies have concluded that hyaluronic acid has positive effects on chondrocytes, synoviocytes and on inflammatory cells that reach the synovial cavity in osteoarthritis. In vivo studies indicate that hyaluronic acid reduces pain by acting on cell receptors.[10] It has also been argued that hyaluronic acid preserves structure of chondrocytes and cartilage,[11]reduces synovial cell proliferation.[12,13]

Ghosh P et al have further postulated that hyaluronic acid binds to free radicals and removes them from joint cavity, hence reducing cartilage damage.[14]

A significant number of studies do report reduction in pain and improved function (not always significantly) that may persist for up to a year.[15,16] Similar results were found in our study stating that viscosupplementation did provide improvement in pain, stiffness and physical function subscore of WOMAC scale upto 6 month period.

Conclusion

In this study a single 3 ml/90 mg IA injection of Sodium hyaluronate was well tolerated and effective in providing statistically significant improvement from baseline in pain, stiffness and physical function subscore of WOMAC scale over 6 months period. However this improvement was not significant beyond 6 months upto 2 years follow up. Since the symptoms didn't worsen from 6 months till about 2 years of follow up period, hence the effect of viscosupplementation was quite effective till 2 years.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Ethical Clearance was taken from the Institute's Ethical Committee.

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Awareness and Knowledge on Geriatric Dentistry amongst Undergraduates: Emphasis on the Special Care Dentistry in the Aging Realm

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Abstract

Background: The emerging world has visualized an increase in the geriatric population percentage. There is a need for understanding and addressing the oral health needs of geriatric population. It is necessary for the future dentists to understand the nature of dental diseases, the difference in the behaviour of these diseases as well as the management.

Aims: The aim of this survey is to assess the awareness and knowledge of Geriatric Dental Care among undergraduate dental students.

Materials and Method: A descriptive cross-sectional questionnaire survey with 40-item questionnaire developed from guidelines by the European College of Gerodontology was conducted among the undergraduate dental students of the 4th and 5th academic year across 5 dental colleges in Chennai. 9 closed-ended 5-point Likert scale questions were also included to assess the importance of the existing barriers in elderly oral care.

Results: Out of 584 undergraduates, the percentage of students with unsatisfactory and satisfactory levels of knowledge was 57.6% and 42.4% respectively. In assessing the importance of barriers in providing dental care, communication skills of the doctor and the patient and transportation were ranked highest by the respondents.

Conclusion: The present study proves the significance of dental health care of the geriatric population and should be integrated with dental curriculum.

Keywords: *Undergraduate Dental Students; Geriatric Dental Care; Oral Health, Elderly population, Gerodontology.*

Introduction

The cycle of life and death is the constant transitions of nature. Ageing is a chronic process wherein the human body experiences constant wear and tear leading to decrease in the performance of routine activities of an individual. Over several eras the field of science, medicine and technology has evolved leaps and bounds such that the evading medical casualties seemed possible. This in turn has given a hand in increasing the life expectancy rates of humans which is essentially a statistical measure of the average time an organism is expected to live, based on the year of its birth, its current age and other demographic factors.

World Health Organization (WHO) defines life

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expectancy as; "the average number of years a person is expected to live on the basis of the current mortality rates and prevalence distribution of health states in a population". India is the second most populous country with 8% involving geriatric population. Life expectancy in India has increased from 62.3 years for males and 63.9 years for females in 2001-2005 to 67.3 years and 69.6 years respectively in 2011-2015. [1]

Due to this swift greying of the population, general health and oral health care presents with a variety of difficulties in terms of providing a comprehensive diagnosis and treatments. Ageing is constantly accompanied with systemic diseases that can negatively influence oral health [2]. Professionals encounter unique challenges to treat the rapidly growing population of the elderly, dependent home bound and nursing home bound residents. The basic perception and understanding of the medical and dental aspects of ageing, ambulation, independent living, socialization and sensory function of the elderly has to be inculcated in to the foundation years of dentistry.

Previous literature have investigated different barriers interfere with providing oral health care to older patients. Saunders et al. reported the primary barriers in geriatric dentistry at dental schools were the lack of trained faculty members, a crowded curriculum and fiscal concerns [3]. Multiple medical conditions, complexity of dental treatments and insufficient training are barriers that can result in dental practitioners' indecision to treat older patients[4,5]. Entwistle showed that the dentists' willingness to provide care for older people could be improved by adding geriatric care to the dental curriculum[6]. Another study emphasized the necessity of geriatric dentistry training courses at dental schools to address the needs of the vast elderly population in India.[7]

Thus this study deals and aims to determine the attitude, knowledge regarding geriatric dentistry in a future population of dentists allowing a small insight on the requirement of geriatric dentistry as a separate entity in the dental curriculum for the betterment of oral health care to the elderly.

Materials and Method

Study Design: A descriptive cross-sectional questionnaire survey was conducted among the undergraduate dental students of the 4th and 5th academic year across 5 dental colleges in Chennai.

Ethical Clearance and informed consent: The study protocol was reviewed by the institutional ethical and review committee. The questionnaires were administered to the 4th and 5th year students randomly along with a brief statement on the objectives of the study.

Proforma details: A 50-item questionnaire was developed from reviewing the existing literature according to the guidelines in gerodontology by the European College of Gerodontology and modified accordingly so as to validate the application of the questions developed[8]. 40 questions were included under different sections that is 14 for knowledge, 9 for attitude and communications, 16 for treatment and 2 for application of geriatric dentistry. To assess the importance of the existing barriers in elderly oral care 9 closed-ended 5-point Likert scale questions were given.

Pretesting the proforma: A pilot study including 30 participants was performed to determine the test-retest reliability of the survey questions. The respondents were asked for feedback on clarity of the questions and indistinctness the answers provided. No modifications were made in the questionnaire based as all the questions were easy to understand and relevant to the present situation.

Method: The responses were classified into "yes", "no". The scoring for the responses is as follows: 1 point for "yes," and 0 point for "no". The maximum attainable score was 40.

The questionnaire was distributed via online google forms. The sample size was selected based on the previous studies and keeping the power of the study as 80%. The Cronbach's alpha value for the questionnaire was found to be 0.8.

Statistical Analysis: Data was analysed using the Statistical Package for Social Science (SPSS) software package version 21. Frequency and percentage distribution were used to present qualitative data. Mean and standard deviation, t-test were used to study the relationship between variables. Statistical significance was considered at the (0.05) level.

Results

The total of 584 students were included in the study: males – 34% and females -66%, 4th year – 320 and 5th year 264 students. A total of 40 questions of the

survey analysed the knowledge, attitude and application of geriatric dentistry.

The questionnaire and responsesfor each question from both the 4th and 5th year is given in Figure 1. Knowledge on health care in relation to ageing and geriatric medicine was lacking in both 4th and 5th year dental students. The attitude towards geriatric care varied between the student populations.

The assessment of the importance of the existing barriers in elderly oral care contained 9 closed-ended 5-point Likert scale questions. The results are summarized in Table 1 and graphical represented in Figure 2(A). The most favoured answers - Follow up of the elderly patients after treatment, Compliance of elderly patient, Time consuming in terms of treating aged patients, Inadequate transportation services and Communication skills of both dentist and patient was important represented by the score 4. Financial ability of the patient, Lack of appropriate facilities for dental treatment in the community, Awareness and knowledge regarding oral health care by care givers and Inadequate knowledge of geriatric dental caregained a response of 3 (very little importance). Table 2 represents the scores on the knowledge and attitude of the respondents. Total score was categorized as satisfactory and unsatisfactory level of knowledge according to participant's responses. The highest score of 38 was taken and 50th percentile of this highest score is referred as cut-off value. That is 50% and more was considered as satisfactory knowledge.

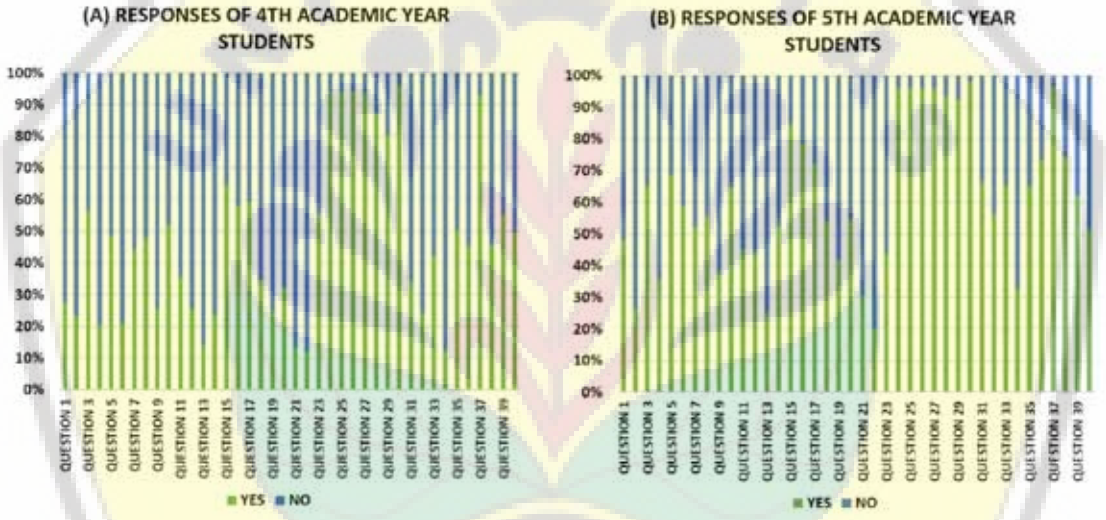

Figure 1: Graphical representation of the responses

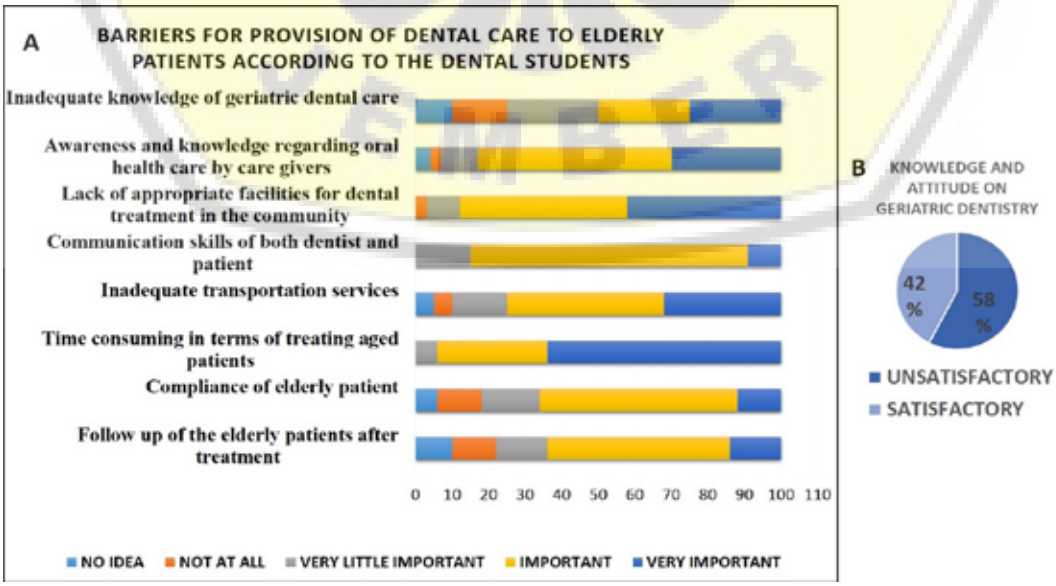

Figure 2: (A) Perception of barriers in dental care provision for elderly. (B) Knoeledge and attitude scale

Table 1: Mean scores of importance barriers for provision of dental care to elderly patients according to the dental students – likert scale (1: no idea 2: not at all 3: very little 4: important 5: very important)

Sr.No.	Barriers Considered and Assessed by the Importance of Each of the Following	4th Year	5th Year	P-Value
1.	Follow up of the elderly patients after treatment	3.2 ± 0.07	4.4 ± 0.2	0.001
2.	Compliance of elderly patient	3.4 ± 0.8	4.4 ± 0.8	0.001
3.	Time consuming in terms of treating aged patients	3.9 ± 0.6	3.4 ± 0.6	0.07
4.	Financial ability of the aged patients	4.12 ± 1.0	4.3 ± 1.0	0.22
5.	Inadequate transportation services	3.7 ± 0.8	4.0 ± 0.7	0.03
6.	Communication skills of both dentist and patient	4.3 ± 0.5	4.4 ± 0.5	0.24
7.	Lack of appropriate facilities for dental treatment in the community	3.1 ± 0.5	4.0 ± 0.7	0.02
8.	Awareness and knowledge regarding oral health care by care givers	4.4 ± 0.3	4.6 ± 0.8	0.04
9.	Inadequate knowledge of geriatric dental care	4.4 ± 0.7	4.4 ± 0.7	0.5

Table 2: Percentage of the total scores on knowledge and attitude on geriatric dentistry

Categories of Knowledge and Attitude	N (184)	Percentage
Unsatisfactory	106	57.6%
Satisfactory	78	42.4%

Discussion

Present day census show that the dwelling, frail elderly population has tremendously grown worldwide due to advancements in science. This population require a specialized set of physical, functional, psychological and social needs. Thus modified versions of professional healthcare is required. This leads to the necessity of training health care professionals to increase their competency and attitude towards the geriatric population.

Geriatric dentistry is a separate speciality emphasized in the Western and European countries but is still in the stage of infancy in India. The current curricula doesn't include geriatrias a separate subject or a speciality. Since the students form the community of future health care providers for the aged population, understanding their attitude and knowledge towards elderly is vital. This current cross-sectional study is the first to be conducted in five dental colleges in Chennai. The current study was conducted to elucidate the attitude and knowledge of dental students belonging to the 4th and 5th year regarding care of the geriatric population. The study population included only the 4th and 5th year because of the varied durations in clinical experience which would be allowing the increased amount of exposure and communication with elderly individuals.

Results of this study showed that age range of the participants was 20-22 year of which 66% were females and 34% males. The questionnaire was adapted to fit the study population. There was no statistical difference in the knowledge and attitude scales between 4th and 5th year. Patil PG et al addressed the influence of early clinical exposure for undergraduate students on self-perception questionnaire on the different aspects of geriatric dental care with two different colleges from Japan and India and concluded that the average scores about own-perception of knowledge and competency about aging, medicine and communication skills were same in both India and Tokyo students. The Indian students were considered to have more subject knowledge, better communications, diagnosis and treatment planning due to early clinical exposure. [9]

The present study evaluated the knowledge and attitude of the student population. Most of the student population responses suggested that they possessed inadequate knowledge on general geriatric care. The percentage of students with unsatisfactory and

satisfactory levels of knowledge was 57.6% and 42.4%respectively. This points out to the fact that the skills of the future dentists have to be modified to provide proper care for elderly patients.

In assessing the importance of barriers in providing dental care, communication skills of the doctor and the patient, transportation were ranked highest by the respondents. The p value was evaluated and assessed for the significance levels showing that the understanding of the existing barriers between the 4th and 5th year were similar.

Fabiano et al reported that transportation, complex and overlapping priorities were given the high rates by the students which was consisted as the barriers to provision of dental care. [10]

Kiyak and Reichmuth examined the determinants of dental service utilization by the geriatric population and revealed that financially weaker section of the elderly were less likely to procure dental care.[11]

Sargeran et al mentioned that a short-term training program on geriatric oral health care may influence and impact on the students' knowledge and practice and supported on inclusion of geriatric dentistry course in the dental curriculum.[12]

Hatami et al surveyed the dental student's attitudes and knowledge of geriatric dental care in Iran. He concluded that only minor percentage of dental students had high levels of knowledge of geriatric dental care and attitudes toward elderly people. [13]

Thus the changing demographics challenges the health care system as the management of the elderly requires a different set of protocol. Hence the futuristic dental care professionals must have a sound knowledge, attitude and the ability to treat the frail community of elderly.

Conclusion

A positive attitude, sound knowledge in understanding and overcoming the barriers in health care system forms the key towards geriodontology. This can be achieved by introducing specialized training programme in the dental educational system. This study was able to evaluate a positive attitude with moderate levels of knowledge in geriatric dentistry. Thus presses for the fact of conducting more studies to evaluate the importance and awareness on geriatric oral care and also post training surveys to evaluate and to modify the programme in geriatric dentistry.

Ethical Clearance: Institutional Review Board committee.

Source of Funding: Self

Conflict of Interest: Nil

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Menstrual Knowledge and Hygiene among Adolescent Girls in Tamil Nadu: A Reticent Matter that Needs Openness

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Abstract

Background: Adolescent girls constitute about 1/5th of the total female population in the world. This period is marked with the onset of menarche. It is still considered as something unclean or dirty in Indian society. Awareness related to menstruation is highly essential to remain healthy.

Aims and Objective: The study focuses on the knowledge of menstruation and menstrual hygiene among adolescent girls.

Material and Method: It adopted a descriptive research design. Simple random sampling was followed. The data were collected using a structured questionnaire from adolescent college students in Madurai, Tamil Nadu, India. Results: seventy-seven percent of the respondents are not aware of the biological functioning that happens during menstruation. Menstrual hygiene was marked good but they are not having adequate knowledge on ill effects of using a sanitary pad.

Conclusion: The results suggest the need for social workers to ensure the utilization of exact health information regarding menstruation to the adolescent girls.

Keywords: *Adolescents, Menstrual knowledge, Menstrual Hygiene.*

Introduction

Menstruation is a phenomenon exclusive to women. Menstrual hygiene has not received sufficient consideration in reproductive health and has an impact on achieving Millennium Development Goals.[1]Menstrual hygiene scheme was launched by the Government of India in 2011 when Adolescent Reproductive and Sexual Health was included as a component of Reproductive and Child Health phase II in National Rural Health Mission. Menstruation is the periodic discharge of vaginal bleeding with the detachment of uterine mucosa after the manifestations of secondary sexual characteristics; it is the natural element of the reproductive cycle.[2] This cycle persists between 26 and 32 days for the uterus in protecting the fertilized ovum, the new cycle begins with the vaginal bleeding when the ovum is not fertilized. [3] On average, every female menstruates for 3-5 days every month. The length and blood flow vary for every woman and every month. [4] Menstrual hygiene refers to the hygienic practices followed during menstruation. It includes the usage and disposal of absorbent material and maintaining cleanliness to prevent infections, illness and other diseases. Unhygienic practices lead to reproductive tract infections.[5]Poor menstrual cleanliness increases vulnerability to infection. The accessibility to water and clean absorbent material is necessary to protect the health and to prevent infections. [6,8] Talking about menstruation symbolized as impure in society. Menstruation is encircled by a silence that does not allow discussion on it which results in ignorance and poor menstrual hygiene practices among females. [7] Menstrual health is also a part of health education that needs to give much importance.[2]

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Method

The objective of the study is to know the knowledge and hygienic practices followed during menstruation among adolescent girls. It adopted the quantitative method and descriptive research design. The study population comprises of all the final year students studying in an autonomous women college Madurai, Tamil Nadu. Simple random sampling was followed. The sample size was 143. The data were collected using a structured questionnaire. It consisted of questions related to demographic details, awareness on menstruation and hygienic practices they follow during menstruation. Data were analyzed and interpreted using SPSS (statistical package for social science). The study was started after getting approval from the college. Purpose of the study was clearly explained to the participants. The informed consent was taken from the participants.

Results

Demographic details: The results show that 116(81%) respondents belong to the age group of 19-20 years and 22 (15%) respondents were above 20 years of age. The mean age of the respondents was 19.66. Majority of the respondents 137 (96%) belong to the Hindu religion. 77 (54%) respondents are living in rural areas and 66(46%) are living in urban areas. The type of family of 128 (90%) respondents was the nuclear family. Only 12 (8%) are living in a joint family. The monthly income of the 77 (54%) respondents were below 10000 and 42 (30%) respondent's family income was between 10000 and 20000.

Knowledge on menstruation: Table 1 depicts the findings of this section. This part of the questionnaire required respondents to give information on the level of knowledge regarding menstruation. Respondents were asked to indicate whether they are aware of the biological process that is happening during menstruation, 111 (78%) of the respondents answered, as they do not know. 90 (63%) respondents have no knowledge about menstruation before they attain menarche. However, 73 (51%) respondents reported that they attained classes in their schools regarding menstruation. Source of information of 100 (70%) respondents were the mother and for 26(18%) respondents it is their friends. More than half, 75 (54%) of the respondents answered the normal interval between two menstrual cycles as 28 days. More than half, 109 (76%) respondents are aware of the age of menarche, as 13 to 15 years and normal duration of the menstruation as 3to 5 days reported by 123 (86%) respondents. 125 (87%) respondents are aware that menstrual blood comes from uterus and 102 (71%) respondents believe that menstrual blood is unhygienic.

Table 1: Knowledge on menstruation (N=143)

Particulars	Frequency	Percentage
Aware of the biological process of menstruation		
Yes	32	22.4
No	111	77.6
Knowledge about menstruation before menarche		
Yes	53	37.1
No	90	62.9
Attended any class in school regarding menstruation		
Yes	73	51.0
No	70	49.0
Source of information about menstruation		
Mother	100	69.9
Teacher	3	2.1
Friends	26	18.2
Books	6	4.2
Sister	8	5.6
Normal interval between two menstrual cycles		
20-27 days	19	13.3
28 days	75	52.4
29-32 days	45	31.5
33-45 days	4	2.8
Average age of menarche		
10-12 years	34	23.8
13-15 years	109	76.2
Average duration of menstruation in month		
3-5 days	123	86.0
6-8 days	20	14.0
Menstrual blood comes from		
Uterus	125	87.4
Vagina	11	7.7
Don't know	7	4.9
Menstrual blood is unhygienic		
Yes	102	71.3
No	41	28.7

Information on respondents Menstruation: Table 2 portrays the information on respondent's menstruation. The attainment age of menarche of 108 (76%) respondents was 13 to 15 years. The reaction to menarche of 74 (52%) respondents was discomfort and 30 (21%) felt scared. 101 (70%) respondents felt abdominal and back pain during menarche. The

duration of menstruation of 114 (80%) respondents was 3to5 days. Ninety-six (67%) respondents get their menstruation in every 28 to 32 days. Ninety-four (66%) respondents are having a moderate level of bleeding and 57 are experiencing back pain during menstruation.

Table 2: Information on respondent's Menstruation (N=143)

Particulars	Frequency	Percentage
Age at menarche		
10-12	35	24.5
13-15	108	75.5
Reaction to menarche		
Happy	18	12.6
Scared	30	21.0
Discomfort	74	51.7
Emotional disturbance	10	7.0
Confusion	11	7.7
Physical symptom at menarche		
Abdominal and back pain	101	70.6
Sleeplessness	19	13.3
Heavy bleeding	19	13.3
No problem	4	2.8
Amount of bleeding during menstruation		
Scanty	24	16.8
Moderate	94	65.7
Heavy	25	17.5
Problem facing during menstruation		
Headache	3	2.1
Vomiting	9	6.3
Weakness	30	21.0
Abdominal pain	40	28.0
Back pain	57	39.9
No problem	4	2.8
Interval between two cycles		
15-27 days	39	27.3
28-32 days	96	67.1
33-40 days	8	5.6
Duration of menstruation		
2 days	2	1.4
3-5 days	114	79.7
6-9 days	27	18.9

Practices during Menstruation: Table 3 describes the hygienic practices respondents follow during menstruation; it includes materials usage and its disposal. The absorbent material used by 114 (99%) respondents was sanitary napkin and 121 (85%) of them reported comfortable as the reason for using a sanitary napkin. 123 respondents (86%) thinks that using the sanitary napkin as absorbent material is hygienic. The person buys sanitary napkin from the shop for 95 (66%) respondents was a mother. Fifty-nine (41%) respondents change the absorbent material thrice a day and 51 (36%) changes only twice in a day. The disposal way of 76(53%) respondents wrap their used napkins in a plastic bag and 133 (93%) respondents dispose of in dustbin.

Table 3: Practices during Menstruation (N=143)

Particulars	Frequency	Percentage
Absorbent material use during menstruation		
Homemade napkin	2	1.4
Sanitary napkin	141	98.6
Reason for using particular absorbent material		
Comfortable	121	84.6
Quality	16	11.2
Low cost	5	3.5
Peer pressure	1	.7
The person buys absorbent material from the shop		
Myself	34	23.8
Father	13	9.1
Mother	95	66.4
Sister	1	.7
Times of changing absorbent material		
Once	2	1.4
Twice	51	35.7
Thrice	59	41.3
Four and more	31	21.7
Disposal of absorbent material		
Dustbin	133	93.0
Toilet	6	4.2
Open field	1	.7
Burn it	3	2.1
Type of wrap used for disposal		
Papers	67	46.9
Plastic bag	76	53.1
Think sanitary napkin is hygienic		
Yes	123	86.0
No	7	4.8
Don't know	13	9.2

Discussion

The source of information for 70% of the respondents was their mother, which is in line with the studies done by Langer,[9]Dambhare[7] and Thakre et.al.[6] In the present study, 63% of the respondents have no knowledge about menstruation before they attain

menarche. This finding is consistent with that of a study done by Yasmin et.al which reports 58% of girls were ignorant about menstruation before menarche.[1]The reaction to menarche of 52% was discomfort and 21% felt scared. This result is in agreement with the study by Bela Kothari that 70% of girls did not know about menstruation before menarche and had a shocking and frightening experience.[10]The study by Deo et al which says 42.5% urban and 55.4% rural girls were only aware of menstruation earlier to the attainment of menarche. [11]Majority of the respondents have knowledge about the age (76%), duration (86%) and interval (54%) of menstruation. Eighty-seven percent of the respondents are aware that menstrual blood comes from the uterus. This finding supports the verdicts of previous studies done by Santhi Sree (2018) which reports 75% were having adequate knowledge.[12]

The absorbent material used by 99% of the respondents was sanitary napkin and 85% of them reported the reason for using as comfortable. These results are in accord with a recent study by Channawarindicating that 91.2% used pads[13] and most of the respondents (77%) used sanitary pads in another study by Abhijit[14]. A study by Tarhane reveals 79% of girls used pads and the reason for chosen sanitary pads as the high availability and influence of television.[15] This outcome is contrary to that of Dasgupta et al who found in their study only 11.25% of girls used sanitary pads during menstruation.[16]This happened because of the different place of residence i.e. rural and urban. Vidya V P showed that 46% of girls prefer to use clothes and the reason for not opting sanitary pads as the high cost, shyness to buy and disposal problems.[17] Only 41% of the respondents change the absorbent material thrice a day and 36% changes only twice in a day. The disposal way of 93% of the respondents is putting in a dustbin. The previous study by Shanbhag also mentioned as 40% of girls change sanitary pad twice a day and 30% changes thrice a day.[18] In a study by Channawar also reported the majority 74% of girl's disposal method of used absorbent material as a dustbin. In the present study, 78% of the respondents have no knowledge about the biological process happening during menstruation. This is in contrast to the study by Ghimire, which says 70% of the girls had knowledge regarding concepts of menstruation.[19] It was surprising that 86% of the respondents think that using sanitary napkin, as absorbent material is hygienic. This result matched the other study by Langer, which says the complete sample in the study agreed the ideal material to be used during menstruation is sanitary napkins.[10]

The results of this study indicate that adolescent girls lack the knowledge of the biological part of menstruation. It is clearly understood from the finding that 71% of respondents believe that menstrual blood is unhygienic. In addition, they have poor hygienic practices in terms of absorbent material and disposal. The majority are using sanitary napkins and thinks that as hygienic, they are not aware of the side effects of using sanitary napkins. Sanitary napkins have to be changed for every three to four hours. However, the majority are changing only thrice in a day. It will have an impact on their health. sanitary napkins are made of dioxins are used to bleach the cotton/material used for making the absorbent core and it causes for side effects in the body such as pelvic inflammatory disease, ovarian cancer, immune system damage, impaired fertility and diabetes. Sanitary pads are made up of synthetic materials, which can cause blockage of wetness, which encourages bacterial growth. Synthetics and plastic additionally prohibit the free flow of air and might lure heat and moistness, probably promoting the expansion of yeast and bacterium in duct space. Dioxin accumulates within the body fat and might add up to the residual levels over time, efforts need to be undertaken to reduce exposure. Adolescents should not pay their health for convenience. To look at it with an associate environmental perspective, it harms the surroundings owing to the plastic used and therefore the chemicals accessorial thereto for the absorption of blood and adding fragrance.

Conclusion

Adolescent girls should be educated about the development of secondary sexual characteristics, the menstruation, its importance and implications on the body and mental health. The findings support the need to provide education regarding safe hygienic practices that should not harm them in the future. In addition to educating the adolescents and their parents about menstruation and hygienic practices, it is significant to discuss the use of safe hygienic products during menstruation. That is to create awareness and educate people about the health effects of using sanitary pads. Negative attitude disseminates the negative body image and it affects their self.

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Effectiveness of an Intervention Bundle on Thirst Intensity and Dry Mouth among Patients Admitted in Intensive Care Units

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Abstract

Aims: To assess and compare thirst intensity scores and dry mouth scores before and after administration of intervention bundle among patients in experimental and control group.

Settings and Design: The study was done in Intensive care units (Neurosurgical, Medicine, Step up and Surgery). A true experimental pre test post test control group design was used.

Method and Material: Total 60 patients with thirst intensity and dry mouth were selected using convenience sampling and were randomly assigned to experimental and control group using lottery method. Intervention bundle used in the study consisted of cold wet oral swabs to wipe oral cavity and cold water mouth spray. Intervention bundle administered in two sessions with difference of thirty minutes between sessions to the experimental group patients.

Statistical Analysis Used: Analysis was done using SPSS 16.0 version. Descriptive and inferential statistics were used to analyse data in terms of homogenity, significance of result and association of thirst and dry mouth scores with selected variables.

Results: The findings indicated that both the groups were homogenous before administration of intervention bundle. After administration of intervention bundle in two sessions, the mean thirst intensity score was significantly lower in experimental group than control group. The mean dry mouth score was significantly lower in experimental group than control group. There was a significant association of patients' selected clinical variables with thirst and dry mouth in control group. Conclusion: Therefore, it was concluded that amelioration of thirst and dry mouth can be done by using a simple, effective and non pharmacological intervention bundle.

Keywords: *Thirst, Dry Mouth, Intervention Bundle.*

Introduction

Thirst and dry mouth are symptoms experienced by patients admitted in ICU as frequent impelling desire to drink water or any fluid whilst their stay. Intensive care unit (ICU) patients are exposed to many sources of distress such as pain, anxiety, fear, thirst, dry mouth, dyspnoea, immobility, nil per oral status, discomfort.[1] "Intensive care patients report thirst intensity as one of the most distressful of 10 symptoms; thirst is rated as the second prevalent symptom among patients. Thirst and Dry mouth are being the most neglected stressors during nursing care in ICU. A lot of factors which initiates the sensation of thirst and dry mouth in ICU : NPO status, anaesthetic drugs, narcotic drugs, diuretics, sedatives, high dose antibiotics, analgesics, multivitamins, age

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more than 60 years, endotracheal intubation, surgical intra operative bleeding, altered intake output, emesis, hyperglycemia, altered hematocrit level, increased creatinine level, renal failure, heart failure, liver failure accelerates the physiology of thirst and dry mouth by enhancing it. [2] while patients do report about their intensity of thirst and dry mouth, still most of the time it remain untreated and undocumented by nurses, due to which stay of patients in ICU becomes uncomfortable and distressful. Thirst intensity and dry mouth are not even assessed as part of nursing assessment in patients which may lead to some severe complications like: increase in intensity of pain and dyspnoea.[3]

There is a lack of evidence based interventions and practices in hospitals to reduce the intensity and distress of thirst and dry mouth among patients admitted in ICU. There are no assessment strategies which are followed by staff nurses to assess thirst intensity and dry mouth. Therefore, it is an alarming need to view and observe thirst and dry mouth as distressful symptoms and by keeping that as one important factor, this study has been done, consisting of an intervention bundle with an aim to the decrease thirst intensity and distress and dry mouth among critically ill patient. In that view, a clinical trial was done, An experimental study to evaluate the effectiveness of an intervention bundle on thirst intensity and dry mouth among patients of selected units of MMIMS & R and Hospital, Mullana, Ambala, Haryana.

Objectives of the study were:

- To assess and compare thirst intensity scores before and after administration of intervention bundle among patients in experimental and control group.
- To assess and compare dry mouth scores before and after administration of intervention bundle among patients in experimental and control group.
- To determine the association of thirst intensity and dry mouth among patients with selected variables in experimental group and control group.

Subjects and Method: A true experimental pre test post test control group design was used.

The Convenience sampling technique was used to select the setting for study. Medical Intensive Care Unit, Neurosurgical ICU, Step Up ICU, Respiratory ICU and a total of 60 patients were also selected. The selected patients were randomly assigned to experimental and control group using lottery method, 30 in experimental group and 30 in control group. Interview technique was used to collect data for assessment of thirst intensity scores and Observation technique for assessment of dry mouth scores of patients admitted in intensive care units.

Ethical approval to conduct the study was obtained from Institutional Ethical Committee of MMIMS & R Mullana, Ambala, Haryana. Written informed consent was obtained from the study subjects regarding their willingness to participate in research project.

Intervention Protocol: Intervention bundle used in the study consisted of oral swabs, cold water spray squirt bottle, Dental Mirror, sterile artery forceps, sterile bowl and Distilled water.

Experimental Group-patients were explained regarding administration of intervention bundle. Assessment of patients' mouth and lips was determined firstly. Intervention bundle consisted of sterile cold wet oral swab wipes and sterile ice cold water sprays administered for in two sessions of 15 minutes each. First session was given in 15 minutes, patients received cold wet oral swab wipes in oral cavity 2 to 3 times and mouth spray with 5 to 6 sprays. A maximum of 9 wipes and 18 sprays of sterile water. After administration of intervention bundle, Post test 1 was taken after 15 minutes observation with the same tools. Then researcher waited for 15 minutes after post test 1 and session two was administered in 15 minutes with a maximum of 9 wipes and 18 sprays of sterile water. Post test 2 was taken after 15 minutes of session two.

Control group: control group was not given any intervention. Sample characteristics and clinical data (variables) were recorded in record sheet and thirst intensity and dry mouth scores were assessed only. After 30 minutes of pre test scores, post test 1 was taken and data were recorded. Then after, 30 minutes of post test 1, post test 2 was taken and data were recorded.

Intervention to the control group was given after accomplishment of Post test for ethical consideration.

Thirst intensity scale and dry mouth assessment scale were used to assess thirst and dry mouth of patients.

Data Analysis: Data was analysed using SPSS 16.0.

The data was analyzed and interpreted by employing descriptive and inferential statistics. Level of significance for the present study was taken as $p \leq 0.05$.

Results

The results of the study were Experimental and control group were homogenous and comparable in terms of demographic and clinical variables.

Both the groups were homogenous and comparable in terms of thirst intensity and dry mouth before the administration of intervention bundle with p value 0.13 and 0.38 for Thirst Intensity and dry mouth scores respectively among both groups.

Independent't' test was applied and the mean difference in thirst intensity scores between experimental group and control group was found to be statistically not significant (t=1.538, p=0.13) and the mean difference in dry mouth scores between experimental group and control group was also found to be statistically not significant (t=0.92, p=0.35) at 0.05 level of significance in pre test. Therefore, it can be concluded that the patients in experimental and control group had similar thirst intensity scores before the administration of intervention bundle.

Association of thirst and dry mouth was calculated with demographic and clinical variables to know which particular variables were having significant effect on increasing thirst and dry mouth among patients admitted in ICU. Patients with renal system diagnosis had increased thirst intensity in experimental group (p=0.009**). Patients with Gastrointestinal system diagnosis (p=0.009**) and Patients having drainage tube (0.009**) had increased dry mouth scores in experimental group thirst intensity score was higher in age group of 26-45 years group age in control group (f=3.076, p=0.043). F value is ANOVA value (ANOVA was applied for association, By F value, p vlue was calculated.) Patients who were on anti hypertensive drugs and having drainage tubes were having increased thirst intensity (p=0.100) in control group. patients who were on multivitamin drugs had increased thirst intensity (p=0.018*).

Table 1: Effectiveness of intervention bundle on thirst and dry mouth after session 1.

Variables	Group	Mean ±S.D	p value
Thirst Intensity	Experimental group	3.70±0.75	0.001**
	Control group	6.40±0.85	
Dry Mouth	Experimental group	0.97±1.24	0.001**
	Control group	2.60±0.28	

Thirst intensity and dry mouth scores of patients reduced significantly after session 1, the scores of post test 1, mean thirst intensity score was significantly lower (p=0.001**) in experimental group (mean=3.10±0.75) than control group (6.70±0.85) whereas mean scores of dry mouth was significantly lower (p=0.001**) in experimental group than control group. 0.001 p - value indicates that intervention is effective in decreasing thirst and dry mouth.

Table 2: Effectiveness of intervention bundle on thirst and dry mouth after session 2

Variables	Group	Mean ±S.D	p value
Thirst Intensity	Experimental group	3.10±0.75	0.001**
	Control group	6.70±0.59	
Dry Mouth	Experimental group	0.37±0.85	0.001**
	Control group	3.67±0.84	

Thirst and dry mouth scores again reduced significantly after administration of intervention bundle session 2, mean thirst intensity score in experimental group was significantly lower (p=0.001**) than the mean scores in control group whereas mean dry mouth score in experimental group was significantly lower (p=0.001**) than control group.

Table 3: Repeated Measures ANOVA showing comparison of thirst intensity score: pre test to post test 1 and post test 2 score in experimental group and control group.

Group	Time points	Mean±SD	F value	p- value
Experimental group	pre test	6.57±0.56	248.40	0.001**
	post test 1	3.70±0.75		
	post test 2	3.10±0.75		
Control group	pre test	6.33±0.60	6.0	0.004
	post test 1	6.40±0.85		
	post test 2	6.70±0.59		

The difference in mean thirst intensity scores at three points was compared using repeated measures ANOVA (RM ANOVA) . The difference in the mean thirst intensity scores at three points of time was found to be statistically significant (p=0.001**) in experimental group .

First session was given in 15 minutes, patients received cold wet oral swab wipes in oral cavity 2 to 3 times and mouth spray with 5 to 6 sprays. A maximum of 9 wipes and 18 sprays of sterile water. After administration of intervention bundle, Post test 1 was taken after 15 minutes observation with the same tools. Then researcher waited for 15 minutes after post test 1 and session two was administered in 15 minutes with a maximum of 9 wipes and 18 sprays of sterile water. Post test 2 was taken after 15 minutes of session two. Significant p value 0.004 in control group shows and explains that thirst and dry mouth intensity continuously increasing in patients. To know whether thirst intensity and dry mouth increases or decreases, RMNOVA was applied.

Table 4: Comparison of dry mouth score: pre test to 1st post test and 2nd post test score in experimental group and control group. N=60

Group	Time points	Mean±SD	F value	p-value
Experimental group	pre test	2.87±1.61	74.46	0.001**
	post test 1	0.97±1.24		
	post test 2	0.37±0.85		
Control group	pre test	3.20±1.12	5.32	0.008**
	post test 1	3.57±0.89		
	post test 2	3.67±0.84		

The difference in mean dry mouth scores at three points was compared using repeated measures ANOVA(RM ANOVA). The difference in the mean dry mouth scores at three points of time was found to be statistically significant (p=0.001**) in experimental group. Therefore, it can be inferred that the mean dry mouth scores of patients in control group were significantly different at three points of time and scores of dry mouth were decreasing significantly.

Table 5: Post Hoc test

Group	Three points time		M_D	SE_{MD}	p- value
Experimental group (n=30)	Pre-test	Post-test 1	2.86	0.17	0.001**
	Pre-test	Post-test 2	3.46	0.17	0.001**
	Post test 1	Post test 2	-3.46	0.17	0.001**
Control Group (n=30)	Pre-test	Post-test 1	-0.067	0.135	0.62
	Pre-test	Post-test 2	-0.367	0.089	0.001**
	Post test 1	Post test 2	-0.30	0.10	0.01*

LSD post hoc test was applied and pair wise comparison was done to find out where the significant difference occurred amongst three time points.

Thirst intensity decreased in experimental group between pre test scores and post test 1 scores, post test 1 scores and post test 2 scores. Hence, after administration of intervention bundle in patients of experimental group, thirst intensity significantly decreased. Therefore, intervention bundle was effective in reducing thirst among patients

Table 6: Post Hoc test

Group	Three points time		M_D	SE_{MD}	p- value
Experimental group (n=30)	Pre-test	Post-test 1	1.90	0.18	0.001**
	Pre-test	Post-test 2	2.50	0.27	0.001**
	Post test 1	Post test 2	0.60	0.16	0.001**
Control Group (n=30)	Pre-test	Post-test 1	-0.36	0.18	0.62
	Pre-test	Post-test 2	-0.46	0.17	0.01
	Post test 1	Post test 2	-0.10	0.05	0.83

The findings of LSD post hoc test also showed and confirmed that the scores of dry mouth were significantly decreasing where as in Control group scores were significantly increasing which assures the effectiveness of Intervention Bundle.

Dry mouth decreased in experimental group between pre test scores and post test 1 scores, post test 1 scores and post test 2 scores. Hence, after administration of intervention bundle in patients of experimental group, dry mouth significantly decreased. Therefore, intervention bundle was effective in reducing dry mouth among patients.

Discussion

The findings of this study states that patients in middle adulthood (age group 46-60 years) admitted in ICU or who are critically ill are more prone to experience thirst and dry mouth as symptom during their stay. More than One third (36.66%) of the patients in this age group were having thirst intensity and dry mouth. This finding is consistent with a study conducted by Nancy A stotts et al to identify predictors of thirst intensity in ICU which also concluded majority of patients were in age group of 46-60 years with mean age 55.7±14.5.[1]

The findings of the study that is showed significant decrease in mean thirst intensity (3.10±0.75) from pre test to post test 1 and post test 2 in experimental group (p=0.001**) and no significant decrease in mean thirst intensity score (6.70±0.59) in control group patients. There is also significant decrease in mean dry mouth (0.37±0.85) from pre test to post test 1 and post test 2 in experimental group (p=0.001**) and no significant decrease in mean dry mouth score (3.67±0.84) in control group patients. These findings are extremely consistent with a study conducted by Eun A Cho et al to assess effectiveness of ice chips on intensity of thirst and fluid intake in patients undergoing hemodialysis. The study showed results of significant decrease in thirst intensity

(2.28±0.85) from pre test to post test one and post test 2 in group 2 administered with ice (p=0.001).[13]

Another study conducted by Patrícia Aroni et al evaluate simple and safe strategies to mitigate thirst in the immediate postoperative period. The results of the study showed a significant decrease in thirst intensity in patients administered with ice from initial score 5.1 to 1.51. The findings of the present study also showed significant decrease in thirst intensity after administration of intervention bundle (cold water wet swabs and ice cold water spray), mean thirst intensity (3.70±0.75) in experimental group and no significant decrease in mean thirst intensity score (6.40±0.85) in control group.

In the present study, administration of Intervention bundle in experimental group significantly decreased mean thirst intensity (3.70±0.75) scores (p=0.001**) and mean dry mouth scores (0.37 ±0.85)(p=0.001**). The findings of the study are consistent with another study conducted by Arai SR et al to assess effectiveness of intervention bundle on thirst intensity and dry mouth. The findings revealed significant decrease (p=0.001**) in thirst intensity in experimental group than control group. The findings of the study also showed that the Usual Care group was 1.9 times more likely to report dry mouth compared to the Intervention Group for each additional assessment ($p < 0.04$).[12]

Conclusion

Thirst and Dry mouth are being the most neglected stressors during nursing care in ICU and post operative recovery unit. The present study focuses on assessment of thirst and dry mouth in critically ill patients and also association of clinical variables of patients with thirst and dry mouth. Proper dissemination of information should be done regarding the beneficial effects of ice cold water in reducing thirst and dry mouth of ICU patients

The study concludes that intervention bundle was effective in decreasing thirst intensity and dry mouth among ICU patients and also importance of integrating a practice of routine protocol to assess thirst intensity and dry mouth among critically ill patients at frequent intervals.

Thirst intensity and dry mouth should be monitored and evaluated as a part of the ICUs' quality management program, utilizing a variety of quantitative and qualitative approaches.

Conflict of Interest. No conflict of Interest.

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Ethical approval to conduct the study was obtained from Institutional Ethical Committee of MMIMS & R Mullana, Ambala, Haryana.

The study have also been registered under clinical Trials. gov NCT03215251.

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Minimally Invasive Surgical Techniques– An Emerging Trend in Periodontics: A Review

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Abstract

Minimally invasive dentistry is a concept that preserves dentition and supporting structures. However, minimally invasive procedures in periodontal treatment are supposed to be limited within periodontal surgery, the aim of which is to represent alternative approaches developed to allow less extensive manipulation of surrounding tissues than conventional procedures, while accomplishing the same objectives. In this review, the concept of minimally invasive periodontal surgery (MIPS) is explained.

Keywords: *Surgery, Periodontitis, Incisions, Flap, Bone.*

Introduction

Periodontitis is defined as the inflammation of the periodontal tissues that is present beyond the gingiva and causes the destruction of the attachments of connective tissue. If a periodontal disease occurred, we can opt for therapies to treat them. Periodontal therapy ideally arrests the progression of the disease and can regenerate the lost attachment apparatus of the connective tissues. Since the early 1980s it has become quite evident that minimally invasive techniques for intervention in some areas have produced lesser complications with a reduced risk of patient morbidity.(1) This has given rise to the idea of minimally invasive (MI) treatment primarily aiming at minimizing trauma of any interventional treatment and also at the same time achieving satisfactory therapeutic results.(2) More and more procedures are being re-evaluated worldwide with a view to reducing operative trauma. Due to its better advantages clinicians attempted to perform more procedures as minimally invasive as possible .

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This same concept has been advented into dentistry under the broad term " MINIMALLY INVASIVE SURGICAL TECHNIQUES "(MIST) in periodontal therapy. Intrabony defects are treated with periodontal regeneration using various principles . These include

- Use of barrier membranes,(3,4)
- Demineralized freeze-dried bone allograft,(5)
- A combination of barrier membranes and grafts (6,7) and
- Enamel matrix derivative (EMD)(8,9)

Data from clinical trials and meta-analyses establish that these approaches provide benefits in terms of clinical attachment level (CAL) gain and probing pocket depth reduction as compared with access flap alone.

History of MIST: Minimally invasive surgery is a surgical approach for performing a bone grafting procedure utilizing a much smaller incision than has been traditionally used.

Initially, harrel and Rees (1995) proposed the minimally invasive surgery (MIS) with the aim of producing minimal wounds, minimal flap reflection and gentle handling of the hard and soft tissues.

Cortellini and Tonetti (2007) proposed a papilla preservation flap in the context of a minimally invasive, high-power, magnification-assisted surgical technique,

in order to provide even greater wound stability and protection and to limit further patient morbidity.

Rationale Behind MIST:

- Reduction of operative trauma
- Increase in wound stability
- Increase in flap stability
- Improvement of primary closure of wound
- Reduction of surgical chair time
- Reduction of postoperative discomfort for the patient
- Reduced recovery time

Indications for MIST:

- Isolated, interproximal bone defect, not extending beyond the interproximal site
- Periodontal defects in the borders of edentulous areas
- Periodontal defects that extend buccally/lingualy from inter proximal site
- Multiple separate defective sites in a single quadrant.

Contra-Indications for MIST:

- Generalized horizontal bone loss
- Multiple interconnected vertical bone loss

Considerations for MIST:

- All incisions are designed to conserve soft tissues
- Separate incisions are performed, continuous incisions are avoided
- Vertical releasing incisions are avoided
- Coverage of graft/membrane by soft tissue is achieved to promote periodontal regeneration, for example, if the bony defect is in esthetic areas, incision is given in palatal papilla[10]
- Tissues are reflected by sharp dissection or combination of blunt and sharp
- Adequate visualization of the procedure requires magnification and light source. Surgical microscope, loupes ×3.5 magnification can be used.
- Root surface debridement becomes difficult as minimal flap reflection is performed to preserve tissues. Mechanical debridement can be performed using the tip of curette inserted vertically and shank held parallel to the tooth surface. Ultrasonic scalers can be used to remove the granulation tissues
- Placement of bone graft material – plastic plunger gun can be used for precise placement of graft material
- Interproximal site can be closed by vertical mattress sutures. 6-0 resorbable suture can be used.

Techniques

The most popular MIS techniques are as follows:

Conventional papilla preservation flap[11]: This technique was introduced by Takei et al . The objective of this method is to to keep the papilla intact in areas with more than 3 mm interdental spaces. This method uses sulcular incisions around each tooth. In this method there is no incision being made through the facial interdental papilla, but with a sulcular incision on the lingual/palatal flap along each tooth with a semilunar incision made across each interdental papilla. This incision dips apically from the line angles of the tooth so that the papillary incision line angle is at least 5 mm from the gingival margin allowing the interdental tissues to be dissected from the lingual or palatal aspect so that it can be elevated intact with facial flap.

Modified papilla preservation flap[12]: Cortellini et al. proposed this design as a modification of the conventional papilla preservation flap. It was popularized by Cortellini as MIST. A horizontal incision is traced in the buccal gingiva of the interdental space at the base of the papilla and the papilla is elevated toward the palatal aspect. This technique is most suitable for interdental papilla which are thick and interdental spaces which are wide.

Simplified papilla preservation flap (modified minimally invasive surgical technique) [13]

Further modification of the the above mentioned technique was given by Cortellini . This is because it is best suited for narrow interdental spaces (≤2 mm). An oblique incision instead of horizontal incision is traced across the buccal aspect of the interdental papilla and the papilla is elevated toward the palatal aspect.

Single incision to harvest subepithelial and de-epithelized connective tissue graft[14]: This is a technique to harvest connective tissue graft. It uses only a single incision . This incision is placed at an angle

of 90° to the bone with no epithelium removed. This facilitates the readaptation of the separated tissue.

Pinhole surgical technique [15]: Pinhole surgical technique was designed by Chao. He came up with this technique to overcome the problems associated with periodontal plastic surgical procedures which was done conventionally as It needed the use of releasing incisions, flap elevations, coronal approach for the entry incision and graft placement. An 2-3 mm of small horizontal incision is made in the mucosa covering the bone near the base of the vestibule, apical to the recipient site. A full-thickness flap is raised which is extended coronally and horizontally such that four papillae are involved. Suturing is not required at the entry incision.

Buttonhole technique [16]: This technique is widely used to correct of ridge deficiencies which are very mild in the sites of implant or fixed partial dentures. This causes to decreased flap tension allowing for more precise primary incision closure .

Single tooth flap technique [17]: Single tooth flap approach consists of a mucoperiosteal flap elevated on one side (buccal or oral), leaving the soft tissues on the opposite side intact. It is indicated in intraosseous defects involving the interproximal aspect and exhibiting limited to no extension on the lateral/palatal side.

Tunnel technique [18]: The procedure aims at creating a multi-envelope supraperiosteal bed for the placement of connective tissue graft under a pedicle flap without any external incision.

Flapless punch approach for socket preservation[19]: Flapless punch approach for socket preservation technique is preferred in areas with deficient amount of keratinized tissue. The rationale behind flapless approach is to isolate implant and/or grafted socket from oral cavity and also to obtain an inclusive Guided bone and tissue regeneration effect while preserving circulation and esthetic soft-tissue contours.

Indirect sinus lift procedure for sinus augmentation[20]: The technique involves 1-3 mm wide osteotomy site, minimal instrumentation with closed graft thereby requiring less time and expertise.

Complications:

Post-operative healing: The development of minimally invasive surgery has greatly reduced the amount of complications and side effects in the post-operative period. In the immediate post-operative period, the main problem is represented by the primary closure of the surgical wound. Following traditional regenerative periodontal surgery based on papilla preservation flaps, Cortellini and Tonetti (2000) reported 70% of primary closure of the surgical wounds .

Conclusion:

Many studies assure the effectiveness of MIST by the enhancement of clinical parameters and reducing patient morbidity, but there is still a need to confirm the effectiveness of such techniques in periodontal surgery when compared with other conventional ones.

Ethical Clearance: Nil

Source of Funding: Nil

Conflict of Interest: Nil

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Knowledge on Basic Life Support among Arts and Science Students

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Abstract

Introduction: Basic life support (BLS) is the medical care which is used for victims of life threatening illnesses or injures until they can be given full medical care at hospital. It can be provided by trained medical personnel, including emergency, paramedics and lay persons who have received BLS training.

Aim: The study aims to assess the level of knowledge regarding BLS among Arts and Science students, SRM Institute of Science & Technology, Kattankulathur.

Methodology: Non experimental descriptive research design was adopted to assess the knowledge regarding BLS among Arts and Science students at SRM Institute of Science & Technology. 120 students who fulfilled the inclusion criteria were selected by using non probability convenient sampling technique. Structured questionnaires were used to assess the demographic variables and knowledge on BLS among students.

Results: The analysis revealed that, majority 107(89%) of students had inadequate knowledge regarding BLS, 13(11%) of students had moderately adequate knowledge and no one had adequate knowledge about BLS. The study results revealed that, there was no significant association found between the level of knowledge regarding BLS among Arts and Science students with demographic variables .

Conclusion: The present study concludes that, majority 89% of Arts and Science students had inadequate knowledge regarding BLS and no one had adequate knowledge about BLS. Since BLS is an important life saving techniques, teaching programme can be planned on BLS for Arts and Science students. Thereby their knowledge on BLS can be improved.

Keywords: *Knowledge, Basic life support, Arts and Science students.*

Introduction

Basic life support (BLS) is the medical care which is used for victims of life threatening illnesses or injures until they can be given full medical care at hospital. It can be provided by trained medical personnel, including emergency, paramedics and lay persons who have received BLS training. BLS is generally used in the pre hospital setting and can be provided without medical equipment.[1]

Many countries have guidelines on how to provide BLS which is formulated by professional medical bodies in those countries. The guidelines outline algorithms for the management of a number of conditions, such as cardiac arrest, chocking and drowning. BLS generally does not include the use of drugs or invasive skills can be contrasted with the provision of Advanced Cardiac Life Support (ACLS). The most laypersons can master

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BLS skills after attending a short course. Fire fighter, lifeguards and police officer are after required be BLS is also immensely useful for many other professions such as they care providers, teacher and personnel and social workers especially working in the hospitals and ambulance drivers.[2]

Cardiopulmonary resuscitation (CPR) provided in the field increase the time available for higher medical responders to arrive and provide ALS care. An important advance in providing BLS is the availability for the automatic external defibrillator or AED. This improves survival outcomes in cardiac arrest cases. Healthy people maintain CABs by themselves. In an emergency situation, due to illness or trauma, BLS helps the patient ensure his or her own CABs, or assist in maintaining for the patient who is unable to do so. For airways, this will include manually opening the patient airway (head tilt or jaw thrust) or possible insertion of oral (oropharyngeal airway) or nasal (nasopharyngeal airway) adjuncts, to keep the airway unblocked patient. For breathing, this may include bleeding control or (CPR) techniques to manually stimulate the heart and assist its pumping action . About 75% - 80% of all out hospital cardiac arrest happen at home and approximately 25% of sudden cardiac arrest victim die without getting immediate basic life support so effective basic life support provide immediately after cardiac arrest an double the value between the life and death for a loved one.[3]

Studies have also identified differences in the quality of CPR/BLS performed by various health care providers. Often chest compression is performed in adequately with slow rates of compression and inadequate depth of compression. Previous studies of CPR/BLS knowledge and skills have focused on other main stream health professions. The certificate is designed to provide competencies, skills and knowledge necessary to respond effectively and safely in first aid situations.[4]

CPR provided in the field increases the time available for higher medical responders to arrive and provide ALS care. An important advance in providing BLS is the availability of the automated external defibrillator or AED. This improves survival outcome in cardiac arrest cases.[3]

Jones A Y(2014) a study was conducted to evaluate the performance of staff nurse in general hospital and nursing homes in a survey method. Result showed that 86% of the nurse performed CPR in bed without support and 55% had to turn their head or back to look at the ECG monitor during the procedure. This survey suggests that there is a need to review the support given to the nurses to ensure safe administration of CPR procedure in general ward management.[5]

Basic life support involves the external support of circulation and ventilation for a patient with cardiac or respiratory arrest through basic life support, rapid intervention is the key to success and critical in preventing biologic death of brain cells. It is important to remember that indicated good basic life support is better than basic life support but even bad basic life support is a million times better than no basic life support at all.[3]

The present study aims to assess the level of knowledge regarding Basic Life Support (BLS) among Arts and Science students at SRM Institute of Science & Technology, Kattankulathur, Kancheepuram district, tamilnadu".

Methodology

The research design chosen for the study was Non-experimental descriptive research design. The study was conducted at SRM College of Arts and Science Kattankulathur, Kancheepuram district. In this study, the samples constituted of students who were studying I year B.Sc. Physics and B.Sc. Chemistry.120 students those who fulfilled the inclusion criteria were selected by Non-probability convenient sampling technique. The inclusion criteria include a. Students who were willing to participate in the study, b. Students who were studying I year B.Sc. Physics and B.Sc. Chemistry, c. Students who were present at the time of data collection. The exclusion criteria include a. Students who underwent any online courses/short term courses on BLS.

Development and Description of the Tool: It consists of two sections. Section A comprised of structured questionnaire to assess the demographic variables of students which includes age, sex, educational status, family monthly income, previous knowledge about BLS and source of information.

Section B pertained to assess the knowledge on BLS among the students by Structured questionnaire. It consisted of 25 closed ended multiple choice questions. The correct answer of each question was allotted with one mark and the wrong answer for each question was allotted with zero mark. The scores were interpreted as adequate knowledge (>70%), moderately adequate knowledge (51-70%) and Inadequate knowledge (<50%).

Reliability of the Tool: Reliability of the tool was established by split half method. The coefficient correlation r = 0.75 which was very high. Hence, the tool was considered reliable and feasible for proceeding with the main study.

Ethical Consideration: The research proposal was approved by research committee of SRM college of Nursing, SRM university, Kattankulathur, Kancheepuram district. Permission was obtained from Dean, SRM College of Nursing and Dean, SRM College of Arts and Science. Informed consent was obtained from the study participants, after explaining the nature and duration of the study. Assurance was given to the individual that report will be kept confidential.

Results

Regarding the demographic variables of Arts and Science students, 60(50%) of students belonged to the age group of (17-18 yrs), 59(49%) were in the age group of (18-19 yrs), 1(1%) were in the age group of (19-20). Considering the sex, 59 (49%) were male and 61 (51%) were female. Considering the education, 66(55%) of students were studying B.Sc. . Physics and 54(45%)of students were studying B.Sc. Chemistry. Considering the family income, 13(11%) student's family income was Rs.1590-Rs.4726, 33(28%) of student's family income was Rs.4727-Rs.7877, 33(28%) of student's family income was Rs.7878-Rs.11816, 41(34%) of student's family income was Rs.11817-Rs.15753. Considering the previous knowledge on BLS, 82(68%) of students had previous knowledge about BLS and 38(32%) of students had no knowledge about BLS. Considering the source of information, 28(23%) of students have got information from media, 56(47%) of students have got information from relatives, 36(30%) students have got information from friends.

Table 1: Frequency and percentage distribution of level of knowledge on BLS among Arts and Science students N=120

S.No.	Knowledge level about BLS	No. of students (n)	Percentage Distribution %
1	Inadequate Knowledge	107	89
2	Moderately Adequate Knowledge	13	11
3	Adequate Knowledge	0	0

The analysis revealed that, majority 107(89%) of students had inadequate knowledge regarding BLS, 13(11%) of students had moderately adequate knowledge regarding BLS and no one had adequate knowledge about BLS.

Table 2: Association of level of knowledge regarding BLS among Arts and Science students with their demographic variables. N=120

S.No.	Demographic Variable	Class	Knowledge level about BLS		Chi-Square value	DF	P-Value
			Inadequate Knowledge	Moderate Knowledge			
1	Age in years	17-18 Years	54	6	0.230	2	0.892
		18-19 Years	52	7			
		19-20 Years	1	0			
2	Gender	Male	53	6	0.053	1	0.818
		Female	54	7			
3	Educational Status	B.Sc. Physics	58	8	0.252	1	0.616
		B.Sc. Chemistry	49	5			
4	Family Income Per Month	Rs.1590 - Rs.4726	11	2	1.192	3	0.755
		Rs.4727 - Rs.7877	31	2			
		Rs.7878 - Rs.11816	29	4			
		Rs.11817 - Rs.15753	36	5			
5	Previous knowledge about BLS	Yes	75	7	1.414	1	0.234
		No	32	6			
6	Source of Knowledge	Media	24	4	0.579	2	0.749
		Relatives	50	6			
		Friends	33	3			

The results revealed that, there was no significant association found between the level of knowledge regarding BLS among Arts and Science students with their demographic variables such as Age, Sex, Educational status, Family income, Previous knowledge about BLS and Source of information.

Discussion

Basic life support is a process of externally supporting the circulation and respiration of a person who has a cardiac or respiratory arrest in order to maintain life until advanced life support is available. The purpose of life support is for oxygenating the vital organs such as brain and heart until appropriate definitive medical treatment can restore the normal heart and ventilator action.[3]

In a normal and healthy individual, the life process can be achieved by the physiological and physical process on their own but there are certain moments like accidents which,need on the spot attention to pull the victim out of trauma or crisis. The occurrence of such the emergency is obviously unpredictable. Most of the time emergencies would be airway obstruction,apnoea, blood loss and cardiac arrest.[6]

The present results showed that, majority 107(89%) of students had inadequate knowledge regarding BLS,13(11%) of students had moderately adequate knowledge regarding BLS and no one had adequate knowledge about BLS. The results revealed that, there was no significant association found between the level of knowledge regarding BLS among Arts and Science students with their demographic variables such as Age, Sex, Educational status, Family income, Previous knowledge about BLS and Source of information.

Alafia (2014) conducted a study to assess the knowledge of basic life support among under graduate other medical personnel, clinical nurses and lay persons throughout turkey. The questionnaire investigated the demographic characteristics of the subject, the knowledge of the theoretical and practical aspects of basic life support and personal experience and attitudes related to basic life support. The findings are compared to the other participants, individuals with previous emergency experience and those who had previous basic life support training answered significantly more the theoretical questions correctly. However neither of those of these groups performed significantly better than the other participants in the practical questions.[7]

Sudden cardiac death is the most common cause of death in developed countries. In US the incidence of sudden death is 2,50,000 per year. Only 2% to 15% of the patients suffering from sudden cardiac reach the hospital. The risk of sudden cardiac death from coronary heart disease in adults is estimated to be about 1per,1000 adults of 35 years and older per year. So being trained to perform BLS can make the difference between life and death for a victim. Every students must know about this life support's in their life. This may help them to save the life of the individual.[8]

Effective BLS provided, immediately after cardiac arrest can double a victim's chance of survival. Death from cardiac arrest is not inevitable. If more people lives could be saved. CPR can restore circulation oxygen reach blood to the brain which can prevent permanent brain damage or death that occurs within 4-6 minutes. A person may need CPR which he suffers from drug overdose, heart attack, blood loss, stroke, drowning, electrocution, suffocation, chocking where the heart beat and breathing has to be restored. If a victim receives this crucial help of BLS in the form of mouth to mouth resuscitation and rhythmic chest compression, it can add vital minutes to his/her life while awaiting the arrival of an emergency medical technician.[9]

Conclusion

The study concludes that, majority 107(89%) of Arts and science students had inadequate knowledge regarding BLS and 13(11%) of students had moderately knowledge regarding BLS while none had adequate knowledge about BLS. BLS is generally for everyday life, in which it is used to resuscitate victims of threatening illness or injuries. It is generally used in prehospital setting and can be provided without medical equipment. BLS helps to ensure the CAPs. Since it is an important life saving techniques, teaching programme can be planned on BLS for Arts and Science students. Thereby their knowledge on BLS can be improved.

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Conflict of Interest: Nil

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Effectiveness of Structured Teaching Programme on Knowledge and Practice of Safety for Women

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Abstract

As India races towards becoming an economic superpower, the country is lacking in women's safety with an alarming number of women succumbing to road accidents and fire related deaths every year.(1) The present study aimed to evaluate the effectiveness of structured teaching programme on knowledge and practice of safety for women among female nursing students studying at selected nursing college in Pune city. Non-experimental descriptive design was used to assess the 122 female nursing students' level of knowledge and practice regarding 'women safety.' To select the samples, Non-Probability convenient sampling technique was used. After Pre-test structured teaching programme were implemented. Result have shown that structured teaching programme were effective in improving the knowledge and practices of female nursing students regarding women safety.

Keywords: *Women safety, structured teaching programme.*

Introduction

"You can tell the condition of a Nation by looking at the status of its Women." very rightly said by Jawaharlal Nehru. Comparing the status of women with the ancient times, women now can be seen everywhere in every field working shoulder to shoulder with men and now they are even holding high offices and big positions in Indian administration. Still the area where the nation is falling back and is lacking is the safety and security of Indian women. (2)

All woman has the right to live in her community without fear of violence. The situation is same in cities and rural areas. Its observed that those who are living in lower economic condition were more vulnerable to all sort of abuses against women. (3)

Women's safety includes strategies, practices and policies which strive to reduce or prevent violence against women, including women's fear of crime. It involves freedom of expression and prevent from exploitation. This includes safe of drinking water, the existence of communal toilet facilities, slum improvement, gender sensitive Street designs, safe shopping centers and public transport systems.(4)

Gender-based violence is present at various levels, beginning with discrimination at birth, further perpetuated through discrimination in education, nutrition, employment, wages and direct/indirect acts of sexual aggression."Moroccan women have the right to live a decent life just like men, without being raped, or suffering violence that prevents them from being fully involved in the country's political, economic and social life. We ought to work towards this end and change this reality; by doing so, we'll secure freedom and dignity for every woman and build a healthier society," Said by Amina Azatraoui(5)

The UN Declaration on the Elimination of Violence Against Women states, "violence against women is a manifestation of historically unequal power relations between men and women" and "violence against women is one of the crucial social mechanisms by which women are forced into a subordinate position compared with men."(6)

Statement of the Problem: A comparative study to evaluate the effectiveness of structured teaching programme on knowledge and practice of safety for women among female nursing students studying at selected nursing college in Pune city.

Objectives of the Study:

1. To assess the pre-test knowledge and practices regarding women safety among female Nursing students.
2. To assess the post-test knowledge and practices regarding women safety among female Nursing students.
3. To determine the effectiveness of structured teaching programme regarding women safety among female Nursing students.
4. To find out the association between pre-test level of knowledge with their selected demographic variables
5. To find out the association between pre-test level of practices with their selected demographic variables.

Operational Definitions:

Women safety: In the study women safety means the rules, regulations and actions taken by the people and the government to protect the women in the society.

Structured teaching programme: In this study it refers to systematically planned teaching programme designed to provide information to 122 female nursing students regarding as achieved by knowledge score.

Hypothesis:

H_{o1} = There is no difference between pre-test and post-test knowledge score regarding 'Women Safety' among female Nursing students studying at selected colleges in Pune City.

H_{o2} = There is no difference between pre-test and post-test practice score regarding 'Women Safety' among female Nursing students studying at selected colleges in Pune City.

$H_{o\ 3}$ = There is no association between pre-test and post-test score regarding 'Women Safety' among female Nursing students studying at selected colleges in Pune City.

Research Design: Research design will be non-experimental descriptive design to find out the effectiveness of structured education on college student's knowledge and practices regarding understanding of women's safety at selected colleges in Pune.

Population: In the present study, the population is comprised of the college students studying in different Colleges across Pune.

Sample and sampling technique: A non-probability convenient sampling technique was used for selecting 122 female nursing students who met the set criteria during the period of data collection.

The following criteria were set for the selection of samples:

Inclusion criteria:

- Nursing student of selected nursing institution
- Those who are available at the time of the study
- Those who are willing to participate

Exclusion criteria:

- Those who are not willing to participate
- Those who were absent during data collection

Data collection technique and instruments: A study aimed at evaluating the effectiveness of structured teaching programme on knowledge and practice of safety for women among female nursing students studying at selected nursing college in Pune city. To collect the data for present study, self-structured knowledge questionnaire and practice checklist was selected as constructed.

Development of the tool:

The tool was developed based on:

1. Related review of literature guidelines, journals, reports and articles published and unpublished studies) were reviewed and used to develop the tool.
2. Guidance and consultation with the guide and subject experts.
3. Objectives of the study

A self-structured questionnaire and checklist was developed to assess knowledge and practice of nursing students regarding women safety

Description of the tool: A tool consists of three sections as follows:

Section 1: Demographic variables (age, gender)

Section 2: Checklist to assess the practice of nursing students regarding women safety.

Section 3: Self structured questionnaire to assess the knowledge of nursing students regarding women safety.

Content validity: To ensure content validity of the tool it was submitted to 15 experts. Three from Obstetrics and gynaecological nursing, three from community health nursing departments, three from medical surgical department, three from Child health nursing department and three from Psychiatric department. The experts were selected based on their clinical expertise, experience and interest in the problem being studied. They were requested to give their opinion on the appropriateness and relevance of items in the tool. As a whole the suggestions and comments of experts included grammatical corrections of the sentences. The modified tool contained 5 items after incorporating the suggestions.

Reliability: To measure the reliability of the tool, Karl Pearson Test-retest was used to establish a reliability of structure questionnaire on knowledge and checklist on practice regarding women safety among female nurses' students. Reliability was satisfactory, value of practice is 0.92 and value of knowledge is 0.80

Data Collection: pre-test was taken followed by 1-hour structured teaching programme then post-test score is achieved.

Description of demographic variables: According to the data collected from the Samples, 9 (7.37%) samples were in the age group of 17-19 years, 79(64.75%)samples were in the age group of 20-22 years, 22(18.03%) samples were in the age of 23-25 years and 12(9.83%) samples were in the age group of 26 and above

Total number of the female Nursing students who have attended Workshop/Seminar/Conference on women safety were 42(34.42%) and 80 (65.57%) of the students did not attend any of it.

The above table shows that 18(14.75%) of the female Nursing student's parents earned between 10,000-20,000, 24(19.67%) samples patents earned between 21,000-30000, 36(29.5%) samples parents earned between 31,000-40,000 and 44(36.06%) samples parents earned between 41,000 and above.

The study revealed that 62(50.81%) of the Nursing students were Hindu, 46(37.7%) were Christian, 7(5.73%) were Muslim and 7(5.73%) of the Nursing students belongs to other religion.

Related to Academic level, 33(27.04%) of the Nursing students were 1st year B.Sc. Nursing, 35(28.68%) were 2nd year B.Sc. Nursing, 26(21.31 were 3 rd year B.Sc. Nursing and 28 (22.95%) were 4th year B.Sc. Nursing.

Regarding Parent education, 3(2.45%) of the nursing student's parents were illiterate, 49(40.16%) were below 12th standard 62(50.81%) were Graduated and 8(6.55%) were Post-Graduated and Above.

About Residence, 26(21.31%) of the nursing students were hosteller, 60(49.18%) were non-hosteller and 36(29.05%) stays with parent/relative.

Comparison of pre-test and post-test knowledge score on female nursing students regarding women safety: To test the statistically significant difference between the mean pre-test and post-test knowledge scores of the female Nursing students regarding women safety. the following null hypothesis was stated.

Hypothesis$_{-01}$: The mean post-test knowledge score is higher than the mean pre-test knowledge score of women safety.

Mean post-test knowledge score of the female nursing students regarding women safety (11.12) are significantly higher than their mean pre-test knowledge scores (4.74). In order to find out the significant difference between the mean score of pre and post-test knowledge score of the female nursing students regarding women safety paired 't' test was computed. The calculated value is higher than the table value (T-test value 31.65), the null hypothesis was rejected and the research hypothesis was accepted. Hence the researcher concluded that gain in knowledge is not by chance but by structured teaching programme on women safety.

Comparison of the pre-test and post-test practice score on female nursing students regarding women safety.

To test the statistically significant difference between the mean pretest and post-test practice scores of the female nursing students regarding women safety, the following null hypothesis was stated.

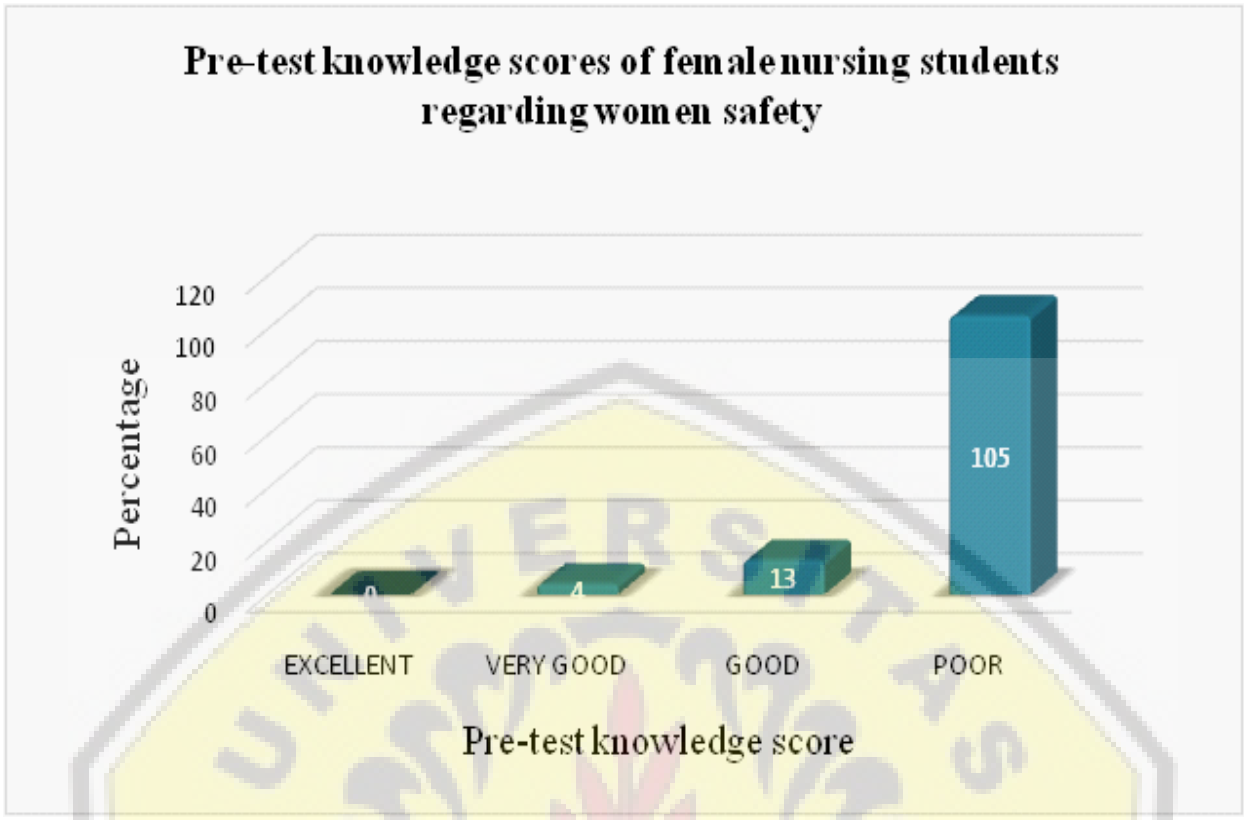

Figure 1: Distribution of samples according to the pretest knowledge scores regarding women safety.

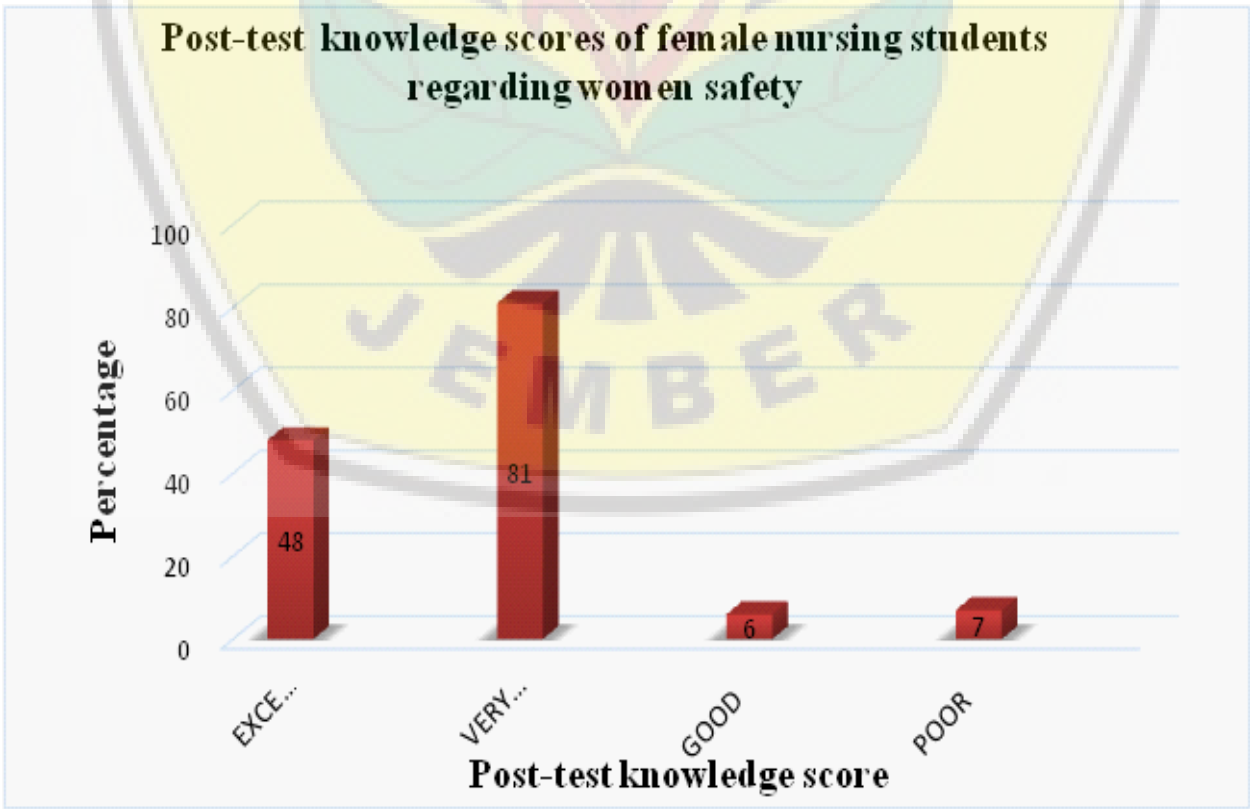

Figure 2: Distribution of samples according to the post test knowledge score of Female Nursing students

regarding women safety.

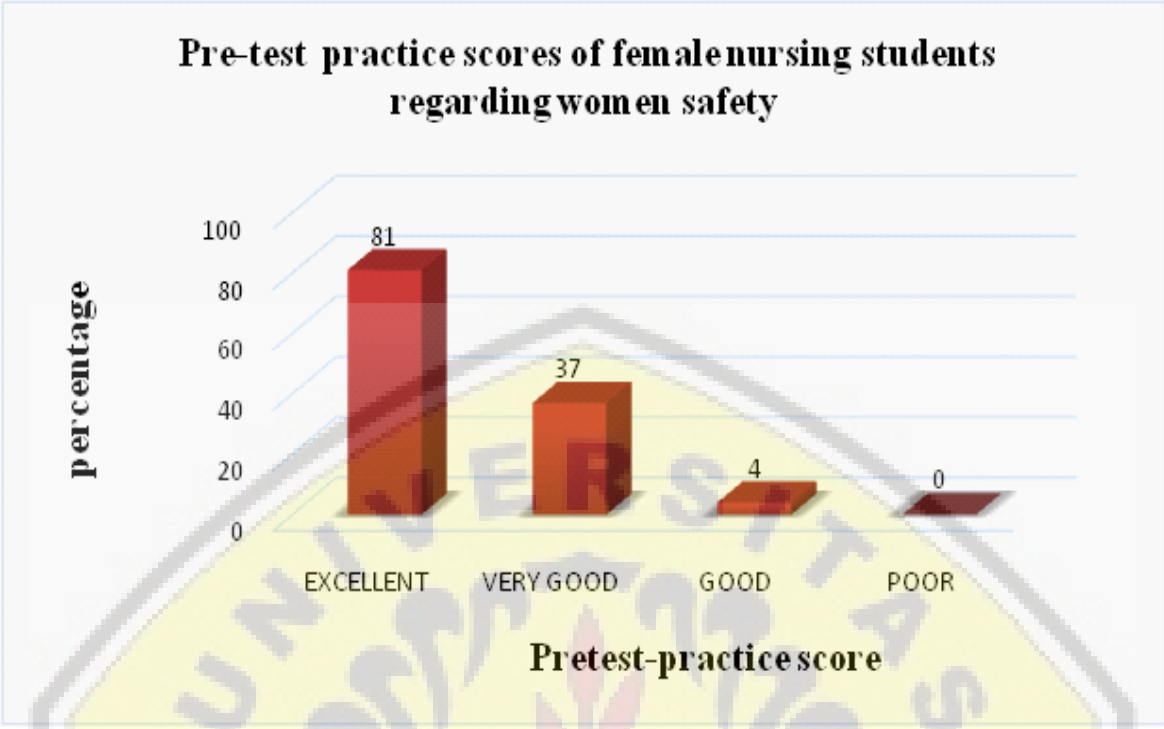

Figure 3: Distribution of samples according to the pre-test practice score of female nursing students regarding women safety.

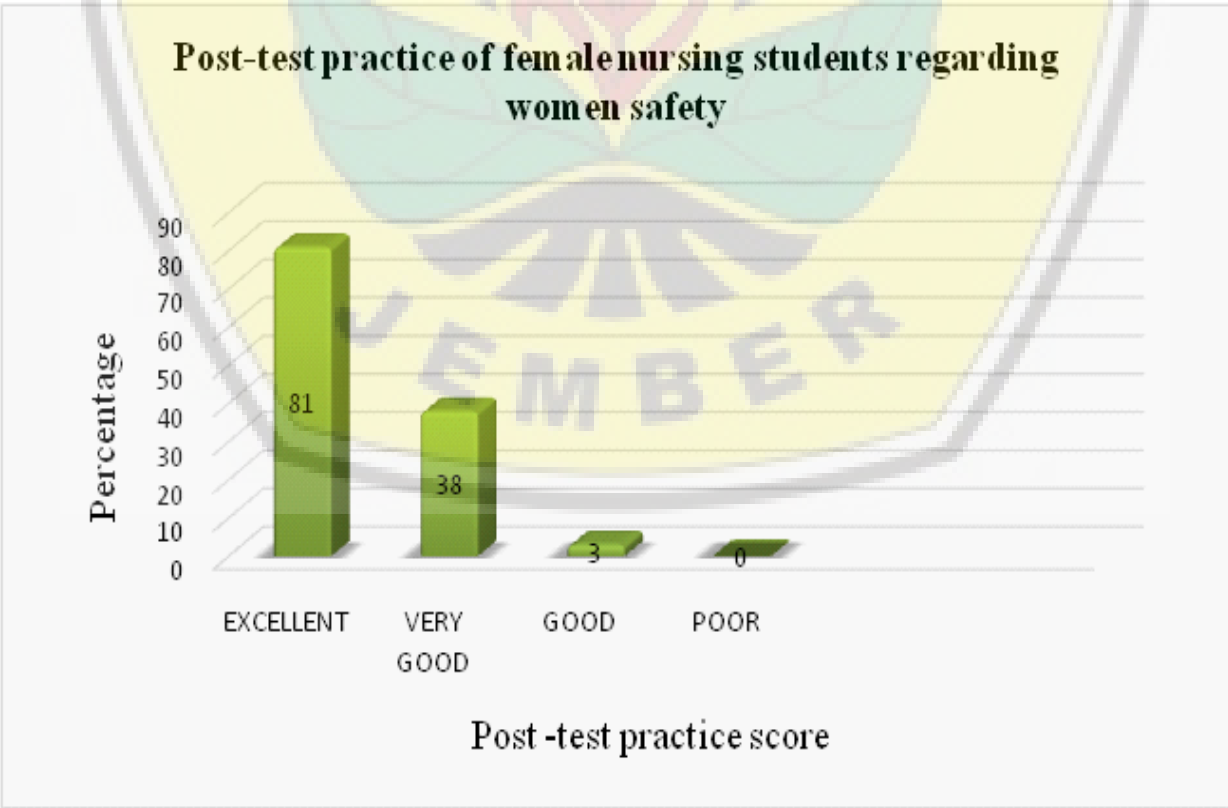

Figure 4: Distribution of samples according to the post test practice score regarding women safety.

Hypothesis-$_{02}$: The mean post-test practice score is higher than the mean pre-test practice score regarding women safety among female nursing students.

Mean post-test practice score of the female nursing students regarding women safety is 15.43, mean pre-test practice score of the female nursing students regarding women safety is 15.38. Though there is not much difference between the pre-test and post-test practice but the mean post-test practice score is significantly higher than their mean pre-test practice scores (15.38). In order to find out the significant difference between the mean score of pre and post-test practice score of the female nursing students regarding women safety paired 't' test was computed. The calculated value is higher than the table value (t-test value 0.17), the null hypothesis was rejected and the research hypothesis was accepted. Hence the researcher concluded that change of practice is not by chance but by structured teaching programme on women safety.

Association between the pre- test knowledge and practice scores of female nursing students regarding women safety and demographic variables

To identify the association between the pre-test knowledge scores on female Nursing students and the selected demographic variables. The following null hypothesis was stated

Table 1: Association between the pre- test knowledge score of female nursing students regarding women safety with the demographic variables

Demographic Variable	Frequency Numbers	Excellent	Very good	Good	Poor	Fisher's exact test
Age						
16-18 years	09	0	1	0	8	
19-21 years	79	1	2	11	65	0.602
22-24 years	22	0	0	3	19	
25 and above	12	0	0	0	12	
Attended any workshop/seminar regarding women safety previously				7		
Yes	42	0	3	11	32	0.071
No	80	2	0		67	
Religion						
Hindu	62	0	1	7	54	
Christian	46	1	2	9	34	0.320
Muslim	07	0	1	0	6	
Others, specify	07	0	0	0	7	
Income of the parents						
10,000-20,000	18	0	0	2	16	
21,000-30,000	24	0	2	3	19	0.881
31,000-40,000	36	0	1	4	31	
41 and above	44	0	1	4	39	
Academic level						
1st year BSc	33	0	2	2	29	
2nd year BSc	35	0	0	6	29	0.242
3 rd year BSc	26	0	1	6	19	
4th year BSc	28	0	0	3	25	
Parents education						
Illiterate	03	0	0	0	3	
12th Standard or below	49	0	2	8	39	0.977
Graduate	62	0	3	7	51	
Post-graduate and above	08	0	0	1	7	
Residence						
Hostel	26	0	1	4	21	
Non-Hostel	60	0	2	4	54	0.138
With parents/relatives	36	0	0	8	28	

Table 2: Association between the pre- test practice score of the female nursing students regarding women safety with demographic variable.

Demographic Variable	Frequency	Excellent	Very good	Good	Poor	Fisher's exact test
Age						
16-18 years	09	3	5	1	0	
19-21 years	79	31	40	7	1	0.042
22-24 years	22	7	14	1	0	
25 and above	12	11	1	0	0	
Attended any workshop/seminar regarding women safety previously						
Yes	42	14	24	3	1	0.177
No	80	36	37	7	0	
Religion						
Hindu	62	29	27	6	0	
Christian	46	21	23	1	1	0.086
Muslim	07	0	7	0	0	
Others, specify	07	3	3	1	0	
Income of the parents						
10,000-20,000	18	9	9	0	0	
21,000-30,000	24	7	15	1	1	0.021
31,000-40,000	36	15	17	4	0	
41 and above	44	17	23	4	0	
Academic level						
1st year BSc	33	10	16	6	1	
2nd year BSc	35	19	15	1	0	0.005
3 rd year BSc	26	5	18	2	1	
4th year BSc	28	18	9	1	0	
Parents education						
Illiterate	03	2	1	0	0	
12th Standard or below	49	16	28	4	1	0.870
Graduate	62	24	33	4	1	
Post-graduate and above	08	4	3	1	0	
Residence						
Hostel	26	11	14	1	0	
Non-Hostel	60	24	26	9	1	0.132
With parents/relatives	36	14	20	1	1	

Hypothesis-$_{03}$: There will be no significant association between the pre-test knowledge scores of female Nursing student's knowledge and selected demographic variables.

Recommendations:

- A comparative study can be done between nursing colleges related to women safety.
- A similar study can be conducted with large samples.
- Study can be done using the different method of teaching.
- Further studies can be conducted on knowledge and factors influence non – compliance of optional among the female nursing students.

Conclusion

The structured teaching programme through charts and PowerPoint presentation found to be effective in improving the knowledge and practice among female nursing students related to women safety. Through this study, researchers have come to the statement of conclusion that before the structured teaching programme the female nursing students had poor knowledge,but a

good Practice related to women safety. The raised post test score gained from the structured teaching programme suggested, effective in upgrading their knowledge about women safety and should be included in the academic curriculum of every Schools, Colleges or Universities which will help to increase the knowledge about women safety among the girl's students of our society and which will give confidence to them about how to be safe and secure, also it can help us to reduce the criminal offenses towards the girls or women's in the society or in the country.

Ethical Clearance:

1. The study proposal was sanctioned by the Symbiosis college of nursing ethical committee
2. Permission was obtained from the director of the college of nursing
3. Study was explained to participants and informed consent was taken from the participants
4. Confidentiality of data collected was maintained

Source of Funding: Self.

Conflict of Interest: There is a genuine need for the awareness and to provide a good knowledge and practices regarding women safety. In a recent decade woman or a girl of any age are unsafe and at risk for harassment and violence at any time. Researcher must be able to provide a good knowledge and practices of safety for women in every schools, colleges or Universities.

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An Assessment on Quality of Life Among Peri and Post-Menopausal Women in Semi Urban Area of Tamil Nadu: A Community based Cross-Sectional Study

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Abstract

Introduction: Menopause is the normal physiological process occurring between 45-55 years of age. Many deviations are developed during this phase in vasomotor, physical, psychosocial and sexual system of body which hampers quality of life. Therefore, this study was conducted to assess the menopausal related symptoms among peri and post-menopausal women and their impact on quality of life and to establish association between sociodemographic variables with quality of life of peri and post-menopausal women

Methodology: This is a community based cross-sectional study, which was conducted in a semi urban area, Sriperumbudur, Tamil Nadu, India for 6 months period. A total 250 women of 40 – 60 years were enrolled using multistage random sampling. MENQOL questionnaire (4 domains) was used. Data was analysed using t test, multivariate linear regression and correlation.

Results: The study group consists of 127(50.8%) women in peri menopausal group, 41(16.4%) in early post-menopausal group and 82(32.8%) in late post-menopausal group. Among 250, 105(42%) of the women's quality of life was affected. Pain in musculoskeletal system was commonest (75.61%) symptom. Age and menopausal status of women was significantly (p value <0.05) associated with all domains and total scores of QOL except vasomotor. BMI was significantly correlated with vasomotor domain.

Conclusion: The menopausal symptoms are affecting the quality of life of peri and post-menopausal women. Due to the lack of awareness majority of women do not seek medical treatment. Therefore, heavy campaigns on large scale need to be conducted to educate women and enable them to recognize the symptoms early.

Keywords: *Peri-menopause, MENQOL, early and late menopause, community-based, semi-urban area, quality of life.*

Introduction

Menopause is a normal physiological process in every women's life. It usually occurs between 45-55 years of age. It is defined as 12 months of amenorrhea after the last menstrual cycle. This process is the result of complete or partial absence of oestrogen release from the ovaries as well as depletion of ovarian follicles[1]. It marks the end of women's fertility.

India has a large population which has already crossed a mark of one billion with 71 million people over 60 years of age and the number of menopausal women about 43 million according to the third consensus meeting of Indian Menopause Society 2008. It has been estimated that the menopausal population in India will be 103 millionby the year 2026[2].

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During the menopausal period women experiences many symptoms including hot flushes,night sweats,sleep and mood disorders, impaired memory, lack of concen tration,nervousness,depression, insomnia because of fluctuation in oestrogen levels[3]. There are also some serious medical conditions related to menopause like osteoporosis caused due to the loss of bone tissue and risk of heart disease increases due to age related factors like increase in weight,blood pressure and cholesterol levels[4]. The duration, severity and impact of the menopausal symptoms vary from person to person and population to population[3]. Some women have severe menopausal symptoms that greatly affect their personal and social functioning and quality of life[4].

Public health systems are over burdened with problems of women of child bearing age, adolescent and infectious diseases. As a result of which, it hardly addresses the specific health problems of older women and they are often neglected. Factors like lack of awareness, poverty and gender bias prevent them from seeking medical help appropriately [5].

In India, there are many studies which associated relationship between quality of life and menopausal symptomsamong rural and urban women[6,7, 8]. But there are only, few studies which has portrayed quality of life of perimenopausal women[4,6]. Also, there is a huge lacuna of information of these women in semi urban areas. With this background, this study is being carried out in semi-urban area of Tamil Nadu to assess the menopausal related symptoms among peri and post-menopausal women and their impact on quality of life and to establish association between sociodemographic variableswith quality of life of peri and post-menopausal women

Methodology

This is a community based cross-sectional study, which was conductedin asemi urban area, Sriperumbudur, Tamil Nadu from January 2019 to June 2019, after obtaining ethical clearance from the institutional ethical board. The study population comprised of peri and post-menopausal women of age group 40 to 60 years.

Peri menopause or menopause transition begins is defined by the World Health Organisation and the North American Menopause Society as the two to eight years preceding menopause and one year following final menses[9]. Post menopause is defined as the period after 12 consecutive months of amenorrhea in the absence of other pathological or physiological causes[9].

Sample size required in estimating proportion (prevalence)was calculated with anticipated population proportion (p) as 37% [4] with 95% confidence interval and at 5% significance level including 10% non-responsive cases, sample size derived to be 279. Multi stage sampling (2stages) method was used to enrol the study subjects.

- **In stage 1 – Selection of Polling Booths:** According to Census of India, Sriperumbudur Town Panchayat is divided into 15 wards. It covers a total population of24,864 in which 12753 and 12,111 of males and females respectively [10]. According to Election Commission of India, there are totally 12 polling booths in this area [11]. Out of these, 3 polling booths were chosen by simple random sampling method using lottery method.
- **In stage 2 – Selection of study population from polling booths:** A complete list of all people above 18 years of age was collected from the voters list [11] of selected 3 polling booths. Women aged between 40 to 60 were shortlisted from the list. After which 85 women from each polling booth were selected by simple random sampling technique using computer generated random numbers. Women who gave consent and not taking any hormonal replacement therapy were included in the study.

The data was collected using pretested structured questionnaire which includes socio-demographic details, menopausal status and MENQOL[4,7] (Menopause Specific Quality of Life questionnaire). MENQOL comprises a total of 29 questions {Four domains-Vasomotor (3 questions), Psychology (7 questions), Physical (16 questions), Sexual (3 questions)}. The responses to the questions was adopted to a 2-point scale consisting of Yes and No options from a 6-point severity scoring pattern in the original version considering the difficulty to answer on the 6-point scale due to low level of education of the respondents[13]. Each 'Yes' answer carried 1 score whereas 'no' answer was considered 0 score. Total scores for each domain and also cumulative score of all domains were calculated. The subjects were then divided into three groups according to their age and menopausal status as perimenopausal (above 40 years and not attained menopause), early (attained menopause less than or equal to 5 years) and post-menopausal women (attained menopause greater than 5 years) [3].

This data was entered in MSExcel sheet and analysis was done using SPPS 21 version software. The descriptive statistics were expressed as frequencies, percentages. Also, Means and standard deviation was used to depict scores of MENQOL. Analytical statistics like t test was used to ascertain association between sociodemographic variables and quality of life scores and multivariate analysis via linear regression was also used. Correlation tests were performed for quantitative variables like BMI, age and per-capita income.p value of <0.05 was considered statistically significant.

Result

The study group consists of 250 women of which 127(50.8%) were in peri menopausal group, 41(16.4%) in early post-menopausal group and 82(32.8%) in late post-menopausal group. The mean age of the study participants was 50.18 (SD = 7.182), similarly for BMI, mean was 24.32 (SD = 3.084) and mean per capita income was 7319 (SD = 5218.6). According to educational status substantial amount of them were illiterate (33[13.2%]), 36(14.4%) of them had less than 5th grade of schooling. Most of them were homemakers (89.2%) out of 250 participants, only meagre were working.

Mean score and standard deviation of total scores of peri-menopausal, early and post-menopausal women were [Mean (6.95), SD (5.05)], [Mean (9.41), SD (4.3)] and [Mean (8.81), SD (4.42)] respectively. Among 250, 105(42%) of the women's quality of life was affected i.e., perimenopausal women 54 (42.51%). similarly, for early and late menopausal women shown in [Figure 1].

The most common symptom in peri menopausal group is aches in nape of neck or head (54.33%) whereas, severe pain in musculoskeletal system was common among early (75.61%) and late post-menopausal women (81.71%) and distribution of menopausal symptoms of sexual domain only perimenopausal women's approximately 20% was affected. In other domains, late menopausal women had symptoms of poor health, than the other group people. The sociodemographic variables of the study participants were associated with scores of quality of life in all domains of MENQOL using t test, age of women was significantly (p value <0.05) associated with all domains and total scores of QOL except vasomotor domain whereas BMI of the participants was only significant with vasomotor domain. Using one-way ANNOVA, menopausal status of women (peri, early and late) was significantly associated with quality of life scores except vasomotor domain [Table 1].

The scores of all the four QOL domains were correlated with quantitative variables like age, BMI and percapita income. Age was significantly correlated with all domains; BMI was significantly correlated with only vasomotor domain and percapita income with physical and psychosocial domain.

Multivariate analysis using linear regression was done with various QOL domains as dependent variables. Age (>50 years) was significantly (p value <0.05) associated with psychosocial, physical, sexual and total QOL scores. BMI (>24kg/m2) retained significance with vasomotor domain, Married women had significant association with sexual domain scores.

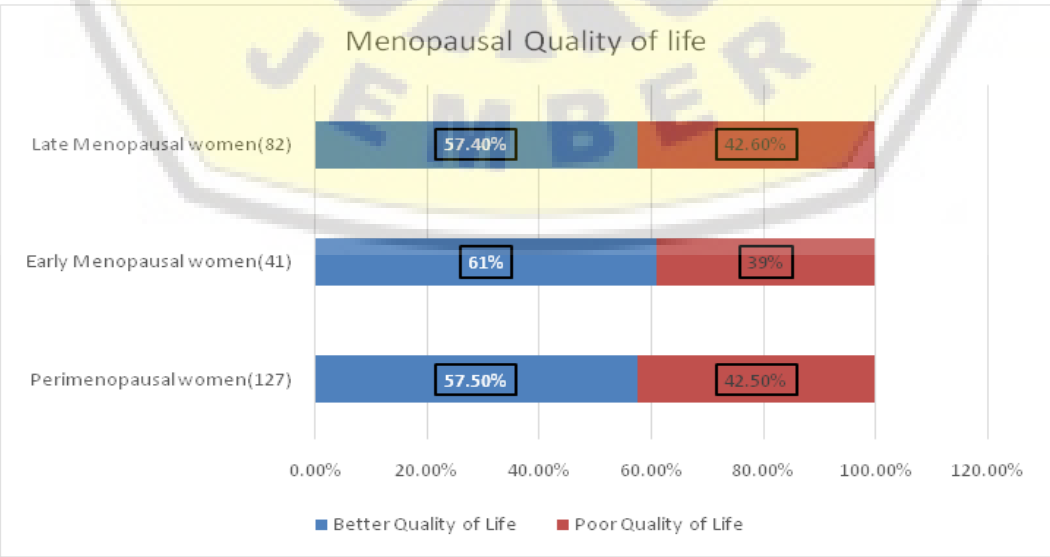

Figure 1: Menopausal Quality of Life

Table 1: Association of sociodemographic variables with quality of life scores

Socio demographic variables		Vasomotor DomainMean (SD)	Psychosocial DomainMean (SD)	Physical Domain Mean (SD)	Sexual Domain Mean (SD)	QOL Total ScoreMean (SD)
Age	<50 years	0.336(0.750)	1.312(1.57)	4.6(3.73)	0.632 (0.798)	6.88(5.106)
	>50 years	0.432(0.796)	2(1.65)	6.68(2.92)	0.08(0.272)	9.192(4.30)
	p value	0.328	0.01*	0.000*	0.000*	0.000*
BMI	<24 kg/m2	0.485(0.882)	1.642(1.665)	5.29(3.46)	0.351(0.64)	7.77(4.93)
	>24 kg/m2	0.267(0.609)	1.672(1.635)	6.03(3.53)	0.36(0.677)	8.33(4.75)
	p value	0.026*	0.88	0.098	0.89	0.36
Marital status	Married	0.37(0.768)	5.42(3.69)	1.49(1.527)	0.509(0.734)	7.823(4.965)
	others	0.413(0.790)	6.08(3.01)	2.04(1.855)	0.000(0.000)	8.533(4.568)
	p value	0.696	0.016*	0.195	0.000*	0.290
Education status	<5 std	0.32(0.704)	1.761(1.706)	5.85(2.882)	0.149(0.399)	8.09(4.071)
	>5 std	0.404(0.798)	1.617(1.629)	5.563(3.714)	0.432(0.714)	8.016(5.115)
	p value	0.49	0.543	0.566	0.0002*	0.916
No of Children	<2	0.38(0.792)	1.418(1.55)	5.17(3.58)	0.44(0.718)	7.412(4.93)
	>2	0.388(0.7415)	2.11(1.73)	6.55(3.17)	0.188(0.4754)	9.24(4.46)
	p value	0.95	0.001*	0.003*	0.001*	0.004*
Menopausal Status	Peri Menopausal	0.2834	1.251	4.724	0.629	6.95(5.05)
	Early Menopausal	0.390	1.512	6.707	0.073	9.41(4.30)
	Late Menopausal	0.536	1.963	6.914	0.085	8.81(4.42)
	p value	0.239	0.001#	0.000#	0.000#	0.001#

*p value <0.05 is significant using t test #p value<0.05 is significant using ANNOVA

Discussion

Life expectancy of women in India has been considerably increased to 69.6 years, therefore women are expected to spend almost a big part of lifetime in and around their menopausal phase[12]. This transitional phase that every woman will go through will encounter poor quality of life, if not intervened. Consequently, maintaining optimum quality of life among them is our priority. Hence quality of life of menopausal women was studied using MENQOL questionnaire. MENQOL was developed in 1996 and it's been applied in many studies in India[4,7].

As regards to the socio-demographic profile of the women, mean age was found to be 50.18 years (SD = 7.18) in this study as compared to study conducted by Nabarunkarmakar et al poomalar & Arunossalame in puducherry the mean age of menopause was found to be 45.93 SD=8.37 years [4], also a study conducted in Minia, Egypt by Nashwankamal and Amany E. Sudham the mean age of menopause is 48.9 SD=4 years[13]. About 1/3 rd of the women had low education level (<5th std), some of them were illiterate in our study which attributed to poor understanding of 6 point Likert scale of MENQOL and also reflected women's cooperation during conduction of the study whereas a study conducted in rural area of West Bengal [6,7] had more than half of illiterate women.

With respect to the frequencies of menopausal symptoms, In a study conducted among Qatari women by AbdulbariBener & Anasfalah the vasomotor (71%) and sexual symptoms (66%) were more prominent in perimenopausal women than early and late postmenopausal women [14], whereas, in the current study vasomotor symptoms is more likely present in late postmenopausal group but sexual discomfort was more in perimenopausal women. In a study conducted by Poomalar and Bupathyarounassalam in Puducherry showed that psychosocial symptoms (93.2%) were more prominent among the late postmenopausal group[4], similar results were also found in the current study.

Results of the current study revealed that, there was a significant association of age of women with quality

of life scores, this could be that as the age increases the severity of symptoms also increases leading to poor quality of life (Table 1), comparable findings were found by Mohamed HA et al [3]and by a study conducted in West Bengal[6,7]. Whereas, BMI was significantly associated with vasomotor domain stating that as the BMI increases vasomotor symptoms tends to increase. Menopausal status was significantly associated with MENQOL scores;however, studies did not find a relationship between the QOL and menopausal status of women. A study done in Minia, Egypt[13]states that higher educated women, working women had significant relationship with QOL scores whereas in our study education was significant only with sexual domain of QOL. Occupation variable in our study had no association affirming that 3/4th of the women were homemakers. Similar findings were found in studies conducted in Indian set up [8,15].

The limitation in our study are, all the participants were selected from one semi-urban area randomly, so the results cannot be generalized to entire population. Natural ageing process is a potential confounder which was not eliminated since it was a cross-sectional study. The chance of recall bias could not be ruled out as the women were providing retrospective information.

Conclusion

It is evident from the results that the menopausal symptoms are affecting the quality of life of peri and post-menopausal women. Age, BMI, Marital status and education are some of the factors which affects quality of life scores. Due to the lack of awareness majority of women do not seek medical treatment for menopausal symptoms affecting quality of life. Therefore, heavy campaigns on large scale need to be conducted to educate women and enable them to recognise the symptoms early, to seek timely treatment for the same to improve their quality of life.

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Combination of Naturopathy and Yoga on VO2 Max among Hypertensive Patient

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Abstract

The purpose of the present study was to investigate the combination of naturopathy and yoga on vo2 max among hypertensive patient. To achieve the purpose of the study thirty hypertensive patient were selected from, Sivganaga District, Tamil Nadu, India during the year 2019. The selected patient were divided into two equal groups consists of 15 patient each namely experimental group and control group. The experimental group underwent acombined naturopathy and yoga programme for six weeks. The control group was not taking part in any training during the course of the study. Vo2 max was taken as criterion variable in this study. The selected subjects were tested on Vo2 max was measured through Cooper's 12 Minutes Run or Walk Test (stop watch and heart rate monitor). Pre-test was taken before the training period and post-test was measured immediately after the six weeks training period. Statistical technique 't' ratio was used to analyse the means of the pre-test and post test data of experimental group and control group. The results revealed that there was a significant difference found on the criterion variable. The difference was found due tocombined naturopathy and yoga given to the experimental group on VO2 max when compared to control group.

Keywords: *Combined naturopathy and yoga, VO2 max and 't' ratio.*

Introduction

According to Vrinte[1] Yoga is a methodical effort towards self-perfection by the development of the potentialities latent in the individual person. It is a process by which the limitations and imperfections can be washed away resulting in a super human in race. Alaguraja and Yoga[2] Yoga is universally benefiting all people of all ages. The study of Yoga is fascinating to those with a philosophical mind and is defined as the silencing of the mind's activities which lead to complete realization of the intrinsic nature of the Supreme Being. The science of Yoga Nidra is based on the receptivity of consciousness Yoga, et. al[3]. In Stance of World Health Organization (WHO) Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have a negative effect on health, leading to reduced life expectancy and/or increased health problems.

Today's there is an escalating emphasis on appearing smarter, feeling better and living longer. In order to achieve these ideals as, scientific proof tells us that one of the keys is high fitness. On the contrary, acquiring these ideals is a challenge because today physical activity is less a part of our daily livestyle. Kerr[4] Training is not a recent discovery. In ancient times, people systematically trained for military and Olympic endeavors. Today athletes prepare themselves for a goal through training.

Alaguraja., et. al[5] Today, sports have become a part and parcel of our culture. It is being influenced and does influence all our social institutions including education, economics, arts, politics, law, mass communication and even international diplomacy. In fact its scope is awesome. Yoga is a system of exercises which helps the mind and body in order to achieve tranquility and spiritual insight. Yoga therapy that includes Aasanas and Pranayama is fast advancing as an effective measure to prevent physical and psychological disorders; by changing the human mind and body in a holistic way.[6.]

Strukic, P. J[7] VO2 max is the maximal oxygen uptake or the maximum volume of oxygen that can be utilized in one minute during maximal or exhaustive

exercise. It is measured as milliliters of oxygen used in one minute per kilogram of body weight.

Methodology

Selection of subjects: The purpose of the study was to find out the combination of naturopathy and yoga on vo2 max among hypertensive patient. To achieve this purpose of the study thirty hypertensive patients were selected as subjects at random. The age of the subjects were ranged from 25 to 40 years.

Selection of variable

Independent variable

- Combined Naturopathy and Yoga

Dependent variable

- VO2 Max

Experimental design: The selected subjects were divided into two equal groups of fifteen subjects each, such as acombined naturopathy and yoga group (Experimental Group) and control group. The experimental group underwent combined naturopathy and yoga for six days per week for six weeks. Control group, which they did not undergo any special training programme apart from their regular physical activities as per their curriculum. The following physiological variable, namely Vo2 max was selected as criterion variable. All the subjects of two groups were tested on selected criterion variable Vo2 max was measured through Cooper's 12 Minutes Run or Walk Test (stop watch and heart rate monitor) at prior to and immediately after the training programme.

Statistical Technique: The 't' test was used to analyse the significant differences, if any, difference between the groups respectively.

Level of significance: The 0.05 level of confidence was fixed to test the level of significance which was considered as an appropriate.

Analysis of the Data: The significance of the difference among the means of the experimental group was found out by pre-test. The data were analysed and dependent 't' test was used with 0.05 levels as confidence.

Table 1: Analysis of t-ratio for the Pre and Post Tests of Experimental and Control Group on VO2 Max

Variables	Group	Mean		SD		df	't' ratio
		Pre	Post	Pre	Post		
VO2 Max	Control	34.23	34.20	1.96	2.05	14	0.31
	Experimental	34.17	34.93	1.78	1.83		6.81*

*Significance at 0.05 level of confidence.

The Table-I shows that the mean values of pre-test and post-test of the control group on vo2 max were 34.23 and 34.20 respectively. The obtained 't' ratio was 0.31, since the obtained 't' ratio was less than the required table value of 2.14 for the significant at 0.05 level with 14 degrees of freedom it was found to be statistically insignificant. The mean values of pre-test and post-test of the experimental group on vo2 max were 34.17 and 34.93 respectively. The obtained 't' ratio was 6.81* since the obtained 't' ratio was greater than the required table value of 2.14 for significance at 0.05 level with 14 degrees of freedom it was found to be statistically significant. The result of the study showed that there was a significant difference between control group and experimental group in vo2 max. It may be concluded from the result of the study that experimental group improved in vo2 maxdue to six weeks of combined naturopathy and yoga .

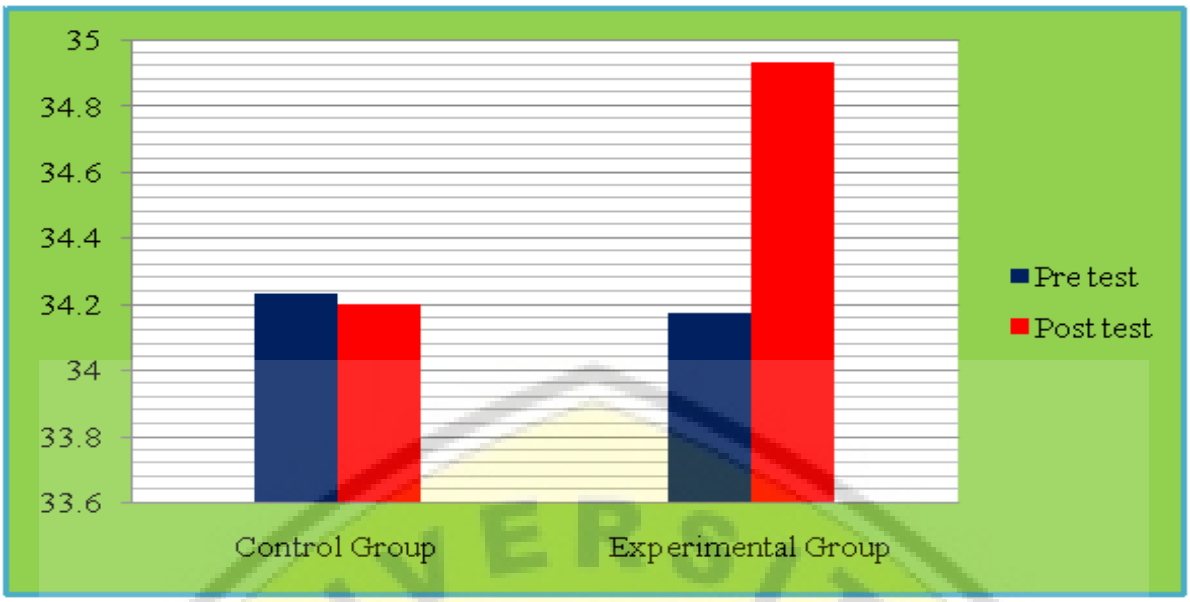

Figure 1: Bar Diagram Showing the Pre and Post Mean Values of Experimental and Control Group on vo2 Max

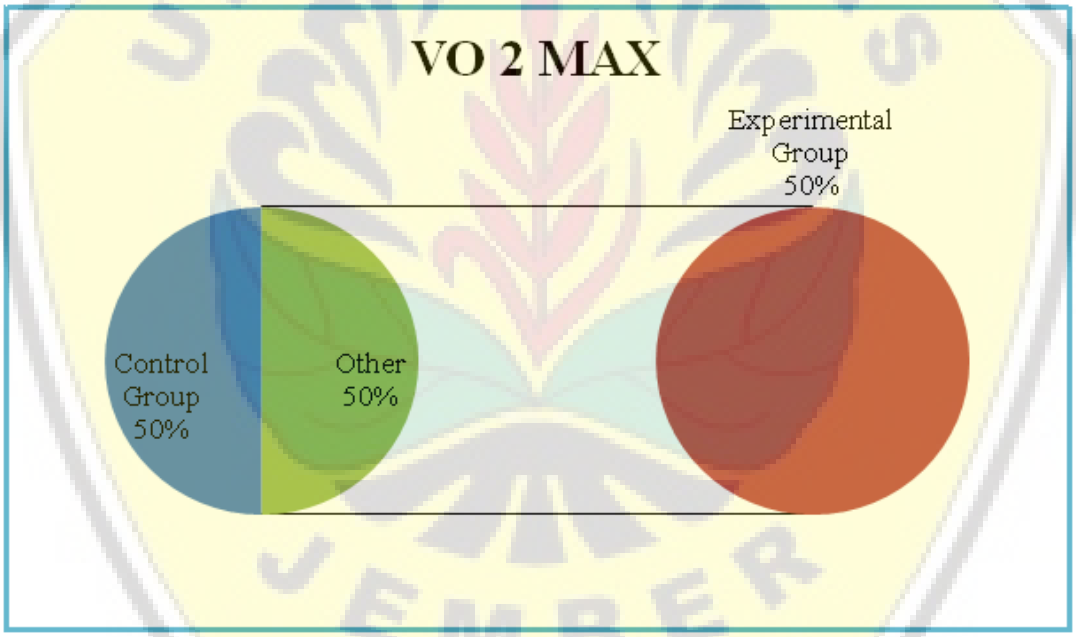

Figure 2: Comparison

Discussions on Findings

The result of the study indicates that the experimental group, namely combined naturopathy and yoga group had significantly improved the selected dependent variable namely vo2 max, when compared to the control group. It is also found that the improvement caused by combined naturopathy and yoga when compared to the control group, Alagurajaet al.[5]

Conclusion

On the basis of the results obtained the following conclusions are drawn:

1. There was a significant difference between experimental and control group on vo2 maxafter the training period.
2. There was a significant improvement in vo2 max. However the improvement was in favor of

experimental group due to six weeks of combined naturopathy and yoga.

Ethical Clearance: With respect to the above said Research Article involving human subjects for which the ethical clearance being sought, I am to state that I have gone through the "NIMHANS Ethical Guidelines……. Human Subjects" and am aware of the Helsinki Declaration of 1975, as revised in 2000 (5) rules governing the studies involving the human subjects. I am also aware that these guidelines are strictly to be followed while carrying out the above said research article involving human subjects.

Source of Funding: Self funding

Conflict of Interest: Nil.

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Universal Health Care Coverage in India: Challenges and Opportunities

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Abstract

Background: India continues to be among the countries of the world that have a high burden of diseases. The state must provide free and universal access to quality health-care services to its citizens. The present article reviews the Universal Health Coverage Scheme introduced by the Indian government to strengthen health insurance system with triple objectives of ensuring efficiency, equity and high-quality care.

Objective: The objective of the study is to analyze the significance and performance of Universal Health Coverage in India.

Method: Mixed Method research was conducted in the study to consolidate quantitative and subjective method to help assemble a more comprehensive picture of the issue addressed. The data were collected from 617 members (include both managers and consumers) from Kerala and Tamil Nadu state of India to know the level of awareness of Indian consumers.

Results: The various health program and policies in the past have not been able to achieve the desired goals and objectives.

Conclusions: These difficulties can be met by a change in outlook in health policies and programs for vulnerable population groups, rebuilding of public health units, reorientation of undergrad medical education, more accentuation on public health investigate and extensive education crusades. The Indian health system is characterized by a vast public health infrastructure which lies underutilized and a largely unregulated private market which caters to the greater need for curative treatment.

Keywords: *Risk Pooling, Universal Health Coverage, Modicare.*

Introduction

Indian health framework has enrolled significant accomplishments since independence in different key health pointers. However, much remains desired with significant weaknesses in health care organization, financing and provision of health services. of the three issues highlighted, health financing in India has been the center of significant debate. Demographic (maturing of the population), epidemiological (rising range of cost-concentrated non-transmittable ailments) and social (expanded mindfulness and desires for customers of healthcare for the mechanically propelled mind) changes in well-being have spiraled the healthcare treatment costs multifold. It has led to an impoverishment of India's poor with estimates suggesting one-fourth of all hospitalizations leading to indebtedness. Sizeable informal sector and asymmetry of information between insurer and beneficiary pose the challenge for using social and Private Health Insurance (PHI), respectively.[1] Healthcare in India is an account of insufficient resources and poor results. The venture is well beneath WHO rules in both qualitative and quantitative terms.

Objectives of the Study:

- Respondents of higher education level demonstrated a higher level of awareness of health insurance.
- It is been perceived that most of the managers or executives (Insurance Salesmen) think that consumers don't want to purchase health insurance scheme because it has no returns.

- Universal Health Insurance Scheme packages lead to public tax money being invested in private health insurance companies, rather than being put back into government funds.

Study Design: The present study is a Mixed Method research which consolidates quantitative and subjective method to help assemble a more comprehensive picture of the issue addressed. Secondary research includes the summary, collation and/or synthesis of existing research.[2]

Research Methodology: The present study is a Mixed Method research. The analysis is based on Primary data collection as well as Secondary data collected from various websites, newspapers and other necessary official records, books and magazines. Monthly closing prices have been taken for technical analysis purpose from the year 2013 to 2018. The data were collected from 617 members (include both managers and consumers) from Kerala and Tamil Nadu state of India. Statistical measures like simple moving averages, Pearson Chi-Square, have been used to find out the conclusion. Besides tables and charts are used to present and analyze data.

Efforts and Actions Related to Universal Coverage: Achieving universal healthcare requires a significant amount of investment into the health technology infrastructure. For that purpose, the government has introduced National Health Insurance Schemes. Those schemes are:

i. **Rashtiya Swasthiya Bima Yojana (RS BY):** Ministry of Labor and Employment has propelled RS BY (Rashtriya Swasthiya Bima Yojana), Government of India to give medical coverage scope to Below Poverty Line (BPL) families. The target of RS BY is to give security to BPL family units from money related liabilities emerging out of wellbeing stuns that include hospitalization. Recipients under RS BY are qualified for hospitalization scope up to Rs. 30,000/- for the more significant part of the diseases that require hospitalization.[3]

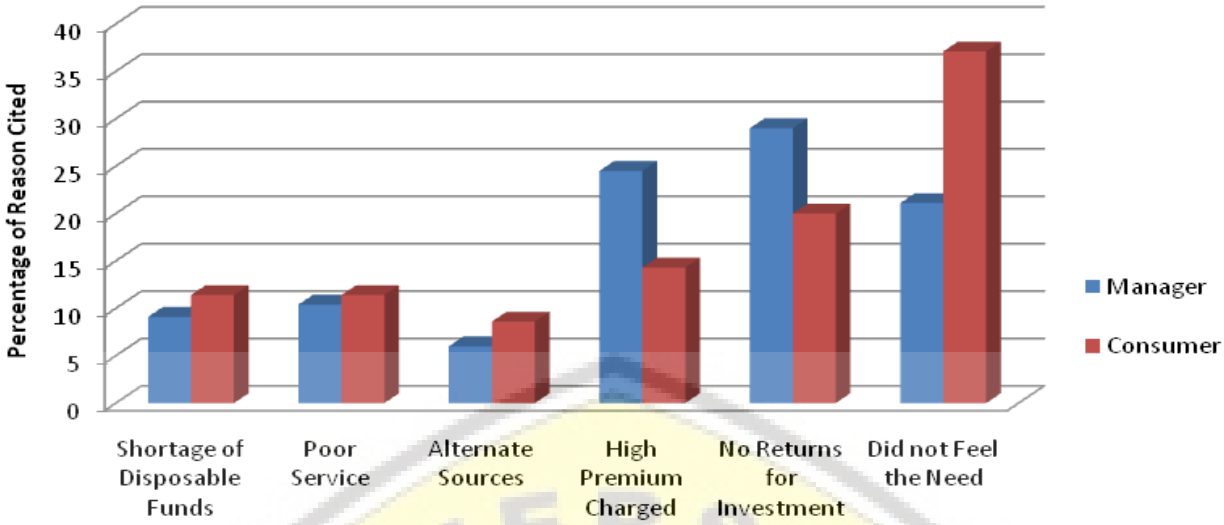
ii. **Employment State Insurance Scheme (ESIS):** Employees' State Insurance Scheme of India is a multidimensional, savings framework tailored to give financial assurance to the worker populace and their dependents secured under the scheme. Other than full restorative look after self and dependents, that is permissible from the very beginning of insurable work, the guaranteed people are additionally qualified for an assortment of trade benefits out occasions of physical trouble because of affliction, temporary or permanent disablement and so forth bringing about loss of acquiring limit, the restriction in regard of insured women, dependents of safeguarded people who die in industrial accidents or due to business damage or occupational hazard are qualified for a month to month annuity called the dependents to advantage. [4]

iii. **Central Government Health Scheme (CGHS):** The Central Government Health Scheme (CGHS) was begun under the Indian Ministry of Health and Family Welfare in 1954 with the target of providing extensive medical care facilities to the employees, pensioners of Central Government and their dependents residing in CGHS covered cities.[5]

iv. **Aam Aadmi Bima Yojana (AABY):** Aam Aadmi Bima Yojana, a Social Security Scheme for the rural landless household was launched on second October 2007. The earning member of the family or the head of the family of such a household is secured under the scheme. The Central Government and the State Government equally share the premium of Rs.200/- per person per annum. The age limit coverage of this scheme is between 18 and 59 years.[6]

v. **Universal Health Insurance Scheme (UHIS):** For enhancing the entrance of health care to low-income families, four public sector general insurance companies have been selected for implementing Universal Health Insurance Scheme. The scheme accommodates repayment of restorative costs up to Rs.30,000/- towards hospitalization floated among the whole family, demise cover because of a mischance @ Rs.25,000/- to the gaining leader of the family and remuneration because of loss of procuring of the acquiring part @ Rs.50/- every day (most extreme up to 15 days). Focusing on the BPL families; the Universal Health Insurance Scheme (UHIS) has been upgraded.

Reason for Not Taking Health Insurance Policy-Consumer vs Company: The necessary inquiries: what are the variables that shoppers consider vital while settling on the buying choice of medical coverage and why they do not purchase? Executives at times concur with what clients say while having distinctive reasons in some other. A general correlation of perception of purchasers' explanations behind these and company executives' view it is made here.



Source: Primary data

Chart 1: Perception Comparison of Managers & Consumers

From Chart 1 it is evident that around 37.1 percent respondents never felt the urgency to purchase Health Insurance whereas 29 percent of the managers think that consumers do not want to purchase health insurance scheme because it has no returns.

Test of Awareness vs Educational Qualification:

			Total Awareness Level					
			Very Low	Low	Neither High Nor Low	High	Very High	Total
Education Qualification	Less than Degree	Count	17	66	98	59	8	248
		% within Educational Qualification	6.890%	26.60%	39.50%	23.80%	3.20%	100%
		% within Total Awareness Level	65.40%	61.70%	40.30%	29.10%	21.10%	40.20%
		% of total	2.82%	10.70%	15.90%	9.60%	1.30%	40.20%
	Degree	Count	5	22	74	61	14	176
		% within Educational Qualification	2.80%	12.50%	42.00%	34.70%	8%	100%
		% within Total Awareness Level	19.20%	20.60%	30.50%	30%	36.80%	28.50%
		% of total	0.78%	3.540%	11.9%	9.90%	2.30%	28.50%
	Post Graduate	Count	2	3	30	31	8	74
		% within Educational Qualification	2.70%	4.10%	40.50%	41.91%	10.80%	100%
		% within Total Awareness Level	7.69%	2.80%	12.30%	15.30%	21.10%	12%
		% of total	0.28%	0.50%	4.90%	5%	1.30%	12%
	Professional	Count	2	16	41	52	8	119
		% within Educational Qualification	1.70%	13.40%	34.50%	43.70%	6.70%	100%
		% within Total Awareness Level	7.70%	15%	16.90%	25.60%	21.10%	19.30%
		% of total	0.30%	2.60%	6.60%	8.40%	1.30%	19.30%
Total		Count	26	107	243	203	38	617
		% within Educational Qualification	4.20%	17.30%	39.40%	32.90%	6.20%	100%
		% within Total Awareness Level	100%	100%	100%	100%	100%	100%
		% of total	4.20%	17.30%	39.40%	32.90%	6.20%	100%

Source: Primary Data

The awareness rating of respondents with various educational qualifications is analyzed for estimating the association between education group and awareness level announced.

H_0: There is no association between education and awareness level

H_A: There is a connection between education and awareness level

Table showing results of Chi-Square Tests:

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	50.933[a]	12	.000
Likelihood Ratio	53.315	12	.000
Linear-by-Linear Association	31.655	1	.000
N of Valid Cases	617		

The test was observed to be significant with ($p < 0.05$). Thus the connections clarified above are measurably significant.

It is construed that there is an association between education level and level of awareness of health insurance. Respondents of higher education level demonstrated a higher level of awareness of health insurance.

Government led actions on the financing of clinical services: Prime Minister Narendra Modi's government's ambitious plan, named "Modicare" by Indian media. Under the arrangement, the government will take care of health-care costs of up to $7,800 for 100 million low-income families and spend around $188 million to make "health and wellness" centers. Spending on nourishment for tuberculosis patients, cleanliness drives and training will likewise result in huge upgrades in public health.[7]

India is moving towards fast-tracked initiatives aimed at achieving the tenets of universal health coverage - strengthening health systems, improving access to free medicines and diagnostics and reducing catastrophic healthcare spending. The government has launched the Ayushman Bharat programme, which rests on the twin pillars of health and wellness centers and the National Health Protection Mission for 100 million families covering 500 million individuals. This plan will reach out to approximately 40 percent of the country's population who will be provided an insurance cover of Rs 500,000 per year. Apart from the rapid scale-up of diagnostics and treatment, the government has introduced supplementary nutrition for patients for the duration of treatment.[8]

Challenges and opportunities:

- **Challenges:** India has been widely criticized for having one of the world's lowest public spending on health (1.2% of GDP), but even with this minimal expenditure, it is as yet conceivable to accomplish universal health coverage (UHC). India's Ministry of Health has evaluated that taking off UHC will cost around $6.5 billion every year for a long time (2015-19). Therefore, the expense of taking off UHC is just 0.28 percent of India's GDP and well within the country's public health expenditure. UHC in a general sense implies improved access to health services and improved health outcomes. Central and state approaches in India are focused on budgetary hazard security and thinking of new health insurance packages. It is significant that these insurance packages lead to public assessment cash being put resources into private health insurance companies, as opposed to being returned to government funds, where it could be utilized to, for instance, improve the essential healthcare infrastructure and healthcare workforce in rural zones.[9]
- **Opportunities:** A high-level expert group on UHC was established by the Planning Commission of India in October 2010, with the order of building up a structure for giving effectively available and reasonable healthcare to all Indians.

  Public and private hospitals in urban areas have seen a steep rise in the adoption of technology, but these systems are disparate and use various technology systems. Consequently, patients' health information gets trapped in silos, unable to be shared with other systems and establishments due to lack of interoperability.

  The need of the hour is to ensure high data quality by introducing a secure, digital system to maintain Electronic Health Records (EHRs) in pre-defined standards. This digital, standardized platform would ensure that patients' health information is available when and where it is needed. Ultimately, this would bring a patient's total health information together to support better health care decisions and more coordinated care.

Sugessions:

i. India's government needs to assume a stewardship role. By building a compelling administrative system and steady strategies crosswise over states and the Center, workforce shortages can be survived, alongside coordinating healthcare offices over the village, town and local levels. Persistent intrigue can be kept as an essential concentration by changing such bodies as Rashtriya Swasthya Bima Yojana (RS BY) and National Rural Health Mission. (10)

ii. The private sector can help improve India's healthcare infrastructure. However, without faster accreditation, few private players will gain credibility, or raise standards, resulting in low customer satisfaction, more extended emergency clinic stays and poor administration. The National Accreditation Board for Hospitals and Healthcare Providers need to roll out incentives encouraging accreditation and make it a mandatory process.

iii. Public-private partnerships or build-operate-transfer or operations and contracting maintenance schemes can utilize private capital for provisioning healthcare services.

iv. Insurance coverage is likewise appalling in India, with just around 25% of the populace secured. In order to accomplish universal access, a coverage proportion of around 75% should be focused, with the rest of access through government installments through RS BY.

v. Social insurance plans should be taken off at scale, with the government sending a more prominent offer of healthcare funds for RS BY.

vi. Some smart targets need to be prioritized to achieve UHC in India. They are:

- The government should focus on reducing child under nutrition and chronic diseases.
- The number of malaria infections and tuberculosis deaths should be reduced.
- The focus should be provided to reduce the newborn mortality rate.
- Childhood immunizations should be increased.
- Improving access to family planning.

Discussion

It is critical because the twin objectives of UHC: that individuals and populaces get the health services they require, without confronting budgetary hardship. WHO assesses that about 150 million individuals around the globe experience the ill effects of out-of-pocket expenditure on health services, while 100 million individuals are pushed underneath the neediness line.

There is no one-size-fits-all approach to deal with accomplishing UHC. T Maturing populaces and the blossoming weight of non-communicable diseases present exceptional difficulties that will require all nations to discover creative approaches to reshape their health systems.(11) On the first challenge, two promising methodologies rise: utilizing general incomes to cover the casual sector completely or utilizing a combination of tax subsidies, non-financial incentives and contributory requirements.

The previous can create quick outcomes, yet puts weight on government spending plans and may incite casualness, while the last will require a robust managerial mandate and systems to follow the capacity-to-pay. As for advantage bundles, we find considerable variation in the nature and meticulousness of procedures necessary the selection and refreshing of the services included. Likewise, when all is said in done, bundles do not yet concentrate adequately on non-communicable diseases (NCDs) and related preventive outpatient care. At last, there are significant variations and imbalances in the supply-side preparation, as far as accessibility of infrastructure, equipment, essential drugs and staffing, to deliver on the promises of UHC. Health specialist skills are likewise a constraint.(12)

Conclusion

The objective of Universal Health Coverage is to guarantee that all individuals acquire the health services they need without languishing money related hardship while paying over them. Thus institutionalization of tax-funded Universal Health Insurance Scheme (UHIS), with the complementary role of private health care (PHI) is strongly recommended. State Health Insurance (SHI) schemes should be merged with UHIS. Benefits package of this scheme should include preventive and in-patient curative care to begin with and gradually include out-patient care. State-specific priorities should

be incorporated into the benefits package. Application of such an insurance system besides being essential to the goals of an effective health system provides an opportunity to regulate the private market, negotiate costs and plan health services efficiently. Purchaser-provider split provides an opportunity to strengthen public sector by allowing providers to compete. It requires a reliable, efficient, well-run health system; a system for financing health services; access to essential medicines and technologies; and a sufficient capacity of well-trained, motivated health workers who can spread the awareness regarding the importance of health Insurance scheme among the citizen of India.

Ethical Clearance: Not required

Source of Funding: Self

Conflict of Interest: Nil

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A Study on Risk Factors Associated with Central Serous Chorioretinopathy and Relation Between Risk Factors and Visual Recovery

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Abstract

Central serous chorioretinopathy (CSR) sudden onset of uniocular and binoucular diminished vision associated with a positive relative scotoma, metamorphopsia and hyperopic shift. Pathophysiology of central serous chorioretinopathy is highly controversial, various risk factors are proposed. The study aims to determine various risk factors associated with CSR as compared to age and sex matched controlled group. Results show male predominance (5.5 : 1), 90% population returned to normal vision after 3 months, though few patients (10%) did not regain good vision. Stress, steroid intake,recent life events, tobacco use, antihistaminics use and development of this condition predispose to this condition. No statistically significant risk factor was found between patients with poor visual outcome and risk factors present in them.

Keywords: *CSR, visual recovery post CSR, risk factors with CSR.*

Introduction

Central serous chorioretinopathy (CSCR/CSR) is typically a sporadic, self-limited disease of young or middle-aged young males. This fairly common condition is characterized by a usually unilateral, localized detachment of the sensory retina at the macula with or without retinal pigment epithelium detachment.[1-3] The study aims to find out the risk factors and systemic findings in-patient of CSR.

Materials and Method

It is a prospective observational case control study. Patients were selected from the out patient department of the Regional Institute of Ophthalmology, Kolkata. Patients of acute, chronic and recurrent CSCR were included in the study. CSR was diagnosed on the basis of history, complete ocular examination, including direct ophthalmoscopy, +78D or +90D examination of the macula, indirect ophthalmoscopy, fundus photography, Fundus Flourescence Angiography (FFA) (if nedded).

Psychiatric evaluation was done to collect data on psychological stress included recent life events (such as death, divorce, marital, business or family strife) and any alcohol abuse were cited. Patients who were diagnosed as anxiety spectrum disorder and alcohol abuse or dependence were treated in psychiatry and ophthalmology department simultaneously.

All cases were followed 2 weekly till complete resolution of the ocular condition confirmed by the detailed ocular examination by the aforesaid method for a maximum period of 1 year.

Data Analysis: To determine if there is any relationship between visual recovery and risk factors present the cases were divided into 2 groups. Group 1 – Patients with ultimate BCVA of ≥6/12 and Group 2

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– Patients with BCVA< 6/12. The risk factors present in them are calculated. Data collected are analysed by chi-square test to find out the stastistical significance. The Fisher exact test was used instead of chi-square test when the expected cell counts were 5 or fewer. Odds ratio was calculated to find out the relative risk between exposure and the disease.

Inclusion Criteria: Idiopathic Central Serous Chorioretinopathy proven by the above examinations.

Exclusion Criteria:

The exclusion criterias are as follows: Any macular abnormalities of the affected eye other than CSR such as secondary causes of CSR, trauma, optic nerve pit.

Result and Analysis

78 consecutive patients of CSCR were included in the study. The mean age of the cases was 38.93 years (Standard deviation : 6.9, median : 38 years). There were 66 males and 12 females in the CSCR group (M:F = 5.5 : 1). 61 patients had first episode of classic CSCR and 17 cases had recurrent or chronic CSCR. There were 78 age and sex matched controls.

In our study 70 (89.74%) of the 78 cases achieved good visual recovery (Visual acuity ≥ 6/12) at the end of 1 year follow up. Only 8 (10.25%) cases experienced unsatisfactory visual recovery (visual acuity< 6/12). Patients with poor visual outcome were analysed against the risk factors present in them to find out any relationship between the risk factors and unsatisfactory visual recovery.

In our study systemic steroid use was present in 11 (14.10%) of 78 cases whereas it was present in 2 (2.56%) of the controls. Fisher exact test was performed on these data and the P value was seen to be 0.0173 (< 0.05).

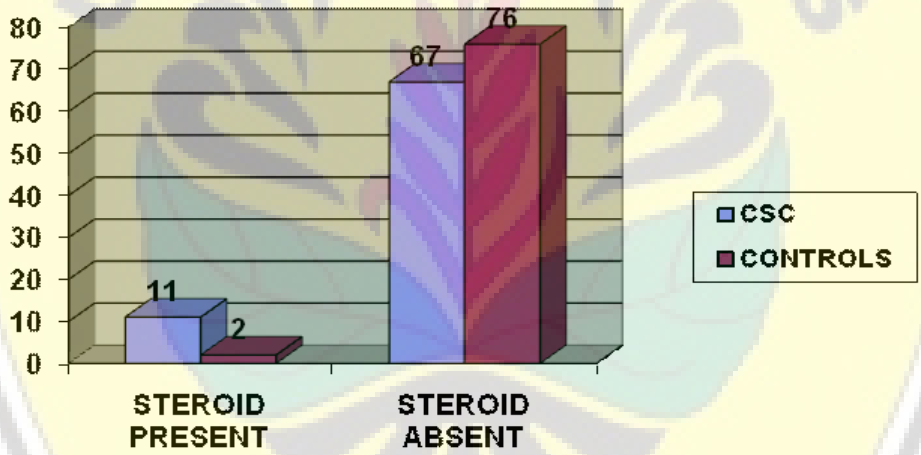

Figure 1: Bar diagram depicting the use of steroid in cases and controls

Table 1: Presence of stress among cases and controls

Stress	CSC	Controls
Present	20	10
Absent	58	68
Total	**78**	**78**

In our study self reported or psychiatrist elicited psychological stress was present in 20 (25.64%) CSR patients and 10 (12.8%) controls. Chi-square test was performed on these data r =4.127 was P = 0.0422 (< 0.05).

In our study we have found 14 (17.9%) of the 78 patients have history of smoking whereas 5 (6.41%) of the 78 controls are found to be smokers. As alcohol intake may be a confounding factor so we have excluded patients with history of both alcohol and smoking intake. Fishers exact test was performed and two tailed p value was found to be 0.0479 (<0.05).

Table 2: Presence of smoking among cases and controls

Smoking	CSC	Controls
Present	14	5
Absent	64	70
Total	**78**	**78**

Odds ratio = 3.19, P value < 0.05

In our study we have found 5 (6.4%) of the 78 patients with CSR has history of alcohol intake whereas 2 (2.56%) of the 78 controls are found to be alcoholic. As smoking may be a confounding factor so we have excluded patients with history of both alcohol and smoking intake. Odds ratio was calculated from the above data and was found to be 2.60. Fishers exact test was performed and two tailed p value was found to be 0.4423 showing that the difference is not statistically significant.

Table 3: Antihistaminics use among cases and controls

Antihistaminics	CSCR	Controls
Present	11	3
Absent	67	75
Total	**78**	**78**

Odds ratio = 4.104, P value 0.0466(< 0.05).

Among study population, 8 cases with poor visual recovery steroid use was found in 3 (37.5%) of them. All 3 of these patients showed macular pigment epithelial atropic changes. On the other hand 3 (27.27%) cases of the total 11 cases with systemic steroid use experienced poor visual recovery. These findings were plotted in the 2 × 2 contingency table and P value calculated. The two sided P value was 0.079 which is less than 0.05 showing that there is no statistically significant correlation between steroid use and final visual acuity.

In our study stress was identified as a risk factor in 5 (62.55%) cases with poor visual recovery. So, on the other hand 5 (20%) of the 25 cases with positive stress has poor visual recovery. Fisher's exact test was performed on these data and P value was found to be 0.24, showing no statistical significance.

Discussion

Idiopathic CSR is a disorder characterized by neurosensory retinal detachment associated with retinal pigment epithelial detachment, leakage and angiographic retinal pigment epithelial and choroidal hypermeability.[1-3]

Systemic steroid use was found more (14.10%) in cases than controls (2.56%) {Odds ratio 6.23, P< 0.05}. The results matched with previous study.[4,5] In our study we have also found a statistically significant relationship between steroid use and development of CSR. Apart from this we have also found that of the total 8 patients that have unsatisfactory visual recovery 3 (37.5%) of them are steroid users. These patients also developed diffuse macular pigment epithelial atrophic changes.[6,7]

In our study psychological stress statistically significant correlation was found between recent psychological stress and development of CSR. The result is similar as previous studies.[8,9]

The possible aetiological role of adrenomedullary system associated with increased catecholamine secretion has also been proposed.[9-11] When the choroidal vessels are severely affected by the elevated blood pressure, as in acute hypertension, fibrinoid necrosis of choroidal arterioles can cause occlusion of areas of choriocapillaries, with a subsequent breakdown of the outer blood retinal barrier. These changes might lead to fluid leakage in the sub retinal pigment epithelial space and development of CSR.

In our study alcohol use or abuse was present in 5 CSC patients and 2 controls (odds ratio [OR], 2.6; P > 0.05) and smoking was present in 14 CSC patients and 5 controls (OR = 3.19; P < 0.05). So a statistically significant relationship was found between smoking and development of CSR. Increased substance abuse involving alcohol and tobacco among CSC patients may also represent a dysfunctional behavioral adaptation to psychological stress.

A positive relationship exists between different various types of stress and the rate of smoking.[12,13] Both human and primate studies suggest that stress increases alcohol consumption.[14] Both tobacco and alcohol use can directly contribute to CSC pathogenesis. Nicotine exposure and chronic alcohol feeding might impair nitric oxide induced vascular dilatation.[15-17] Both alcohol[18] and nicotine[19] under some conditions potentiate norepinephrine-induced vasoconstriction, a potential mechanism previously considered for corticosteroid related CSC[20]. Alcohol consumption might also, under certain conditions, stimulate plasma catecholamines and corticosteroid release[21].

We found antihistaminics use (odds ratio = 4.104, P < 0.05) to be a significant risk factor for patients with CSR. Because antihistaminics are commonly used for the treatment of vasomotor and seasonal allergic rhinitis, a potential relationship between CSR and these conditions require further investigations.

In our study 3 (37.5%)) of the 8 patients with poor

visual recovery are steroid users whereas in the rest 5 (62.5%) stress was identified as a risk factor. No significant relationship could be elicited between the effect of risk factors and final visual outcome. In all the 8 patients significant macular pigment epithelial atrophic changes were seen. So, in a small number of cases, the visual outcome may not be as favorable. Levine and associates[22] suggest that the visual prognosis of CSC patients is not as benign as previously thought. In a long-term study of 14 eyes by FFA, these authors concluded that CSC may be a diffuse, progressive RPE disorder. Non-leaking RPE defects were present inside the previously detached areas in all cases and were also present outside these areas in 43 percent of cases. In the fellow eye, 42 percent had new RPE window defects. Yannuzzi and coworkers[7] have also suggested that for a subset of CSC patients, the visual prognosis may not be so benign. In their series of a subset of 32 CSC eyes with peripheral RPE atrophic tracts, 25 percent of patients had a final visual acuity of 20/200 or worse. Loo RH et al, 2002, in there study showed that 96.0% of central serous chorioretinopathy patients with visual acuity < 6/12 had macular retinal pigment epithelium atrophy. [23]

It is evident in the subset of patients, poor visual recovery may also be the consequence of chronic manifestations of the disease. So, it can be speculated that the underling pathophysiological process is ongoing in these patients. As stress is definitely a risk factor for development of CSR, probably these patients fail to cope with it, resulting in persistent high levels of serum corticosteroids with or without catecholamines with resultant damage to the RPE layer. A larger study is needed to bring out any relationship between the risk factors and final visual outcome.

Conclusion

In our study of 78 patients with CSR with age and sex matched 78 controls, to find out the systemic risk factors for development of the disease and also to examine the relationship between the risk factors and final visual outcome the following conclusions can be drawn from it.

1. A significant association was found between developments of CSR and use of systemic steroids, stress, hypertension, tobacco use, antihistaminics use.
2. No, statistically significant relationship was found between alcohol use or abuse and development of CSR.
3. No statistical significant risk factor was found between patients with poor visual outcome and risk factors present in them.

CSR remains a unique ophthalmic condition in which a definitelink between psychological profile and end organ alterationsmay one day be made. Whether modulating these risk factors will affect the course or severity of CSR requires further prospective investigation.

Ethical Clearance: A Study On Risk Factors Associated With Central Serous Chorioretinopathy And Relation Between Risk Factors And Visual Recovery

Source of Funding: Self

Conflict of Interest: Nil

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Assimilating Novel Perspectives of Complimentary Feeding among Mothers of Infants

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Abstract

Complementary feeding is a process of gradually introducing semi-liquid to semi-solid foods along with breast milk at the completion of 6 months. WHO: 3 key determinants to reduce infant malnutrition are Adequate & appropriate feeding, Health care and maternal education, Environmental health[6,7]. The objectives were to assess the demographic variables of infants and mothers of infants, to assess the pre and posttest knowledge among mothers of infants. Method and materials: Quantitative evaluative approach, pretest posttest control group design were used. An extensive review of literature and guidance by experts formed the foundation to the development of the study and study tool. The data collection tool was validated and reliability was established Simple Random sampling technique with the sample of 500 mothers of infant were included. Obtained written consent from each participant before collecting the data and confidentiality of data were maintained. The collected data was tabulated and analyzed by using descriptive and inferential statistics. There was no significant association between the selected demographic variables. Study group mean and SD 21.6±3.22, SE-0.83, Control group mean and SD 16.2.6±2.01, SE-0.52, t value-5.4, Cohen's 'd' 1.96, Effect size 0.7. Additional counseling session and health Education was arranged for the mothers who are having Moderate and inadequate knowledge on Complementary feeding[1].

Keywords: *Novel perspectives, pediatrics, complementary feeding, mothers of infants.*

Introduction

"Complementary feeding is the process of starting when breast milk alone is no longer sufficient to meet the nutritional requirements of an infants, it should Start at 6 months, breastfeeding should be combined with safe, age-appropriate feeding of solid, semi-solid and soft foods for at least the first year of life"[2,3,4].

The UN estimates that 2.1 million Indian children die before reaching the age of 5 every year–four every minute-mostly from preventable illnesses such as diarrhea, typhoid, malaria, measles and pneumonia. Every day, 1,000 Indian children die because of diarrhea alone[2,3 and 4].

- UNICEF worldwide statistics April 2018
  - Only two fifths of infants 0-6 months of age exclusively breastfed.
  - Only around two thirds are introduced to solid foods in a timely manner[1,5].
- Global Infant mortality rate: 13 deaths/1000 live births[2,6].

Statement of the Problem: A study to assess the level of knowledge on Complimentary feeding among mothers of infants at selected tertiary care hospital, Kancheepuram, Tamil Nadu.

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Objectives:

1. To assess the demographic variables of infants and mothers of infants.
2. To assess the pre and posttest knowledge on complementary feeding among mothers of infants.
3. To find out the association between the knowledge of mothers of infant with selected demographic variables.

Operational Definition:

Level of Knowledge: It refers to the relevant information of mothers of infant regarding complementary feeding which will be evaluated through structured questionnaire, correct responses of mothers are further classified into adequate (≥76%) moderate (51-75%) and inadequate (≤50%)[7]

Complementary Feeding: It is refers to at the completion of 6 months introducing liquids, semisolid and solid foods gradually by locally available and affordable type of foods are provided to the baby along with continued breast feeding. Liquid foods such as rice water, vegetable soups and green leafy vegetables soups. Semisolid foods like thick rice flour kanji. Solid foods like well mashed cooked potato, fruits and vegetables, mashed rice etc.

Mothers of infant: Mothers who are in the age group of 21-40 years & having infant 3-12 months attending well baby clinic for infant immunization and plan to have all immunization in a Selected Tertiary Care Hospital, Kelambakkam, Kanchepuram District.

Material and Method

Research approach: Quantitative, Evaluative approach seems to be the most appropriate approach for this study.

Research design: Pretest posttest control group design was seems to be the most appropriate design for this study.

Research setting: The present study was conducted at Chettinad Hospital and Research institute in Kanchipuram district, Tamil Nadu, India.

Sample and sample size: Infant and mothers of infant between the age group of 3-12 months and who full-filled the inclusion criteria were recruited for this study. Based on the power analysis calculation Formula N= p (1- p) (Z/E)2, sample size of 500,out of which 250 infant and mothers of infant randomly assigned to study group and 250 were assigned to control group. Simple Random sampling technique was used to select the infants and mothers of infants.

Sample Criteria:

Inclusion Criteria:

The study includes infants, who are:

- aged 3 - 5 months; who are either exclusively breast feed or partially breast feed but have not started complementary feeding.
- term/appropriate to gestational age.
- age group between 3 months to 1 year.
- attending pediatric outpatient department.

The study includes mothers of infants who:

- Can read & understand Tamil/English.

Exclusion Criteria:

The study excludes infants who are:

- Critically ill.
- having mal absorption syndrome.
- Known genetic anomaly, neurological disorder.

The study excludes mothers of infants who are:

- having adequate pretest score (≥76%)
- fails to give consent for any reason.
- sick.

Score Interpretation:

Table (1): Standardized structured questionnaire to assess the knowledge on complementary feeding.

Score	Percentage (%)	Inference
0-14	≤49%	Inadequate knowledge
15-22	50-75%	Moderately adequate Knowledge
23-30	76-100%	Adequate knowledge

Data Collection Procedure: Structured questionnaire was used to assess the data of demographic variables and the level of knowledge on complementary feeding. Data was collected for a period of 18 months. Obtained written consent from each participant before collecting the data and confidentiality of data were maintained.

Research Tool:

Part-I: Selected demographic variables of infants and mothers of infants such as age of the mother, education, occupation, source of information, age of the child, sex of the child, number of the children, order of children.

Part-II: A structured questionnaire is used in this study which includes 30 multiple choice questions with 120 items. Each correct answer carries "1" (one) mark and wrong answer carries "0" (zero) mark. The maximum score is 30 and minimum score is 0.

Analysis and Interpretation: The study shows that majority of 51% mothers belong to the category of 26-30, 30% mothers belong to the category of 20-25 & 19% of mothers belong to the category of 31-35 years. Most of them 33% were belong to the category of Primary education. Very few 26.1% were belong to Daily wages. Most of them 52% were gains information through the doctor, 44% of mother gain information through Health workers & 4% of mother gains information through the family. The study shows most of them 57.6% were female & 43.4% belong to male infants.

The study shows that majority of 59.3% of mothers of infants having adequate knowledge on immunization, 24.5% of mothers of infants having moderately adequate knowledge & 16.2% of mothers of infants having inadequate knowledge. There is no significant association between the demographic variables like occupation, age of child, sex of child and order of children and source of information with post test knowledge score.

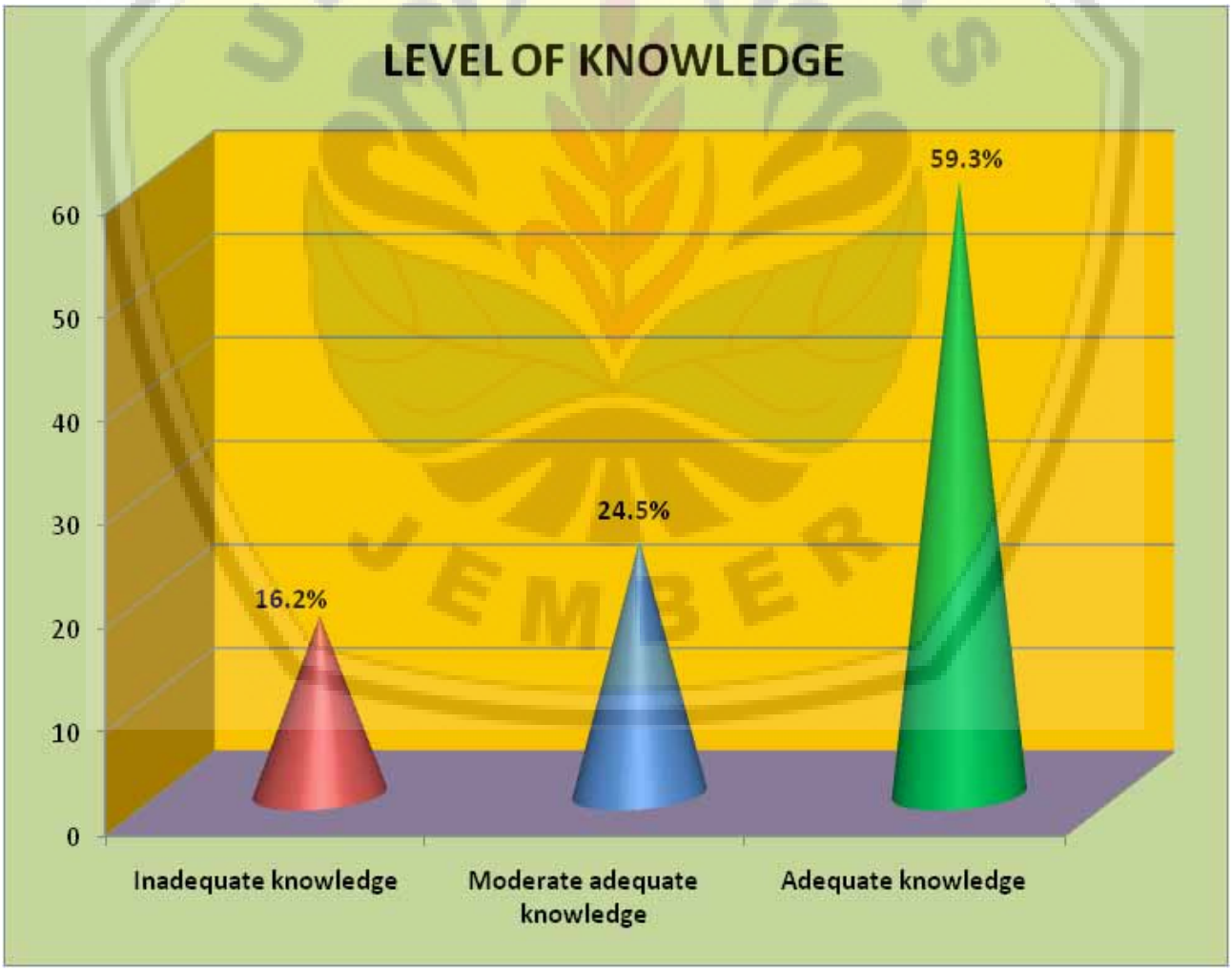

Figure 1: Percentage distribution of knowledge of the mothers of infants: N=500

Conclusion

This study concluded that mothers 59.3% had adequate knowledge, 24.5% had moderate knowledge and 16.2% inadequate knowledge on Complementary feeding among mothers of infants. The mother's of infant's knowledge on Complementary feeding is a peculiar cardinal factor for the reduction of morbidity and mortality especially during the stage of infant. Additional counseling session and health Education was arranged for the mothers of infants who are having Moderate and inadequate knowledge on Complementary feeding.

Conflict of Interest: Nil

Source of Funding: Self funding and no external funding.

Ethical Clearance: Obtained clearance from institutional human ethical committee on 12.09.2017.

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Type of Manuscript: Decision analysis

Decision Analysis for Vital Pulp Therapy in Mature Permanent Teeth

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Abstract

Introduction: Vital pulp therapy (VPT) aims to preserve the vitality of the dental pulp and favours long term survival of tooth. It maintains the tooth in its healthy state and eliminates bacteria from the dentin-pulp complex. The vital pulp is capable of initiating several defence mechanisms to protect the body from bacterial invasion, therefore it is necessary to maintain the vitality of an exposed pulp rather than replace it with a root filling material following pulp exposure. Different approaches are available for VPT in extensively decayed or traumatized teeth which includes pulp capping or pulpotomy procedures.

Materials and Method: The PubMed literature search was performed until June 2019 and the results revealed there are no previous reports on highlighting the concept of VPT in permanent teeth. A decision analysis flowchart was made based on the clinical and radiographic findings of dental caries

Results: Various approaches are available depending on the extent of dental caries pulp capping and pulpotomy procedure can be performed

Conclusion: The guidelines in decision analysis for VPT in permanent teeth help in the careful management of the remaining pulp tissue

Keywords: *Direct pulp capping, Indirect pulp capping, Pulpotomy, Reversible pulpitis, Vital pulp therapy.*

Introduction

The diagnosis of pulp condition plays a crucial role in indicating the need forvital pulp therapy[1]. However, diagnosing the pulp vitality is a complex task due to the subjective nature of symptoms and tests carried out for this purpose. Generally, the diagnosis relies on pulp vitality tests, comprising radiographic evaluation, percussion, palpation and thermal tests, but these tests have an estimated subjective accuracy [2]. The main reason for vital pulp therapies failure has been related to pulp complications due to poor diagnoses [3].

Vital pulp therapy (VPT) preserves the function of coronal pulp tissue and the remaining radicular pulp tissue. The treatment outcome promotes good healing capacity of pulp tissues in young patients [4,5]. Favourable outcome is seen more with reversible pulpal injury, marked clinical outcome is seen in non-inflamed pulp exposed to trauma than inflamed pulp exposed to caries [6]. It has been recommended that VPT should be performed only in young permanent tooth because pulp is necessary for the formation of dentine [7]. Since the evidence regarding the effect of the patients age and the status of the root apex on the outcome of vital pulp therapy, did not indicate that this treatment could

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not be performed successfully in old patients and based on the premise of the innate capacity of pulp tissue for repair in the absence of microbial contamination, preservation of the pulpally involved permanent tooth is also considered[8].

Preservation of pulp vitality in VPT aids to withstand fracture against masticatory forces and the survival rate is higher when compared to root canal treated teeth[9,10]. The success of vital pulp therapy is markedly high wherein controlled haemorrhage is achieved. The other factors that affect the success of VPT are adequate blood supply and the presence of a healthy periodontium [11,12]. The prognosis of VPT is significantly reduced in cases with inadequate coronal seal and subsequent bacterial micro leakage[13]. Another important aspect is that pulp capping agents play a major role in success of VPT. Pulp capping material should be biocompatible, non cytotoxic and antibacterial[14]. This review article discusses about the approaches in VPT, namely pulp capping and pulpotomy, in permanent teeth.

Techniques of vital pulp therapy: Vital pulp therapy is indicated following traumatic, mechanical and carious exposure of pulp. High success rate has been reported in teeth with the absence of clinical signs and symptoms. The techniques of vital pulp therapy include

1. Direct pulp capping
2. Indirect pulp capping
3. Partial pulpotomy
4. Full pulpotomy

Based on the clinical findings, signs and symptoms appropriate treatment protocol needs to be followed, as the vitality of pulp is extremely important for viability of the tooth (Table 1).

Table 1: Overview of treatment protocol for vital pulp therapy

Clinical findings	Indication	Treatment
Absence of sign and symptom of irreversible pulpitis	Carious lesion extending into pulpal one fourth of dentin	Indirect pulp capping Step wise excavation of caries
Vital tooth with absence of lingering or persistent prolonged pain	Reversible pulpitis due to trauma and caries	Direct pulp capping
Absence of lingering or persistent prolonged pain	Reversible pulpitis or irreversible pulpitis based on case selection	Full pulpotomy
Absence of lingering or persistent prolonged pain	A "several day trauma" tooth with exposed pulp	Partial pulpotomy

Indirect Pulp Capping: Indirect pulp capping is defined as a procedure in which carious dentin closest to the pulp, is preserved to avoid pulp exposure and is covered with a bio compatible material.

Indication:

1. Teeth diagnosed with normal pulp with no signs and symptoms of pulpitis
2. Absence of spontaneous pain
3. Absence of inter radicular or periapical radiolucency
4. Absence of sharp penetrating pain after withdrawal of stimulus

Contraindication:

1. Large pulp exposure
2. Non-restorable teeth
3. Tooth with poor prognosis

Procedure: Indirect pulp therapy technique prevents pulpal exposure in the teeth with deep carious lesions in which there exists absence of pulpal degeneration or periapical disease[15, 16]. When the infected layer is removed, the affected dentin can then remineralize and the odontoblasts form reparative dentin, thereby preventing pulp exposure. The remaining soft dentine

is covered by pulp capping agent and over a period of two months the degree of remineralisation is tested and remaining residual softened dentine is removed [17,18]. Permanent restoration can be placedif there has been a favourable response and the dentin becomes hard, whereas if caries has reached the pulp, endodontic treatment has to be initiated.

Materials Used: Several materials were used for indirect pulp capping which includes resin modifies glass ionomers, tricalcium phosphate, hydrophilic resin, zinc oxide eugenol. Mineral trioxide aggregate (MTA) and calcium hydroxide are the most commonly used materials in routine practice.

Direct pulp capping: Direct pulp capping is defined as the treatment of a mechanical or traumatic vital pulp exposure by sealing the pulpal wound with a biomaterial placed directly on exposed pulp. This procedure induces the reparative dentin formation and maintains the vitality of pulp.

Indications:

1. Teeth with traumatic exposures or mechanical non-carious exposures less than 24 hours.
2. Iatrogenic exposure during cavity preparation or crown preparation
3. Accidental pin point exposure when excavating deep caries less than 1 sq mm
4. No radiographic evidence of periradicular pathology
5. Normal response with pulp vitality test without tenderness on percussion.

Contraindication:

1. Intra radicular radiolucency
2. Purulent or serous exudate from exposure site
3. External or internal resorption
4. Swelling associated with the tooth
5. Excessive tooth mobility
6. Mature teeth with inflamed pulps, as with carious pulp exposures, should not be pulp capped
7. Pre-operative tooth sensitivity

Procedure: After adequate anaesthesia has been obtained, place a rubber dam and disinfect the tooth with a chlorhexidine solution and gently rinse with aesthetic or sterile saline. If any haemorrhage occurs, dab with a sterile cotton pellet until haemorrhage ceases. Sodium hypochlorite or chlorhexidine solution may be used to aid in haemostasis and the pulp capping material is applied directly to the exposure site. Finally, the tooth is restored with an appropriate filling material

The outcome for direct pulp capping following a carious exposure is unpredictable [19, 20]. When this treatment is performed on infected pulp tissue the success rate is said to decrease drastically [15]. Therefore, direct capping procedures should only be carried out on fresh, traumatic or mechanical exposures, before bacterial plaque has established on the exposure and the underlying pulp has become inflamed [14].

Materials Used: Materials used for direct pulp capping includes Cyanoacrylate, calcitonin, resorbable tricalcium phosphate ceramic, resin-based adhesive composite, bioceramics, Biodentine, ZOE, MTA. Calcium hydroxide has been regarded as the gold standard for several decades.

Recall: The tooth should be evaluated using pulp sensibility test and percussion test at 3–4 weeks, 3 months, 6 months, 12 months and every year thereafter. Hard tissue barriers sometimescan be seen at the treated exposure site as early as 6 weeks after treatment.

Pulpotomy: Pulpotomy has become the treatment of choice for vital teeth exposed to caries [21]. Pulpotomy is described as a procedure that involves the removal of affected or infected pulp at the coronal portion and preserving the remaining vital pulp inorder to maintain its vitality [22].

Full Pulpotomy:

Indications:

1. More extensive inflammation
2. The tooth is restorable and free from advanced periodontal disease.
3. Soft tissues around the tooth are normal with no swelling or sinus tract.
4. Haemostasis should be achieved after complete pulpotomy.

Procedure: Full coronal pulpotomy involves the complete removal of the coronal pulp and the placement of dressing at the canal orifice. The tissue is capped with pulp capping agents in a manner similar to partial pulpotomy. Many chemical compounds have

been used as pulpotomy agents such as formaldehyde, phenol, creosotes and other highly toxic materials which were advocated to mummify the remaining pulp tissue [14]. Although use of formocresol in the full coronal pulpotomy of permanent teeth with pulp exposures has been advocated, it is not recommended in teeth with mature root unless there are behavioural or socioeconomic constraints to performing root canal therapy [23]. It was found that formocresol and glutaraldehyde are associated with systemic toxicity and carcinogenic potential [7].

Materials Used: Calcium enriched mixture, bioceramics, MTA, adhesive resins, resin modified glass ionomers, calcium hydroxide

Recall: The tooth should be evaluated using pulp sensibility test and percussion test at 3–4 weeks, 3 months, 6 months, 12 months and every year thereafter.

Partial pulpotomy: Partial pulpotomy was described by Cvek in the year 1978 [5]. This aims to surgically remove tissue that is irreversibly inflamed and exposed to microorganisms leaving a clean wound surface on healthy tissue [24]. The pulp wound is then irrigated with sterile saline until physiologic haemostasis is achieved and the pulp wound is covered with pulp capping agents. An alternative hemostatic agent sodium hypochlorite (5.25%) can also be used. It has shown to be effective haemorrhage control and surface disinfectant without any detrimental pulpal effects[25, 12]. The wound dressing is then carefully dried and sealed with a suitable material.

Indications:

1. Extent of pulpal inflammation is expected to be greater than normal.
2. Traumatic exposures older than 24 hours and for mechanical exposures in teeth with deep caries.
3. Frank carious exposure
4. Absence of spontaneous pain
5. Radiographically normal appearance of periodontal attachment
6. Absence of tenderness on percussion

Procedure: Anaesthesia was achieved, isolation and surface disinfection were made. At the exposure site, remove 1–2 mm of the superficial pulp tissue using a sterile diamond bur[26]. If excessive bleeding continues, extend the preparation apically. Remove any excess blood by rinsing with sterile saline or anaesthetic solution and dry with a sterile cotton pellet. Sodium hypochlorite or chlorhexidine can be used to facilitate haemostasis. Care should be taken to avoid the formation of a blood clot, which compromises the prognosis [19]. Removal of superficially inflamed pulp tissue and placement of suitable dressing material gives the opportunity to seal the cavity. The reported success rate for partial pulpotomy is 93-96%

Materials Used: The most commonly used materials are calcium hydroxide and MTA. There is no significant difference in outcome results between MTA and calcium hydroxide.

Recall: Follow-up examinations should be performed at time intervals 3 months, 6 months, 12 months and every year thereafter.

Discussions

Reparative dentin formation occurs in small carious lesions, whereas in moderately large cavities, macrophages and lymphocytes are observed under the involved dentinal tubules of the coronal pulp [27, 28]. Acute localized inflammation and liquefaction necrosis were evident in the exposure site. In order to preserve the remaining healthy pulp, it is therefore recommended to remove this infected, necrotic and disintegrated pulpal tissue [29]. A study report which was conducted for a period of two years showed 80% success rate with the placement of calcium hydroxide in teeth with signs of reversible pulpitis. It also showed a high failure rate when vital pulp therapy was performed on the teeth with irreversible pulpitis or pulpal necrosis.

Hosseini et al [30] reported that vital pulp therapy showed 92% success rate even over a period of 10 years. Evidence of continued apical development was found following formocresol pulpotomy procedures on young permanent teeth with incompletely developed apices[31]. Mass and Zilbermanper formed partial pulpotomy in young permanent molars with carious pulp exposure. The result showed that the success rate was 91.4% after a period of 12 months follow up[31].

It was believed that a direct toxic effect from dental materials is predominant cause of pulp damage after direct pulp capping. However, animal studies reported that when restorative materials placed directly on exposed pulp, pulpal necrosis or inflammation do not

occur[32]. Previous report showed that following direct pulp capping with symptoms of irreversible pulpitis success rate of 80% for a period of six months. Unlike most other studies, teeth with lingering pain to thermal stimuli and with sensitivity to percussion were included in the study[33].

Limitations: In deep or extremely deep caries when irreversible inflammation is present, pulp capping is contra indicated. Magnification and illumination are required to perform pulp capping in case of advanced carious lesions.

Conclusion

To improve the success rate of vital pulp therapy, it is necessary to access various vital pulp therapy procedures and to incorporate the latest available information into clinical practice and teaching. Further research and clinical trials are also needed to develop case selection guideline, treatment approaches and materials needed to maximize clinical success. In the near future with more knowledge about the biology of the pulp, vital pulp therapy can be performed with more predictable outcomes.

Legend: Table 1: Overview of treatment protocol for vital pulp therapy.

Ethical Clearance: No ethical clearance required

Source of Funding: Self

Conflict of Interest: Nil

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Does Infertility Affect Socioeconomic Factors? Evidence from India and Bangladesh

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Abstract

This paper attempts to examine the socio economic factors influencing the women infertility in India and Bangladesh. The main aim of this study is to evaluate the impact of socio economic factors on infertile women across India and Bangladesh. Quantitative study was carried out by taking the data from NFHS-4 health survey. Infertile women were selected based on the assumptions. Binary logistic regression was done to find the association between the economic variables and infertility. On contrary to Bangladesh, Wealth index, residence and education were largely influenced by a infertile women in India. The study pays way for further study by gathering information through direct discussion with infertile women.

Keywords: *Reproduction, health, education, societal issue.*

Introduction

Infertility troubles about 8-10% of married persons[1] and have significant impact on individual's health or couple[2]. Because of socio, economic and cultural dimensional issues[1], it is now a subject matter of discussion with health care providers, medical practitioners, medical council and individuals. The decline in fertility rate has not only had the impact on countries population, but also it weakens country's GDP in the long run [3]. Desire to get a child is individual opinion but has greater influence on socioeconomic variables[4]. In this context, current paper attempts to investigate the impact of socioeconomic factors on infertility in two developing countriesviz, India and Bangladesh. Even though India (3287000 sq.km) is 22 times larger in size than Bangladesh (147600 sq.km), Bangladesh performed better than India in Human Development index[5]. This raises questions

Do socio economic indicators outperform Bangladesh with India?

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Does fertility rate have any impact on socio economic determinants?

Need and Rationale of the study: Variations of infertility prevalence rate were noticed that infertility occurs due to demographic (age, gender, marital status) and social factors (occupation, income, education) [5]. It was perceived that government or private health centers has not given much importance to reduce the issue rather it has become a baby making industry[6]. Moreover, Indian family planning programs emphasize more on prototype and factors for reproduction but not on the reasons for infertility [7]. Hence there is a need for deeper understanding of infertility and its influence on economic factors. For this, study attempts to understand the changes between India and Bangladesh.

Population in India accounts to 1,360,574,949 billion as on Dec 11, 2018[8] and the fertility rate was 2.41 in comparison to Bangladesh which recorded 167,118,692 million and corresponding fertility rate traced less than 2.0[9]. In spite of good remark in population index, Bangladesh infertility affects 10 - 15 percentof married persons[10]. Human Developmental factors like life expectancy, mortality, fertility rate and literacy shows superior performance than India[11]. Table 1 shows approximately 50 percentage change both in rural and urban Bangladesh (IMR rate) whereas India

shows minimum changes implies Bangladesh are faster than India in saving lives.

Table 1: Health index comparison of India vs Bangladesh

	India		% change	Bangladesh		% change
	2005	2015		2004	2014	
IMR a						
Urban	41.5	28.5	31.3	72	34	52.8
Rural	62.2	45.5	26.8	72	40	44.4
Total	57	40.7	28.6	65	38	41.5
Fertility rate (15-49 age)						
Rural a	2.7	2.3	14.8	3	2.3	23.3
Urban (World bank)	2.9	2.4	17.2	2.7	2.1	22.2
Prevalence of Underweight b						
Urban	32.7	29.1	11.0	42.2	26.7	36.7
Rural	45.6	38.3	16.0	48.8	34.8	28.7
Total	42.5	35.7	16.0	47.5	32.6	31.4

a. NFHS, 2015 a. deaths per 1000live birth, b. Below-2 from median weigh for age of reference population

Moreover,fertility rate of Bangladesh has increased by 0.7 in rural and 0.6 in urban whereas India witnessed 0.4 in rural and 0.5 in urban. Here, percentage change in fertility rate was good in India than Bangladesh. Similarly, India performed well in case prevalence of Underweight. In view of the fact, that India good in health indicators, there exists contrary that Bangladesh outperformed India[5], this creates an urge for a detailed look of comparison between India and Bangladesh with respect to socio- economic factors.

Literature Review: Infertility is the inability of a couple who cannot able to give birth to a child even after one year of regular sexual life[14]. This has greater influence on social, psychological and physical factors [15].

Prevalence of different factors was explored[16] in case of infertility treatment in assisted reproductive clinics at Indore and examined 1000 infertile couples and their Socio-demographic characters responsible for treatment. Occupations like advocates, bankers, academicians were reported as highly influenced towards infertility [17]. However, it is good to note that agriculturists were less affected with infertility.

Another study in Nepal [6] examined the socio-economic and cultural factors affecting the fertility by using Nepal Demographic and Health Survey (NDHS 2006). Bivariate and multivariate analyses were carried out to examine the differences in infertility. Age, education, occupation and exposure towards lifestyle were termed as significant factors for high infertility. A study conducted at Dhaka in Bangladesh on infertile women [18], elaborates the basis of infertility, its treatment and the reason for not having child. They found that infertility exists because of emotional moods, stress and psychological changes of both men and women.

In the nutshell, research papers examine neither the consequences of occurrence nor the cause and effect of infertility. Reviews conclude that, attention has to be given to socio cultural dimension and consequences. [19] Present study explores the socio economic factors responsible for the causes of infertility across India and Bangladesh.

Objectives:

The general objective is to

1. To evaluate the impact of socio-economic determinants on infertile women in India and Bangladesh

The Specific objectives are:

1. To understand the percentage distribution of married women
2. To study the prevalence of infertile women across selected socio- economic variables

3. To examine the impact of socio economic factors on infertility

Methodology

The data was taken from National Family Health Survey (NFHS-4). The selection of infertile women was done in two stages

In India there are 628,826 married women from 29 states and 6 union territories. In the first stage, women in the age group of 20-49, with 5 years of marriage life was selected. Hence,a sample of 381805 women was selected.

In the second stage, to be more focused towards reproduction problem, selection of samples were done with assumptions

a. Married more than 5 years not pregnant

c. No terminated pregnancy

d. Never used contraception

e. Zero total children

A sample of 7092 infertile Indian women was selected. Similarly, out of 18,245 samples, 13150 married women was selected and 183 infertile women was chosen.

The study was carried out in three stages:

a. First, Arithmetic mean was done to find the percentage distribution of socio-economic variables of married women across countries.

b. Next, prevalence rate per thousand populations was carried out to find the attributes influencing infertility over a specified period of time.

c. Finally, binary logistic regression was employed to find the significance between infertility and socio economic factors.

Analysis and Discussion

From Table 2, both the countries have more rural dwellers than urban (India: 72 percent and Bangladesh: 65.7 percent). In case of literacy, 40 percent of the women were illiterate in India as compared to 28 percent in Bangladesh. Bangladesh shows increasing enrollments from primary to secondary education when compared to India. Very few percentage of women attained higher education in both the countries. Study shows that women from Hindu religion were predominant (76%) in India where as Muslims in Bangladesh (90%) which supports the data collection. In case of wealth Index India has more number of infertile women under Below Poverty Line category in compare to Bangladesh where more women are under Above Poverty line.

Table 2: Percentage distribution of married women .

Background Variables	India (%)	Bangladesh (%)
Residence		
Urban	28	34.3
Rural	72	65.7
Total	**381805**	**13150**
Highest Education Level		
No education	39.6	28.2
Primary	15.7	31.0
Secondary	38.0	33.4
Higher	6.7	7.3
Total	**381805**	**13150**
Religion		
Hindu	76.3	9.1
Muslim	12.5	90.1
Christian	6.5	0.2
Others	2.7	0.6
Total	**381805**	**13150**
Wealth Index		
Poorest	20.5	19.1
Poorer	21.7	19.2
Middle	20.5	20.1
Richer	19.2	20.3
Richest	18.1	21.3
Total	**381805**	**13150**

Table 3 provides the prevalence rate of infertile women per thousand populations in both the countries across various economic indicators. Table depicts that In India, 722 rural women in 1000 population suffers from infertility whereas only 278 urban women were infertile. In case of education, most of infertile women were literate (589) with minimum of primary education and majority were Hindus. In case of wealth index, infertile women were more under poor category.

When analyzing the status of infertile women in Bangladesh, infertility was high in urban and were educated. Obviously majority were Muslims. Bangladesh has rich wealth index. Another important socio economic indicator occupation illustrate that half of the women in both the countries were employed.

Table 3: Prevalence rate of infertile women per thousand populations across selected socio economic determinants

Socio economic determinants	Infertility	
	India	Bangladesh
Place of Residence		
Urban	278	617
Rural	722	383
Total	**7092**	**183**
Educational Level		
No Education	411	339
Primary	142	284
Secondary	372	306
Higher	75	71
Total	**7092**	**183**
Religion		
Hindu	750	93
Islam	128	902
Buddhism	12	5
Christianity	82	0
Other	28	0
Total	**7092**	**183**
Wealth Index		
Poorest	240	202
Poorer	217	186
Middle	207	202
Richer	189	213
Richest	147	197
Total	7092	183
Occupation		
No Occupation	507	410
Some occupation	493	590
Total	**7092**	**183**

Infertility remains in high in rural India because of the lack of accessibility for the treatment and high treatment cost[20]. Study shows that, infertile women in both the countries were educated with minimum of primary education and were working which implies, infertility may occur because of work pressure, postponing of child birth due to low income[16]. Hence infertility was highly significant with occupation which in turn education. But it is interesting that, female employment empowers women in increasing the opportunity costs to become fertile. Hence education has its own positive and negative side in case of infertility.

Impact of socio economic factors on infertility: Logistic regression was carried out in order to quantify the net effect of infertility on the socio economic variables. Since the dependent variable is dichotomous (i.e 1- infertile women and 0- fertile women) in nature, odds ratio gives the measure of association between the influences of explanatory variable on dependent variables.

In India, results shows that Residence (Rural as reference category), Education (Illiterate as reference category) and Wealth index (Poorest as reference category) has the significant influence on infertility. Odds ratio for Residence was 0.875 which implies women in rural area has the negligible chance (0.875) of getting infertile than those of urban women. In contrary, as per prevalence rate (table:3) infertile women were more in rural India. Hence, can conclude that infertility remains high in rural because of lack of effective treatments where rural prefers to go to PHCs because of accessibility, affordability and availability [21], [22]. This shows, urban infertile women has the more chance of getting fertile by availing the treatments in spite of the high expenditure towards infertility.

Odds ratio of education has 1.068 which implies that illiterate women has negligible chance of getting infertile than those of literate. Infertility increases as the education level increases. There may be several reasons for why education changes the reproductive behaviour. In reality, woman with minimum education can be able to read and write, analyze the situation around her and improves her reproduction[23]. Also surroundings and situational learning by media, even illiterate woman dwelling in cultured area has the chance of diverse attitude towards infertility. For high educated women, there may be delay in getting nuptials which in turn affects fertility rate. On the whole, education has the powerful effect in reducing the fertility rate and also suppresses or delays in fertility [24]. Similarly, in case of wealth index, poor women have the less chance of getting infertile than rich as they are early married, less prone to stress situation and urban lifestyle.

Contradict to the above Indian situation, none of the explanatory variables influences infertility in Bangladesh. It is obvious that the government and NGO policy makers' and donors' main concern is to emphasize family planning and maternal & child health care in Bangladesh [25]. However, there are also contradicting urging in favor of providing infertility services in a developing country like Bangladesh.

Table 4: Impact of socio economic variables on Infertility

Variables	India				Bangladesh			
	B	S.E	Sig	Exp (B) odds-ratio	B	S.E	Sig	Exp (B) odds-ratio
Residence (ref. rural)	-0.133	0.031	0.000	0.875	-0.247	0.171	0.149	0.781
Education (ref. illiterate)	0.066	0.014	0.000	1.068	-0.11	0.089	0.219	0.896
Religion	0.019	0.015	0.206	1.019	-0.042	0.222	0.850	0.959
Wealth Index (ref. poorest)	-0.119	0.011	0.000	0.888	-0.025	0.064	0.696	0.975
Occupation	-0.033	0.038	0.388	0.968	0.215	0.224	0.159	1.24
Constant	-3.735	0.038	0.000	0.024	-3.921	0.21	0.000	0.02

*P<.01

Conclusion

The frequency of infertility is escalating day by day. Women are forced to accept the burden of infertility even when the problem cannot be traced to any reproductive malfunctioning on her part. Infertility grounds woman's powerlessness to achieve the desired social role, it is often associated to psychological distress [26].

Customarily, Infertility intimidates a woman's distinctiveness, position and monetary protection and act as a source of anxiety leading to lower confidence. This study concludes that, infertile women are a source of socio-economical knowledge with distressing consequences on social health of infertile couples. India facing economically influenced infertile women especially with the residing type, education and wealth index than Bangladesh. Infertility remains a neglected issue in Bangladesh's reproductive health policy; instead, the emphasis has always been on the problem of overpopulation[27]. Study provides scope in clarifying the childlessness among literate women and higher income group.

Conflict of Interest: There is no conflict of interest of opinion in publishing this article.

Ethical Consent: I along with other authors give consent that the data set was taken from NFHS-4 available in website [cited April 14, 2019] Available from https://dhsprogram.com/data/available-datasets.cfm

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The Effectiveness of Warm Saline Gargles on Sore Throat among Patients after Endotracheal Tube Extubation in Selected Hospital

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Abstract

Background & Objective: Sore throat is a common morbidity following tracheal intubation in the post-operative period. Our aim was to assess the effectiveness of warm saline gargles on sore throat after endotracheal tube.

Method: A Quasi Experimental: Non randomized control design group was conducted involving 40 endotracheal tube extubated patients who completely out of anaesthetic effect, endotracheal induced sore throat, undergone general anaesthesia in hospital and 2nd post-operative day. After obtaining informed consent. Patients were randomly allocated into two groups of 20 patients each. Warm saline gargles (Isotonic solution 200ml at temperature 30-40 degree Celsius) on sore throat among patients after endotracheal tube extubation in experimental group for 2 times a day for 2 days. Tool used in the study are Numerical pain scale, GRABS- Hoarseness of voice, Modified Bedside Swallowing Scale.

Results: The average change in pain score and GRABS- Hoarseness of voice in experimental group was significantly higher compared to control group. Average pain score in pre-test was 7 which was 1.2 in post-test, t-value 15.2 with df 19 (less than 0.05), null hypothesis rejected. Average GRABS score in pre-test was 10.3 which was 2.7 in post-test, t-value 11 with df 19(less than 0.05), null hypothesis is rejected. p-value were large (greater than 0.05), none of the demographic variables was found to have significant association with the endotracheal induced throat pain, hoarseness of voice.

Conclusion: The effectiveness of warm saline gargles in endotracheal tube extubated patients, null hypothesis is rejected. The association in effectiveness of warm saline gargles over on extubation inducing sore throat with selected socio-demographic variables, null hypothesis is accepted.

Keywords: *Endotracheal tube extubation, sore throat, warm saline gargles.*

Introduction

Endotracheal extubation is a medical procedure in which a tube is placed into the wind pipe (trachea) through the mouth or nose is been removed after the indicated procedure. The common problems after endotracheal tube extubation are common after laryngoscopy and insertion of an orotracheal tube. These are typically of short duration, such as sore throat, lacerations of lips or gums or other structures within the upper airway, chipped, fractures or dislodged teeth and nasal injury. Other complications which are common but more serious include accelerated or irregular heartbeat, high blood pressure, elevated intracranial and intraocular pressure and bronchospasm.

A complaint of postoperative pharyngeal discomfort is so prevalent that it is almost expected by patients and anesthetist alike as an unavoidable part of routine anesthesia. Complaints range from minor throat irritation to debilitating pain, inability to swallow and temporary voice change and are a frequent observation

on the postoperative visit. There is no data regarding the magnitude of post-operative airway complications and their associated risk factors in Ethiopia. The finding of this study confirmed pervious observations that the large the ETT size, the higher the incidence of postoperative respiratory morbidities. Although tracheal intubation remains as absolute necessity for good airway protection for different surgical procedures, recommended to use the smaller ETT sizes (6.5.,7.0 mm ID) to minimize the pressure induces trauma on the laryngeal and tracheal mucosae. [1]

Endotracheal intubation during general anaesthesia often leads to postoperative complication like sore throat, cough and hoarseness of voice. In this study, we tried to determine the effects of controlled ETT cuff pressure in these complications. In the present study the 2 groups were comparable with respect to age, gender, weight, height, BMI and during surgery. The incidence of POST at 12 or 24hr. in the group with controlled ETT cuff pressure was significant difference in the incidence of POST at 1hr between the 2 groups. Proper control of ETT cuff pressure during general anesthesia with the help of a manometer significantly reduces the incidence and severity of POST.

Material and Method

A Quasi Experimental study design with quantitative approach was used, as this study was aimed, the approach was found to be most appropriate. Aexperimental group was given warm saline gargles (isotonic solution 200ml at temperature 30-40 degree Celsius twice for 2 days) and control group was given no intervention. This study was conducted in selected hospital of Pune city. The selection was based on easy accessibility, cooperation and availability of samples. Total 40 Endotracheal tube extubation induced sore throat patients of selected hospital, Pune city who met the inclusion criteria were selected. Tool used for the collection of data was a Modified observational checklist (Numerical Pain Scale, Modified Massey Swallowing Scale and GRABS- Hoarseness of voice). Findings: The analysis and interpretation of the data collected to determine the Effectiveness of warm saline gargles on sore throat among endotracheal tube extubationis carried out based on objectives set by the researcher taking the level of significance as 0.05

Table 1: Effectiveness of warm saline gargles on sore throat after endotracheal extubation based on numerical pain scale n=20, 20

Pain	Experimental				Control			
	Pre-test		Post-test		Pre-test		Post-test	
	n_1	%	n_1	%	n_2	%	n_2	%
No Pain (Score 0)	0	0%	5	25%	0	0%	0	0%
Mild (Score 1-3)	2	10%	15	75%	2	10%	6	30%
Moderate (Score 4-6)	6	30%	0	0%	11	55%	10	50%
Severe (Score 7-10)	12	60%	0	0%	7	35%	4	20%

Table 2: Paired t-test for the effectiveness of warm saline gargles on sore throat after endotracheal extubation based on pain score n=20, 20

	Mean	SD	T	Df	p-value
Pre-test	7.0	2.0	15.2	19	0.000
Post-test	1.2	0.8			

Table 3: Effectiveness of warm saline gargles on sore throat after endotracheal extubation based on Modified GRBAS n=20, 20

Hoarseness of voice	Experimental				Control			
	Pre-test		Post-test		Pre-test		Post-test	
	n_1	%	n_1	%	n_2	%	n_2	%
No hoarseness (Score 0)	0	0%	2	10%	0	0%	0	0%
Mild (Score 1-5)	0	0%	18	90%	2	10%	3	15%
Moderate (Score 6-10)	8	40%	0	0%	9	45%	14	70%
Severe (Score 11-15)	12	60%	0	0%	9	45%	3	15%

Table 4: Paired t-test for the effectiveness of warm saline gargles on sore throat after endotracheal extubation based on Modified GRBAS n=20, 20

	Mean	SD	T	Df	p-value
Pre-test	10.3	2.5	11.0	19	0.000
Post-test	2.7	1.7			

Discussion

A similar study was conducted study on A Quasi experimental study to determine the effect of warm saline gargles on sore throat among patients after endotracheal tube (ET) extubation in Hinduja Hospital. Fifty patients who developed sore throat after endotracheal tube extubation were randomly assigned to control and experimental group. An experimental approach was used and patients intubated for 3 to 48hrs and had regained gag reflex were included for the study and those with altered sensorium and pre-existing sore throat were excluded. Warm saline gargle thrice a day/ standard care was given to the patients in both groups for two days and post-test assessment done thereafter. The calculated 't' value for the post test in control and experimental group is 5.52 which is more than the table value at 0.05 level of significance, hence null hypothesis is rejected. There was significant relation between sore throat and hoarseness of voice and variables like size of tube, use of lubricant jelly and number of attempts.

Conclusion

The following interpretation can be done from the findings of the study. The analysis of the data reveals that the effectiveness of the warm saline gargles is highly significant for reduction of sore throat pain among endotracheal tube extubation patients as measured through numerical pain scale, modified swallowing bedside scale and GRABS- Hoarseness of voice.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Obtained from Institutional Research Committee

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A Study to Assess the Effectiveness of Beetroot Juice in Reducing Blood Pressure among Post Menopause Women Having Elevated Blood Pressure in Selected Central Region of Gujarat

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Abstract

Background of the Study: In the contemporary epoch, In India there is accelerated evolution in health due to expanding strain of prevailing chronic non communicable diseases, supremely cancer, hypertension, chronic lung disease diabetes mellitus and stroke as well as increased age was one the cardinal cause of elevated blood pressure.

Objectives: 1) To determine the effectiveness of beetroot juice in reducing blood pressure among post menopause women having elevated blood pressure. 2) To find out the association between the selected demographic variables and blood pressure among post Menopause women.

Methodology: A quasi experimental study was carried out by electing 64 post menopause women through non probability convenience sampling technique. Demographic data was collected by questionnaire as well as blood pressure was monitored by using digital sphygmomanometer.

Result: Majority of menopause women belongs to the age group between 64-76 years. Menopause women having abnormal BMI above 25 (P= 0.013 at 0.05 level of significance) have increased risk of elevated Blood pressure. Blood pressure was detected higher among women who have attained menopause at later age (>45 years). The significant difference was discovered in pre- test and post- test blood pressure level among participants included in experimental group however; there was no significant difference among participants included in control group at 0.05 level of significance.

Conclusion: Elevated blood pressure can be reduced by regular consumption of beetroot juice among post menopause women.

Keywords: *Elevated blood pressure, Post menopause women, Systolic blood pressure, Beetroot juice, Diastolic blood pressure.*

Introduction

Health is “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO)[1]. It is a treasured facet of every mankind, as well as it is a heavenly gift for a person. Health is sustained not simply as a result of up gradation and utilization of health science technologies, but it also can be achieved through the ingenious life style of personal and community such as exercise, yoga, diet pattern and meditation[2].

There are different etiological factors that cause fluctuations in blood pressure levels among Menopause women such as Age, Hormonal changes, Family history of high blood pressure, Lifestyle, having high blood pressure during pregnancy are the prospect to develop hypertension at the age of menopause, Being

obese, consumption of alcohol, Stress, Lack of physical exercise, Chronic kidney disease, Smoking, Adrenal and thyroid diseases, Being obese, High Cholesterol and triglyceride levels[3][4].

As the Age increase among both male and female is most commonly blood pressure (BP) is increased. However, the prevalence of elevated blood pressure in man is lesser then in postmenopausal women, 41% of postmenopausal women having hypertension. Majority of 25% of the female world population is suffering from hypertension[5]. The risk factors of elevations in blood pressure in women are associated with cardiovascular risk among women having age more than 60 years. As per the data of the United States, there is prevalence of hypertension among women aged 60 years or greater is more than 75% [6]. The data set of National Health and Nutrition Examination Survey (NHANES) IV (1999–2004) illuminate that, the percentage of men and women having elevated Blood pressure was 50.8±2.1% and 55.9±1.5% respectively[7].

As per the data of India Today (2017) in a world there are 1.13 billion adults are suffering from hypertension. In India there are 23.5% Men and 22.60% women suffering from hypertension [8].

The decrease of the hormone oestrogen in postmenopausal women causes elevation in endocrine metabolic dysfunctions, like variation in lipid profile and blood pressure. So that there are various alternatives used and one of those alternatives is physical exercise and diet rich in nitric oxide (NO) that is a dynamic vasodilator for prevention and treatment [9].

Beetroot is the round, dark red, small root of a plant, can be eaten or cooked as a vegetable, especially used in salad. The main content of it is fibre (2-3%), carbohydrates (8%) and water (87%). It contains 6.4 to 12.8 mg/kg nitrate which helps in reducing elevated blood pressure [10].

Methodology

The study was executed by using quantitative research approach with quasi experimental study design. The elected population for the study was post menopause women having elevated blood pressure above 130/80 mm of hg in selected central region of Gujarat. Participants were selected by calculating power analysis with using the formula

$$n = 2(\sigma/\Delta)^2 (Z_\alpha + Z_{1-\beta})^2.$$

n = Sample size, σ = Standard deviation = 1(taken from pilot study), Δ = critical difference = 0.5 (constant value), Z_α = Error (5%) = 1.96, $Z_{1-\beta}$= Power (80%) = 0.84.

There were 64 post menopause women selected and assigned in to two groups by using non-probability convenience sampling technique, the participants who elected in experimental group were given 400 ml of beetroot juice daily for 10 days and no intervention given to the control group participants. Independent variable was beetroot juice as well as dependent variable was elevated blood pressure level and demographic variables were age, age of menopause, BMI, lifestyle, treatment, family type, Smoking, tobacco chewing, alcohol consumption, family history, exercise, food habit and health check-up. All the data was collected by utilizing demographic questionnaire and blood pressure was monitored by using digital sphygmomanometer Med tech Nova checker B. P. Monitor 12T. Pilot study was conducted in changa village to identify feasibility of the samples and reliability of the tool. The main study was conducted in different old age homes. Moreover, the data was analysed and interpreted by using descriptive and inferential statistics. Nutritive value of beetroot juice was given by nutrition.

Results

The analysed finding of the study were exhibited that among 64 post menopause women having elevated blood pressure, majority of them 34 (53.4%) menopause women belongs to the age group of 64 -76 years as well as the mean ± SD was 70.6 ± 6.66 in control group and in experimental group mean ± SD was 70.31 ± 7.13. Especially 26(81.3%) participants were in hypertension stage II and 6(18.8%) were in hypertensive crisis in control group as well 46(71.9%) participants were in hypertension stage II and 9 (28.1%) were in hypertensive crisis in experimental group. Moreover, 46(71.9%) have attained menopause at the age of 40-48 years as well as 28 (43.75%) participants were having BMI 25-29.9. All the 64 (100%) participants were having moderately active lifestyle, no smoking, no tobacco chewing, no alcohol consumption and all were vegetarian. Most of the participants [62(96.8%)] were live in nuclear family, [39 (60.9%)] not taking any treatment, [41 (64.06%)] having family history of hypertension, [43(67.18%)] not doing exercise regularly and [44(68.7%)] not go for regular health check-up.

The paired t test was calculated to assess the significant change in blood pressure level in pre-test post-test S BP and pre-test post-test DBP score among both the groups, The value for control group S BP was obtained t value = 0.976, Table value = 2.04 (P = 0.336) and for DBP was obtained t value = 0.070, Table value = 2.04 (P = 0.945) as well as for experimental group S BP was obtained t value = 12.741, Table value = 2.04 (P = 0.000) and for DBP was obtained t value = 5.629, Table value = 2.04(P = 0.00004) illustrates that no significant change was found in blood pressure level in pre-test, post-test S BP and pre-test, post-test DBP score among control group but, there was significant change and in blood pressure level in pre-test, post-test S BP and pre-test, post-test DBP score among experimental group.

Unpaired t test was carried out to assess significant change in Blood pressure level in both the groups. The calculated value was obtained t value = 9.445, Table value = 2.0 (P = 0.000). It suggests that there was significant change in Blood pressure level in both groups.

The calculated Chi square ($\chi 2$) value = 9.495, Table value = 5.9 (P=0.013) exhibit there was significant association between elevated blood pressure of post menopause women and BMI in control group as well as experimental group and there was no significant association with other demographic variables at P <0.05 level of significance so, research hypothesis was accepted for BMI Hence, it was rejected for other demographic variables.

The Odds ratio suggest the risk of occurrence of hypertension among post menopause women by various risk factors like, Age of menopause (2.094), BMI (0.183), Family history (1.255), Exercise (1.461) and Health checkup (1.667) .

Conclusion

The study concluded that beetroot juice has tremendous effect in reduction of elevated blood pressure as well as abnormal BMI, Increase age of menopause, Family history, Lack of exercise and lack of regular health checkup are the influencing factor in occurrence of hypertension. Along with it highlights that beetroot plays vital role in lowering elevated blood pressure among post menopause women having elevated blood pressure above 130/80 mm of hg. Within 10 days of time period.

Conflict of Interest: Nil

Source of Funding: Nil

Ethical Clearance: The study was approved by the research committee, IEC – 10/05/2019- ARIP/IEC/19/249I and a formal written permission was gathered from the authority of old age home.

Statement of Informed consent: Informed consent was acqired from the participants.

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A Study on Customer Preference towards Online Shopping of Organic Food Products in Coimbatore District

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Abstract

In today's scenario, online shopping is playing an important role in the life of human because time is precious for every people. People have become very busy in their work and they are unable to make their shopping daily. In this article we are going to discuss regarding the preference of organic food products through online shopping (Basha, 2014)[1]. Awareness of organic products has been increasing steadily and Consumers are started to prefer organic food products because they are healthy, safety and environmental friendly (Brijesh Sivathanu, 2015)[2]. Consumer of organic food products are willing to purchase organic products through online shopping due to the time and travel constraints (Ramesh, 2015)[10]. In this paper the researcher has collected the sample size of 80 and tools used for the analysis are percentage analysis, chi- square analysis and Anova. The result of the study is found that the consumers are purchasing the organic food products through online shopping, especially for the health purpose.

Keywords: *Customer preference, organic food products, health and online shopping.*

Introduction

Nowadays health of the human is concentrated well by everyone due to the changes in the food habits. In the current scenario people are moving fast towards their work and they are not concentrated on the health by having the conventional food (Chandrashekar, 2014)[3]. These kind food habits are affecting the health of human and causing many diseases. Awareness of organic food products has increased in the environment and consumer are started to consume it mainly for the healthy, safety and the environmental issues in society (Dash, 2014)[4]. At present consumer of they are using online shopping for the purchase of the products from the various countries and they are getting it with the safe and comfortably. With the help of online shopping time, travel and money has been saved. Consumer are started to purchase all kind of products through online shopping. Consumers of organic food products are started using online purchase of products that are available in various places.

Customers are preferring products based on their attitudes towards the various alternative products available (Kumar, 2015)[5]. Consumer prefer organic food products with the opinion provide by the others through word of mouth and at the same time the consumer will get reviews from various people and are influenced (Paluri, 2014)[7].

Online shopping has become the trending to purchase the products. Based on the online shopping the brief description of the products can be found and also comparison of organic products is made easily (Sharma, 2016)[11]. Customers have purchased organic products which are healthy when compared to conventional products (Rajeswar and Magesh, 2016)[9]. An organic food product helps them to have the better life.

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Statement of the Problem: Awareness of organic food products has increased by the consumer and there is a demand of the organic food products in many areas and at the same time, time constrains is there for the consumer (Narmilan, 2015)[6]. Online shopping helps the consumers to purchase the products from various places easily. Consumers prefer online shopping for the purchase of organic products and the time has been utilized effectively (Priya, 2016)[8].

Objective of the Study:

- To study the customer preference towards online shopping of organic food products
- To find the factors influencing consumers to prefer online shopping for organic products
- To find the constrains faced by the consumer towards the demand of products
- To provide valuable suggestion for the improvement of service in future

Research Methodology

Research Methodology is the methodical way to solve the problem. There is diverse kind of methodologies used in different types of investigation and the term is usually considered to include research design, data collection and data analysis.

Research Design: Research design is the map, arrangement and approach of analysis concerned so as to counter to research questions and to control conflict. Research design depends on depth and extent data necessary of the costs and benefits of the research. Descriptive research is adopted for this research.

Sources of data

Primary data: The primary data was collected through questionnaire from the customers in Coimbatore who are using the online shopping to purchase organic products.

Secondary data: The secondary has been collected from Journal, Records, Books and Company profile.

Research instrument: Data was collected through questionnaire.

Sample size: The sample size for the study was 80.

Tools for analysis: The data collected through the questionnaire has been analyzed by using the tools given below.

- Percentage Analysis.
- Chi-Square test.
- Anova

Percentage Analysis: The percentage analysis method is used to calculate the percent of the favorable and unfavorable responses.

Percentage = [Number of respondents/
Total number of respondents]×100

Chi Square: Chi-square is a statistical test commonly used to compare observed data with data we would expect to obtain according to a specific hypothesis.

The formula to calculate chi-square test:

$$X^2 = \sum \frac{(obs - \exp)^2}{\exp}$$

Obs - Observed frequency, Exp - Expected frequency.

Materials and Method

1. Percentage Analysis

Table 1

Characteristics	Frequency	Percent	Valid Percent
Buying decision through online shopping of the respondent			
Strong impact	35	43.8	43.8
Slight impact	19	23.8	23.8
Bad impact	26	32.5	32.5
Total	**80**	**100.0**	**100.0**

Characteristics	Frequency	Percent	Valid Percent
Payment through online of the respondent			
Highly satisfied	19	23.8	23.8
Satisfied	23	28.8	28.8
Neutral	15	18.8	18.8
Dissatisfied	14	17.5	17.5
Highly dissatisfied	9	11.3	11.3
Total	**80**	**100.0**	**100.0**
Purchasing organic food of the respondent			
Highly satisfied	17	21.3	21.3
Satisfied	19	23.8	23.8
Neutral	14	17.5	17.5
Dissatisfied	14	17.5	17.5
Highly dissatisfied	16	20.0	20.0
Total	**80**	**100.0**	**100.0**
Online Service of the respondent			
Highly satisfied	16	20.0	20.0
Satisfied	23	28.8	28.8
Neutral	9	11.3	11.3
Dissatisfied	17	21.3	21.3
Highly dissatisfied	15	18.8	18.8
Total	**80**	**100.0**	**100.0**
Organic food benefits of the respondent			
Highly satisfied	28	35.0	35.0
Satisfied	13	16.3	16.3
Neutral	17	21.3	21.3
Dissatisfied	6	7.5	7.5
Highly dissatisfied	16	20.0	20.0
Total	**80**	**100.0**	**100.0**
Advertisement of organic products of the respondent			
Idea of delivering the message	26	32.5	32.5
Frequently changes in add	23	28.8	28.8
Logical reason	12	15.0	15.0
Branded modelers	19	23.8	23.8
Total	**80**	**100.0**	**100.0**

2. Chi-Square

Association between Age and Purchase through online shopping: An attempt was made to study the association between Age and Purchase through online shopping. For this purpose the respondents classified on the basis of chi-square test between Age and Purchase through online shopping. The data are tabulated and presented in the table 2.

Null hypothesis (Ho): There is no association between Age and Purchase through online shopping of the respondent.

Alternative hypothesis (H1): There is an association between Age and Purchase through online shopping of the respondent.

Table 2: Age of the respondent and Purchase through online

Age		Purchase through online shopping					Total
		Highly satisfied	Satisfied	Neutral	Dissatisfied	Highly dissatisfied	
Age of the respondent	Below-25	9	7	0	0	8	24
	25-30	9	0	10	0	8	27
	30-35	10	6	7	6	0	29
Total		**28**	**13**	**17**	**6**	**16**	**80**

Table 2.1.1: Age of the respondent and Network facility of the respondent

Chi-Square Tests			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	35.387 [a]	8	.000
Likelihood Ratio	50.687	8	.000
Linear-by-Linear Association	.673	1	.412
N of Valid Cases	80		

a. 7 cells (46.7%) have expected count less than 5. The minimum expected count is 1.80.

Inference: It is incidental; there is an association between Age and Purchase through online

3. **Anova:** Association between gender and buying decision of the respondents

Null Hypothesis (H0): There is no significant difference between gender and buying decision of the respondents.

Alternative Hypothesis (H1): There is no significant difference between gender and buying decision of the respondents.

Table 3: Gender and buying decision of the respondents

Gender of the respondent	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	12.152	4	3.038	31.492	.000
Within Groups	7.235	75	.096		
Total	**19.388**	**79**			

Inference: It is determined that the calculated value is (0.00) which less than the table value (0.05). Therefore the null hypothesis was rejected and concluded there is significant difference between gender and buying decision of the respondents.

Findings: The study has found that there is a strong impact with 43.8% in buying decision through online shopping of organic food products, 28.8% are satisfied with the Payment through online for their safety, 23.8% used to purchase organic products in online shopping, 28.8% of the respondents felt satisfied with the online service to purchase products, 35% of respondents felt that the organic food products benefit for their health and logical reason of the advertisement has to be improved to create effective customer support on purchase. Chi-square test has resulted that there is an association between Age and Purchase through online and Anova test has found that there is significant difference between gender and buying decision of the respondents.

Conclusion

Organic products are emerging to meet the demand in the market in order to satisfy the needs of the customer (Wee, 2014)[12]. Awareness of organic food products has to be used well to increase the consumption and online shopping helps the customers to purchase the organic

products easily without moving from various places. Customers felt that still online service to be improved for them to make more purchase in the safer manner. Buying decision of the customers has to be concentrating well for making them to be satisfied.

Ethical Clearance: Taken from article

Source of Funding: Self

Conflict of Interest: Nil

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Severe Early Childhood Caries, Hypoplasia-Associated Severe Early Childhood Caries and Deciduous Molar Hypomineralization amongst 3 to 6 Years Old Anganwadi Children in Pune, Maharashtra: A Cross-Sectional Study

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Abstract

Purpose: Systemic insults leading to hypoplastic enamel defects predisposing to early childhood caries have been termed as Hypoplasia-associated early childhood caries (HAS-ECC) and have been proposed to have a distinct dual etiology. Thus, the study was undertaken to find its prevalence and dual etiology.

Material and Method: A cross-sectional survey was conducted amongst 775 anganwadi children aged 3 to 6 years to assess severe early childhood caries, hypoplasia-associated early childhood caries and deciduous molar hypo-mineralization using National Institute of Dental and Craniofacial Researchcriteria (NIDCR) and European Academy of Paediatric Dentistrycriteria (EAPD) respectively. Prenatal, perinatal and postnatal history was obtained by maternal interviews using a pre tested questionnaire. Descriptive statistics is presented as frequency, percentage and means using SPSS version 16.

Results: The prevalence was found to be 29.93%,5.54% and 4.12%respectively for severe ECC, hypoplasia associated ECC and deciduousmolar hypo-mineralization. Caries experience increased with age. Maternal interviews revealed that 79.10% mothers were underweight,60.50% had young maternal age and 62.80% mothers used smokeless tobacco during pregnancy. Currentnutritional status was found to be normal for 67.40% children while the sweet score was found to be in the “watch out zone” for all the children

Conclusion: Thus, the presence of these prenatal, perinatal and postnatal factors amongst these children indicate the systemic influence leading to Enamel Hypoplasia (EHP) along with cariogenic dietary practices thereby signifying the probable dual etiology to be present amongst the children diagnosed with HAS-ECC.

Keywords: *Dentalcaries, Dental Enamel Hypoplasia, Hypomineralization.*

Introduction

Early childhood caries (ECC) is a public health problem affecting the infants and preschool children worldwide which if untreated may result in higher risks of new carious lesions in primary and permanent dentition, increased treatment costs, hospitalizations, loss of school days, increased days with restricted activity thereby having a negative impact over the quality of life of the children[1,2]

Caufield et al[3] stated that along with improper feeding practices, prolonged sugar beverage consumption, improper maintenance of oral hygiene and the hypo plastic enamel defects can also cause ECC and

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termed it as HAS-ECC . There are basically two major developmental enamel defectsie., enamel hypoplasia and enamel opacity/hypomineralization being reported by Salanitri and Seow[4]. EHPis a quantitative disturbance of mineralized tissue formation during tooth development occurring due to insult to the embryonic cells during embryonic development.[3]. Enamel hypomineralization is a qualitative defect of the enamel with alteration in the translucency of enamel and no loss of tooth structure. Hypomineralization in second primary molar has been termed as Deciduous Molar Hypomineralization (DMH)[5].

Thus, this study was undertaken to find the prevalence of Severe ECC, HAS-ECC and DMH to have better understanding towards the proposed distinct etiology of HAS-ECC amongst the anganwadi children in Pune, Maharashtra through a questionnaire study.

Material and Method

A cross-sectional survey was conducted from July–September 2015 amongst nineteen anganwadi's selected from West zone of Pune city, Maharashtra according to convenience sampling technique. The sample size of 775 children aged 3-6yrs was calculated at 95% confidence level using the formula for descriptive studies based on published data[6] where in the prevalence of enamel hypoplasia with caries was 34.11%.Ethical Clearance was obtained. Photographic and clinical calibration was conducted for the examiner. Intra-examiner reliability was calculated using Kappa and weighted Kappa for diagnosis of dmfs for S-ECC, HAS-ECC staging and DMH which ranged from 0.7 to 0.92. The interviewer was trained formaternal interviewing using a pre tested questionnaire. Informed consent was obtained from the parents of the children.

The demographic details of the participants were collected from the anganwadi staff records. Socioeconomic status was recorded using Kuppuswamy scale[7]. Clinical examination was conducted on wet teeth by a single well trained examiner in daylight conditions using a portable penlight torchor under natural light to diagnose S-ECC, HAS-ECC and DMH.

Caries was diagnosed according to World Health Organization (W. H. O)[8] criteria for caries diagnosis using dental caries index i.e dmfs index. S-ECC was diagnosed on the basis of criteria laid down by NIDCR proposed by Drury etal[9]. HAS-ECC was diagnosed and classified as per the staging proposed by Caufieldetal[3]. DMH was diagnosed on the basis of EAPD criteria proposed by Weerheijmet al[10].

The information on various prenatal (maternal) factors and nutritional status (BMI) along with perinatal and postnatal factors that influence the development of enamel hypoplasia were obtained by face-to-face maternal interviews of children diagnosed with HAS-ECC using a specially designed, validated questionnaire. The content validation of the questionnaire was carried out by 15 subject matter experts whereby content validity ratio was calculated. The final questionnaire comprised of 14 questions on prenatal, perinatal and postnatal factors. It was then translated to local language (Marathi) and back-translated and subjected to reliability analysis, pretesting and pilot testing. The nutritional status of the child was assessed using WHO child growth standards[11] along with sweet score of the children diagnosed with HAS-ECC were recorded as excellent, good and in the watch out zone [12]. Duplicate examination was done during the course of the survey .

Statistical Analysis: Data collected through the assessment form was entered into Microsoft Excel spreadsheet 2010. Descriptive statistics was performed using Statistical Package for Social Sciences (SPSS) version 16.

Results

Oral Examination: Table 1 Presents the prevalence of S-ECC, HAS-ECC and DMH according to gender. Amongst the children 271 belonged to lower SES,459 upper lower and 45 belonged to lower middle class.

Table 2 Most of the children belonged to stage 1 of HAS-ECC wherein the primary teeth had EHP and a minor to moderate degree of caries. The staging/severity of HAS-ECC increased with an increase in age of the children which was found to be statistically significant ($p<0.05$, Spearman's Correlation value=0.718). Demarcated opacity was the only defect found for DMH.

Table 3 Caries experience of children diagnosed with S-ECC and HAS-ECC shows increased prevalence as age advances.

Table 4 Prenatal factors indicated that mothers were underweight with 44% consuming milk and milk products (once a week) and 51% green leafy vegetables (2-3 times a week). Dietary insufficiency was seen and 93.02%consumed nutritional medication during

pregnancy. Postnatal factors indicated that recurrent diarrhea was seen in 14% and chronic respiratory infection probably in 19% during infancy and 84% of them breast fed their infants.

Table 1: Genderwise distribution of S-ECC, h AS-ECC, DMH

Gender	Children Examined	S-ECC	HAS-ECC	DMH	Without Disease
	N (%)	N (%)	N (%)	N (%)	N (%)
Male	391(50.50)	123(15.87)	20(2.58)	18(2.32)	268(34.58)
Female	384(49.50)	109(14.06)	23(2.96)	14(1.80)	275(35.49)
Total	775(100)	232(29.93)	43(5.54)	32(4.12)	543(70.07)

Table 2: Age-wise distribution for staging of HAS-ECC.

Age of Children	Stage 0		Stage 1		Stage 2		Total	
	N	%	N	%	N	%	N	%
36-47 months	08	1.03	01	0.13	00	00	09	1.16
48-59 months	03	0.39	12	1.54	00	00	15	1.93
60-72 months	00	00	15	1.94	04	0.51	19	2.45
TOTAL	11	1.42	28	3.61	04	0.51	43	5.54

Significant (2-tailed)=0.0, Spearman's Correlation Value = 0.71

Table 3: Mean caries experience among S-ECC and HAS-ECC

Age of Children	S-ECC	HAS-ECC
	Mean (SD)	Mean (SD)
36-47 months	4.50(0.54)	4.55(0.72)
48-59 months	6.84(1.01)	7.20(1.42)
60-72 months	7.80(1.70)	9.63(3.11)

Table 4: Prenatal, Perinatal And Postnatal Factors Of Children With Has-Ecc

		N	%
1	**Prepregnancy BMI of Mother**		
	Underweight	43	79.10
	Normal	08	18.60
	Overweight	01	02.30
2	**Pregnancy age of mother**		
	Less than 20	26	60.50
	More than 20	17	39.50
3	**Green Leafy vegetables consumed by mother**		
	Daily	09	20.94
	2-3 times a week	22	51.16
	Once a week	12	27.90
	Once a month	0	0
	Never	0	0
	Cant say		
4	**Milk and milk products**		
	Daily	06	13.95
	2-3 times a week	18	41.86
	Once a month	19	44.19
	Never	0	0
	Can't say	0	0
5	**Gestation of child**		
	Full	34	79.10
	Pre term	09	20.90
6	**Birth weight**		
	Normal	17	39.50
	Low	26	60.50
7	History of recurrent diarrhea		
	Yes	06	13.90
8	**Breast feeding**		
	No	07	16.30
	Less than 6	00	00
	6 months	00	00
9	**Nutritional status**		
	Normal	29	67.40
	Moderate	14	32.60
10	**Sweet score**		
	Excellent	00	00
	Good	00	00
	Watch out zone	43	100

Discussion

The study was conducted at anganwadi which are preschools developed under the Integrated Child Development Scheme (ICDS) for the children of low socioeconomic status where they are provided with preschool education, mid-day meals, regular health and nutritional assessment and monitoring. [13].

S-ECC - The prevalence of S-ECC found in this study is comparable to the prevalence of results reported by another study conducted among 30% Bangalorechildren[14]. The prevalence of HAS-ECC was found to be 5.54% in the present study (Table -1,2). However, amuch higher prevalence for enamel defects and dental caries has been recorded amongst Brazilianchildren (24.56% and 48.4%)[15], Connecticut Headstartchildren (50%)[16] and Chinese children (22.17%)[17] all reported with higher enamel hypoplasia. This difference could be due to the difference in the criteria used for recording enamel defects. Also HAS-ECC was found to be a subset of S-ECC contributing 18.5% to the S-ECC group confirming the propositions put forth by Caufield et al[3]. The severity of HAS-ECC was found to increase with the age of the children. EHP as antecedent along-with the cariogenic dietary consumption has been attributed as the cause.

DMH – The prevalence of DMH of 4.12% (Table-1) is comparable to the prevalence recorded amongst Iraqichildren (6.6%)[18]and Nigerianchildren (4.6%)[19]. DMH has been classified into demarcated opacity, post eruptive enamel breakdown, atypicalrestorations, extractions due to hypo-mineralization and un-eruptedteeth. Demarcated opacities (100%)were the only type of defect recorded in this study. Similar findings were recorded amongst Iraqi children showing 92.8% demarcated opacities and 7.2% with extractions due to hypo-mineralization[18]. However, the inability to examine the required sample size calculated for the estimation of the prevalence of DMH due to feasibility issues and a high caries experience amongst the children that may have masked the hypo-mineralization defects could have lead to an underestimation of the prevalence of DMH in this study.

A self-reported pre-pregnancy BMI(Table-4) was used as a surrogate measure for maternal nutritional status. Majority of mother's were found to be underweight prior to pregnancy in this study. A low BMI signifies underweight mothers indicating lack of nutrients which would result in diminished fetal growth or duration of gestation resulting in pre term birth (PTB) and low birth weight (LBW). BMI has greater influence on PTB and LBW (predisposing to EHP) than the amount of weight gain during pregnancy [20]. A large number of adolescent pregnancy cases were observed amongst children with HAS-ECC in this study which is supported by studies among Spanishchildren[21] and Brazilianchildren[22].

A large proportion of mothers in the present study were found to be tobacco chewers during pregnancy. Tobacco consumption by mothers during pregnancy has been associated with increased risks for ectopic pregnancy, still birth, preterm birth. LBW according to a report published in 2013 by W. H. O[23] results in a disequilibrium which affect early events in tooth development such as papilla condensation, enamel organ proliferation PTB has been associated with impaired calcium metabolism and rate of enamel matrix formation as supported by Chowdhury and Bromage[24].

Birth weight less than 2500 grams is being defined as LBW by UNICEF[25] and they may present with neonatal complications and metabolic disorders which may interfere with odontogenesis. A large proportion of children diagnosed with HAS-ECC in this study had low birth weight while Australian Aboriginalchildren[26] with EHP presented positive findings of LBW.

Criteria prescribed by WHO[10] which defines preterm birth as babies born alive before the completion of 37 weeks of pregnancy was used in the present study. PTB has been associated with impaired calcium metabolism which may affect enamel development[27]. History of recurrent diarrhoea was recorded as it would lead to defective mineral absorption or excess excretion of minerals leading to DDE/EHP.

Postnatal malnutrition leads to development of EHP. Postnatal malnutrition upto one year of age leads to EHP in primary dentition since the enamel formation gets completed in the first year of life. Hence, Malnutrition during these growth years may predispose to enamel defects leading to caries. 33% of children presently had moderate malnutrition. A longitudinal study conducted amongst Mexican children revealed an association between malnutrition and development of hypoplastic defects in permanent teeth. [28]. HAS-ECC has been proposed to be a duality of EHP due to systemic insults and cariogenic dietary practices[3] hence, cariogenic dietary practices of the children diagnosed with HAS-ECC were assessed.

The study had certain limitations, ie., the underestimation of the prevalence of HAS-ECC and DMH as they were masked by high caries experience, recall bias amongst mothers of children diagnosed with HAS-ECC while conducting questionnaire based interviews, inability to examine a huge sample may have led to underestimation of the prevalence of DMH.

Conclusion

S-ECC, h AS-ECC and DMH were identified to be present amongst the anganwadi children in West zone of Pune, Maharashtra. Thus, this study reflects the prevalence, clinical presentation (staging) and the probable distinct etiology of the proposed subset of S-ECC defined as HAS-ECC. This is a cross-sectional study hypothesizing the proposed definition and distinct dual etiology of HAS-ECC. Dentistsalong with other health workers should incorporate antenatal and postnatal health education in general and oral health education. It is necessary for the dentists to have adequate knowledge about the etiology of Developmental Defects of Enamel in order to gain a greater understanding of the problem to establish appropriate preventive and curative measures.

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Conflict of Interest: Nil

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Effect of Cold Needle on Pain of Infant After Intramuscular Vaccine in Selected Hospitals

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Abstract

Background: Pain is an unpleasant sensory and emotional experience.[1] The pain associated with immunization is a source of anxiety and distress for the children approximately 77.2% of rural and 80% of urban children are immunized annually.[9] Using cold needle would decrease the pain.

Objectives: The objective of the study is to assess the effect of cold needle on pain of infant after intramuscular vaccine.

Materials and Method: An evaluative study with quasi experimental posttest only design was used to assess the effect of cold needle on pain of infant after intramuscular vaccine. 60 samples were taken using probability sampling technique-systematic random from selected hospitals, of which 30 were using normal room temperature needle and 30 were using cold needle. The data was collected using self-structured demographic data, FLACC pain assessment scale and observation checklist.

Results: The analysis was done by using descriptive and inferential statistics. Researcher applied Unpaired t-test for comparison of difference between post- test levels of pain associated with intramuscular immunization among children in experimental and control group based on observational checklist. On observation, Majority of infant 63% experience moderate level of pain during intramuscular injection with cold needle, 23% of the infants had mild pain and least percentage of 13% of the infant had severe pain in experimental group. In control group most of the samples had severe pain i.e. 70% and 30% had moderate level of pain during intramuscular injection. Corresponding p- value was 0.00001 which is significant less than $p<0.05$ level. Hence, the null hypothesis is rejected. It is evident that the use of cold needle is effective.

Conclusion: The intramuscular route is always a preferred one for the delivery of injections. The proper administration of intramuscular injection is necessary to minimize the pain and discomfort. In the present study sufficient difference in pain levels were found. Cold needle was effective in reducing pain during intramuscular immunization in infants.

Keyword: *Assess, Effect, Cold needle, Pain, Infant, Intramuscular vaccine.*

Introduction

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage.[1] The intramuscular injection is a procedure commonly performed by nurses and are associated with discomfort, pain and trauma to the injected tissue. Even though it can cause tissue, musculoskeletal and neurological complications such as abscess, tissue necrosis, muscle damage and nerve injury.[4]

The pain associated with immunization is a source of anxiety and distress for the children. The Centre for Disease Control and Prevention schedule recommends

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immunizations against 16 diseases, which translates in to 16 to 20 separate injections before the age of 2 years, depending on the number of combination vaccines available.[17]

The intramuscular injection is always a preferred one for the delivery of injections and it also causes pain and discomfort. Hence, there are many non-pharmacological measures to reduce the level of pain; one of which is ice-application.[15]

Cold therapy is one of the most widely used treatment modalities for acute pain. The Gate-Control Theory stimulated by cold can close the neural gate so that the central perception of pain is reduced.[7]

Thus, considering the anxiety and pain during the intramuscular injection, the researcher felt the need to conductive an evaluative study on assessing the effect of cold needle on pain.

Method and Materials

Study Objectives:

1. To determine the effect of cold needle on the pain level of children.
2. To determine the association of pain level with selected demographic variables

Study Design: The study used evaluative approach with quasi experimental posttest only design was used to assess the effect of cold needle on pain of infant after intramuscular vaccine. 60 samples using probability sampling technique-systematic random from selected hospitals, of which 30 were using normal room temperature needle and 30 were using cold needle. The data was collected using self-structured demographic data, FLACC pain assessment scale and observation checklist.

Findings:

Section I: Data on demographic variables of immunized infants.

Majority of samples in both experimental and control group belongs to the age group of 1.5 to 3 months i.e. 93% in both experimental and control group. Maximum samples in both experimental and contol group were male i.e. 57% and 63% respectively. Most of the sample i.e. 93% in experimental group and 83% in control group weighted between 4.6 – 5.5 kg . None of the sample had allergy reaction due to intramuscular injection.

Section II: Data on level of pain associated with intramuscular immunization among infants.

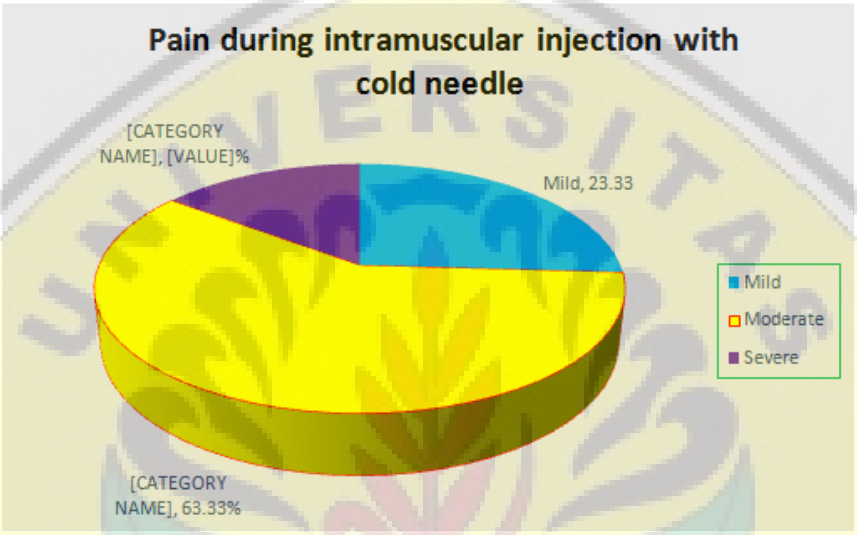
Table 1: Description on level of pain response in the experimental and control group. N=6

Sr.No.	FLACC SCALE (Face, Legs, Cry, Activity, Consolability Scale)	Experimental		Control	
1.	**Face**	F	%	F	%
	No expression or smile	06	20	0	0
	Rarely grimace, withdrawn and disinterested	09	30	3	10
	Persistently quivering chin and clenched jaw	15	50	27	90
2.	**Legs**				
	Normal position	01	3.33	0	0
	Anxiety, restless, stress	25	83.33	12	40
	Legs drawn up	04	13.33	18	60
3.	**Activity**				
	Lying quietly and normal position	01	3.33	0	0
	Squirming, shifting, moving constantly	28	93.33	24	80
	Arched, stiff, jerking	01	3.33	06	20
4.	**Cry**				
	No cry	04	13.33	0	0
	Moan, occasional complaint	22	73.33	20	66.6
	Crying, screams and frequency complaints	04	13.33	10	33.33
5.	**Consolability**				
	Relaxed and pleased	04	13.33	0	0
	Reassure easily by touching and hugging	24	80	19	63.33
	Difficult to pacify	02	6.66	11	36.66

The table no 1 shows that, control group (90%) had constant quivering chin and clenched jaw as compared to experimental group (10%). Majority of infants in experimental group experience uneasiness, restless and tense whereas control group showed kicking of legs i.e. 60%. Both the experimental and control group had squirming, shifting, back and forth tense i.e. 93% and 80% respectively. Most of the infants occasionally whimpers or moans in both experimental (73%) and control (66%) groups. Least percentage of infants had difficulty to console in experimental group i.e. 6% contrast to control group (37%).

Section III: Data on effectiveness of cold needle on levels of pain associated with intramuscular immunization among infants.

Analysis of data to determine the level of pain among infants during intramuscular vaccine with cold needle in experimental group



The level of pain during intramuscular vaccine with cold needle in experimental group.

The majority of 63% of the infant experience moderate level of pain during intramuscular injection with cold needle, 23% of the infants had mild pain and least percentage of 13% of the infant had severe pain.

Analysis of data to determine the level of pain among infants during intramuscular vaccine in control group: The above figure shows that in control group most of the samples had severe pain i.e. 70% and 30% had moderate level of pain during intramuscular injection.

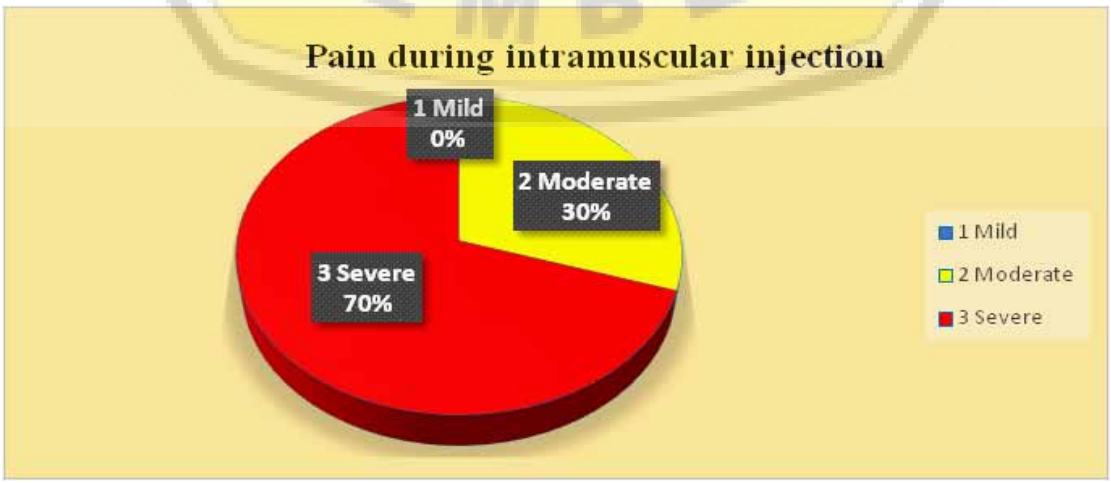


Table No 2: Description on the comparation of level of pain in the experimental and control group. n=30

Sr.No	Level of pain	Mean	Mean difference	Standard deviation	Unpaired t-test	p-value
1	Experimental Group	5.36	2	1.54	5.3423	0.00001
2	Control Group	7.36		1.351		

Researcher applied unpaired t – test to compare the pain during intramuscular injection in control and experimental group. It was found that the mean experimental group score was 5.36 and the mean control group score was 7.36 with the standard deviation of 2. The calculated mean difference was 2 and the obtained 't' value 5.3453 and p- value was 0.00001 which is significant less than $p<0.05$ level. Hence the null hypothesis is rejected. It was inferred that there is a significant difference between mean post- test levels of pain associated with intramuscular immunization among infants in experimental and control group. Cold needle is significantly effective in reducing the pain during intramuscular injection in infants.

Discussion

Present study was done on 60 patients, to assess the effect of cold needle on pain in infant. The sample were divided in two groups, 30 patients using room temperature needle and 30 patients using cold needle.

The focus of this study was to assess the effect of cold needle on pain among infants. In experimental group unpaired t test was applied to compare pain during immunization among infants and the t-value was found to be 5.34 and corresponding p-value was 0.00001, which is less than 0.05, null hypothesis was rejected and research hypothesis was accepted which show that use of cold needle for intramuscular injection is effective. When the samples of experimental and control group were assessed 13% of infant had severe pain in experimental group and in control group 70% of children had severe pain during intramuscular injection, which shows that use of cold needle while intramuscular injection is found to be effective among infants.

The demographical variable has no significant association with pain during Penta vaccination because the p–value is large (greater than 0.05). This data gives sufficient difference in pain levels when compared against experimental and control group. Cold needle was effective in reducing pain during intramuscular immunization in infants.

Conclusion

The purpose of the study was to assess the effect of cold needle on pain of infant after intramuscular vaccine. The research was a learning experience for the investigator which gave her better exposure. In this study since the ($p<0.05$) H_0 (null hypothesis) was rejected. It is evident that the control group had moderate pain as compared to another group. Researcher recommended to use cold needle for intramuscular injection across the hospitals.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Taken from Ethical committee of Dr. D. Y. Patil University.

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Exploring Challenges of Maternal Healthcare Utilization in Bangladesh: A Cross-sectional Survey in Saturia, Manikganj District

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Abstract

The main objective of the study is to explore maternal healthcare utilization challenges and care seeking behavior among child bearing mothers in Bangladesh. A semi-structured interview schedule was utilized for household survey in the study. A total of 240 women with a child under five years from different households were independently selected and interviewed to collect data. Results showed that around 50 percent women experienced cesarean delivery for last childbirth;the rates for ANC and PNC utilization were reported to be 75 percent and 25 percent respectively for the respondents. ANC and modes of latest childbirth were found statistically significant for age of the respondent, level of education and monthly household income.

Keywords: *Maternal Healthcare; ANC; PNC; Cesarean Delivery; MMR.*

Introduction

As a public health priority, maternal healthcare utilization attained enormous importance to reckon with improved healthcare delivery and quality services in Bangladesh. Despite remarkable successes in MDGs associated targets, there is still a continuous disparity in maternal healthcare utilization among Bangladeshi women. Maternal healthcare utilization operated on the basis of supply oriented approach[1] rather than emphasizing socio-cultural factors related with proper access and use of care services. The global health provision SDG 3 attempts to achieve global Maternal Mortality Ratio (MMR) less than 70 per 100, 000 live births by the end of 2030.[2] The main objective of SDG 3 denotes sustainable development attained through universal coverage of health interventions and care services.[1] It seems to be quite questionable to target the achievement of universal maternal healthcare coverage if inequity appears directly in the system. The current health system prioritized to achieve targeted SDG criteria in quantity without reducing gap for quality healthcare.

Maternal mortality, the death of a mother during pregnancy periods or within forty-two days of termination of pregnancy, from any cause related to or aggravated by the pregnancy or its management[3] achieved priority[4] for worldwide health and community development since the Nairobi Safe Motherhood Conference in 1987.[5] Despite huge concentration and financial investment towards maternal and child health, there is still a sharp increase in neonatal, infant and child mortality in sub Saharan Africa and Southern Asia.[5] Bangladesh achieveda surprising success to reduce maternal mortality in the past decade, but there is an indisputable question to decrease MRR target of 121 per 100,000 live births by 2022.[6] MMR found a significant declination from 322 to 194 maternal deaths per 100,000

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live births between BMMS 2001 and BMMS 2010[6] in Bangladesh. However, fertility contraction, increased access to healthcare, healthcare in antenatal, delivery and postpartum periods and socioeconomic conditions[6] directly declined maternal mortality. Nevertheless, MMR stopped to get less after 2010 and challenged the achievements of baseline targets of the fourth Health, Population and Nutrition Sector Program [HPNSP] backed by Sustainable Development Goals (SDGs).

Pregnancy related complications are attributable to lead the causes of maternal mortality and morbidity in Bangladesh. Antenatal care (ANC) is identified as an important contributor[7] to diagnose pregnancy complications during child bearing periods. According to BMMS survey (2016), approximately 75 percent women met with a medically trained healthcare provider for at least one ANC visit while around 09 percent women approached a non-medical professional for the same visit. However, 37 percent women accepted the recommended number (4 or more) antenatal checkups during pregnancy in 2016 whereas 23 percent women received four or more ANC checkups in 2010.[6] In a study of 2003, about 53 percent study women did not take any antenatal care check-up and only 11 percent women got a minimum of four check-ups.[8] Moreover, family income, age, education, occupation of both parents [9], mode of transport[10] cost concern for medical treatment[11] and exposure to mass media[12] were found strongly associated with the use of ANC among women during pregnancy periods.

The prevalence of home delivery coupled with low utilization of birth attendant significantly increased maternal mortality in Bangladesh. Although there is a strong mandate to train and employ skilled birth attendants[1] in health facility centers, the utilization of SBAs found disproportionate prevalence in different wealth settings.[13,14] The existing literature validated that around 85 percent Bangladeshi women accepted home delivery from untrained birth attendants like neighbors or relatives with nomedical or facility training.[15] In Bangladesh, out of 80 percent respondents, over 70 percent mothers considered home delivery as comfortable while about 29 percent respondents claimed it as obligations due to family sentiments and financial constraints.[16] PNC associated physical examination, immunization, health education and family planning services[9] improved maternal healthcare. Despite progress, there was also a low level of skilled PNC visits[1] within two days of delivery among Bangladeshi mothers.[17] The main objective of the study is to correlate socio-economic variables of women with maternal care-seeking behavior and explore maternal healthcare utilization challenges in Bangladesh.

Method

A descriptive cross-sectional survey was administered to collect quantitative data about ANC, PNC and birth attendant for March-April, 2018 at Saturia village in Saturia upazila, Manikganj. Women who had given birth in the last five years and her child remained alive were contacted with the interview. The study purposively selected Saturia village from nine villages in Saturai upazila. Every household was chosen using simple random sampling to get a woman with a child under five years old. A total of 240 women from different households were independently selected and interviewed to collect data. A semi-structured interview schedule was utilized for the survey. The interview schedule was translated into Bengali to facilitate comfortable interview session with local women. The data collection team composed of both male and female interviewers. Data captured into individual interview schedule was entered into database created by SPSS software and cleaned simultaneously. Data analysis was performed by using the Statistical Package for the Social Sciences (SPSS) software (version 20). The status of data analysis appeared descriptive in nature.

Findings:

Table 1: Birth attendant of mothers

Characteristics	Frequency	Percent (%)
Mode of latest delivery		
Cesarean	123	51.3
Normal	117	48.8
N	240	100.0
Decision makers about latest delivery		
Self-decision	37	15.42
Husband	53	22.08
In laws	13	5.92
Parents	22	9.17
Doctors	44	18.33
Nurses	2	0.83
Family after the discussion	60	25.0
Others	9	3.75
Total	**240**	**100.0**

Place of delivery		
Home	69	28.8
Public hospital or clinic	46	19.2
Private hospital or clinic	125	52.1
Total	**240**	**100.0**
Decision makers about place of latest delivery		
Self-decision	29	12.08
Husband	60	25.0
In laws	12	5.0
Parents	34	14.17
Doctors	16	6.67
Nurses	3	1.25
Family after the discussion	66	27.5
Others	20	8.33
Total	**240**	**100.0**

In the Table 1 it was noted that approximately 50 percent mothers accepted cesarean method during their last child birth whereas around 48 percent mothers sought for normal delivery. However, family after consultation (25.0 percent) and hus Bands (22.08 percent) appeared as dominant factors that determined the delivery. Moreover, about 18.33 percent doctors suggested the latest delivery type for mothers while around 15.42 percent respondents decided by themselves. About 71 percent mothers got delivered at public or private health centers by a trained staff while around 29 percent respondents sought home delivery by a traditional birth attendant. It was noted that family decision after the discussion (27.5 percent) and hus Band's decision (25.0 percent) were found as contributory factors to select place of delivery.

Table 2: Antenatal care seeking practices and challenges

Characteristics	**Frequency**	**Percent (%)**
ANC for last pregnancy		
Yes	167	69.58
No	73	30.42
Total	240	100.0
Frequency of ANC care		
One	38	22.75
Two	39	23.35
Three	32	19.16
Four +	58	34.73
Total	**167**	**100.0**
ANC seeking practices*		
Private health centers	109	54.0
Public health centers	69	34.2
Traditional healer	5	2.5
Homeopathic shop	3	1.5
Local pharmacy	16	7.9
Total	**202**	**100.0**
Challenges for ANC*		
Lack of money	61	57.0
Excessive costly	5	4.7
Long distance	1	.9
Lack of companion	6	5.6
No permission from husband	7	6.5
No permission from family	27	25.2
Total	**107**	**100.0**

*Multiple Responses

Overall, about 70 percent mothers sought for ANC service during last pregnancy whereas around 30 percent survey respondents did not seek for ANC. Approximately 35 percent mothers sought ANC service for four times or more followed by WHO guidelines. In order to seek ANC services, 54 percent of the study mothers found private hospitals while around 34 percent got in public hospitals during last pregnancy. Around 57 percent study mothers claimed lack of money while about 25 percent study participants expressed they did not get any permission from family for ANC.

Table 3: Postnatal care seeking practices and challenges

Characteristics	**Frequency**	**Percent (%)**
Postnatal care for last pregnancy		
Yes	59	25.3
No	174	74.7
Total	**233**	**100.0**
Frequency of postnatal care		
One	24	40.68
Two	16	27.11
Three	11	18.64
Four +	8	13.56
Total	**59**	**100.0**
Postnatal care seeking practices*		
Private health centers	85	61.6
Public health centers	32	23.2
Traditional healer/Quack	6	4.3
Homeopathic shop	4	2.9
Local pharmacy	11	8.0
Total	**138**	**100.0**

Characteristics	Frequency	Percent (%)
Challenges for PNC services*		
Lack of money	27	19.6
Excessive costly	4	2.9
Long distance	3	2.2
Transportation problem	4	2.9
Lack of companion	6	4.3
No permission from husband	12	8.7
No permission from family	82	59.4
Total	**138**	**100.0**

*Multiple Responses

In the table 3, survey results demonstrated approximately three quarters (75 percent) child bearing mothers did not seek for any postnatal care whereas one quarter (25 percent) respondents sought for postnatal care after the last delivery. In addition, around 40 percent mothers received PNC service for one time while about 25 percent respondents accepted PNC service for two times. Approximately 60 percent of the study mothers claimed about no permission from family as the major challenge for PNC coverage whereas around 20 percent study participants reported scarcity of money as barriers to PNC.

Table 4: Table on socioeconomic and maternal healthcare variables

Characteristics	Sources of PNC	ANC seeking	Mode of last childbirth	Place of last delivery
Age	$\chi^2 = 4.437$ P = 0.079	$\chi^2 = 4.302$ P = 0.038*	$\chi^2 = 4.09$ P = 0.043*	$\chi^2 = 9.36$ P = 0.009**
Education	$\chi^2 = 7.47$ P = 0.053*	$\chi^2 = 6.34$ P = 0.029*	$\chi^2 = 5.91$ P = 0.047*	$\chi^2 = 6.708$ P = 0.037*
Income	$\chi^2 = 5.07$ P = 0.065	$\chi^2 = 5.25$ P = 0.032*	$\chi^2 = 5.983$ P = 0.043*	$\chi^2 = 8.586$ P = 0.032*

* Significant at = 5%, ** Significant at = 1%

Age and monthly income of respondents and sources of PNC remained statistically independent. Age and monthly income of the household did not influence selection of PNC sources. On the other hand, ANC uptake and modes of latest childbirth were found statistically significant for age of the respondent, level of education and monthly household income.

Discussion

Unlike scientific and legal[18] provisions, normal delivery appeared as surgical and medical intervention that seriously stroke mothers. Having CS not more than 10-15 percent, [19] the state of CS culminated in developing countries like Bangladesh. The current study showed over 51 percent mothers opted for cesarean delivery while about 49 percent respondents reported it normal. Unlike 10-15 percent accepted by WHO, the rates of CS in Bangladesh (51.3 percent) doubled compared with that of USA (24 percent), UK (22 percent) and Brazil [30 percent in public hospitals and 70 percent in private hospitals], the world highest cesarean rates.[2] Likewise, Bangladesh stepped into CS for mothers due to multiple factors. Skilled birth attendants emerged as significant contributors for safe delivery during pregnancy, child birth and their immediate postnatal periods.[21] However, over 71.3 percent respondents went to public or private hospital or clinic for their recent child birth while about 29 percent respondents experienced home delivery attended by a traditional birth attendant. The current findings contrasted that picked up about 49.2% deliveries were attended by traditional birth attendants in Bngladesh.[16]

About 70 percent mothers experienced ANC services while around 30 percent mothers did not receive any ANC check-up for their recent child birth. These results similarly matched with that of another study in Bangladesh, the percentage of ANC uptake and ANC negligence appeared as (76.8 percent and 23.2 percent) respectively in 2016.[22]

Age, maternal education and monthly household income showed a significant association with ANC of women in Bangladesh. The findings agreed to results of BDHS 2014 in Bangladesh. Additionally, a significant

increase of adequate ANC visits among pregnant women was observed with the increase in maternal education level.[23] In case of PNC analysis, the current study picked up the reverse maternal health outcome. Majority of the mothers (74.7 percent) did not receive any post-natal care after delivery in the current study while only 25.3 percent respondents experienced PNC care in post-delivery periods. The notable challenges women encountered lack of family permission (59.4 percent) and financial constraints (19.6 percent) to seek for PNC services in the region.

Conclusion

Family and hus Band appeared as the dominant actors to shape birth attendant choices of mothers in Bangladesh, though there are plenty of challenges to achieve ANC and PNC outcomes suggested by WHO in rural context in Bangladesh. A comprehensive maternal and child health policy coupled with an active healthcare facility might be recommended to advance maternal and child friendly healthcare environment.

Conflict of Interest: None declared

Financial Disclosure: None declared

Ethical Clearance: The study was operated at Saturia, Manikganj, Bangladesh by taking official approval of the director of Saturia Health Complex. Moreover, the study sought for individual consent to collect survey data in person.

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Drug Utilization of Antibiotics in Medicine Ward of Tertiary Care Teaching Hospital

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Abstract

Background: Drug utilization study are used to foster more efficient use of scarce resources to improving the standards of medical treatment at all levels in health system. It also helps in the identification of problems created with drug use. The aim of study was to evaluate the pattern of drug utilization of antibiotics in patients.

Method: This was a prospective observational study which was done in six months from August 2018–February 2019. 100 patients were enrolled in the study. Which were taking antibiotics from in-patient department of medicine ward of tertiary care teaching hospital. Results: It was observed that out of 100 patients, 52 were female and 48 were males. Majority of the patient lies in the age group of 20-40 years. It was observed that total 623 drugs were prescribed out of which 146 were antibiotics (23.43%). The use of these antibiotics was in intravenous (87) and oral (59). There were 78 conditions in which antibiotic were prescribed empirically and in 22 conditions prophylactically. The maximum antibiotic prescribed was observed in Urinary Tract Infection (20.51%). Major cost was rendered by Cephalosporin class (36.98%) and the least was of tetracyclines (2.05%). The ratio of cost of total drugs to the antibiotics was found to be 49.37%.

Conclusion: Thus the study conclude that the Drug Utilization Study can help to understand the usage pattern and extra cost rendered by the patient due to intravenous antibiotic and thus providing a helping hand in the designing of antibiotic policies.

Keywords: *Antibiotic, Drug utilization study, Antibiotic usage pattern.*

Introduction

In contrast to the public health, resistance of antibiotic becomes a major threat as the consumption of antibiotic increases[(1)]. Antibiotics-resistant pathogens have become evident and spread among human and animal populations worldwide[(2,3,4)]. Pathogens such as methicillin-resistance staphylococcus aureus (MRSA)[(5)] and carbapenem-resistant Enterobacteriaceae (CRE)[(6,7)] have become a worldwide problem. The loss of efficacy against common pathogens has not only led to a shift towards extortionate antibiotic drugs in high-income countries, but also to increased morbidity and mortality in low-income and middle-income countries, where it restricts their use due to afford ability of second line drugs[(8)]. An inappropriate prescription increases the cost of the medical treatment and it also increases the morbidity and mortality. The impact of the irrational prescription of drugs also leads to an increase in

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the incidence of adverse drug events. To control the worldwide ascendancy of bacterial resistance, to minimize the side effects and to reduce the cost of the treatment, the rational use of antibiotics is being increasingly recognized as an important contributor[9].

In recent years, issues of quality assurance and cost control have often focused on the use of antibiotics [10, 11]. This has led to the broadcasting of antibiotic utilization review which is an authorized, structured, ongoing review of prescribing, dispensing and use of medication. Antibiotic utilization review results are used to foster more efficient use of scarce health care resources. It provides opportunity to identify trends in prescribing within groups of patients whether by disease-state or drug-specific criteria[12,13,14,15].

So this study was undertaken in an active inpatient environment of tertiary care teaching hospital to evaluate the usage pattern of intravenous and oral antibiotics, to assess the additional cost rendered by the patients due to over utilization of antibiotic and drug related problems evaluation associated with the antibiotic.

Study Design: A prospective observational study on antibiotic utilization pattern was conducted by the department of pharmacy practice in collaboration with M. M. Hospital, mullana-ambala (India) with a sample size of 100 patients. The study was conducted for a period of six months from August 2018 to February 2019. A total of 100 patients were analyzed on the basis of inclusion and exclusion criteria. All the prescription had complete documentation of information including, patient demographic characteristics, date of admission and discharge, clinical diagnosis, drug name, dose and route of administration, investigations, rationality and outcome of health status. The data of the patients who received antibiotic was recorded and analyzed further for drug utilization studies. The study protocol and all the other documents which were related to the study were approved by the Institutional Ethics Committee.

Inclusion Criteria: All the patient of either gender with any kind of diseased condition admitted in medicine ward of M.M. hospital during the study period were included in the study.

Exclusion Criteria: We excluded the inpatients who discharged on the day of admission, outpatient and patients admitted to ICU. All the pediatrics, geriatrics, pregnant/lactating mothers were also excluded in the study.

Method of Data Collection

During our study, we reviewed the case record sheets of all patients who met the inclusion criteria. Data was collected using a well-structured case record form (CRF) which includes patient's demographics, drug allergies, patient's disease history, medication chart, culture reports and laboratory parameters. The culture and sensitivity reports were analyzed to assess the appropriateness of the antibiotic selection. Any medication error and drug related problems that were found in our cases were also recorded. All the discrepancies observed have been documented appropriately in the CRF designed for our study.

Results

A total of 100 patients were enrolled in the study from August 2018 to February 2019. The subjects were segregated into 5 major groups as discussed in table 1. The mean age of the subjects was found to be 38.97 ± 19.70 years. It implies that the maximum patients were in the age group of 20 – 40 years with standard deviation of 19.70 years. Moreover, it was observed that male-female ratio almost equal, contributing to 1:1.1(48; 52). The mean age of male population was observed as 39.09 ± 19.67 years whereas; in female population it was found to be 38.98 ± 19.70 years. This implies that the majority of male and female patients were from the age group of 20 – 40 years.

It was observed that, majority of the subjects are from the age group of 20-40 years with 17 males and 21 females patients, followed by the patients under 41-60 years (29 Females; 11 male) shown in figure 1.

Antibiotics were the most used drug along with anti-tubercular drugs and anti-malarial drugs (n=146; 23.43%), followed by antacids (n=100; 16%), utilization of multivitamin and supplements was less (n=78; 12.52%), followed by NSAIDS (Non-steroidal Anti-inflammatory drugs) (n=70; 11.23%). (table 1).

The comorbid conditions of the subjects (n=100) were classified into three types. Patients with one morbidity was the highest (n=49), followed by the patients with two comorbid conditions (n=31) and the patients with more than two comorbidities was the least (n=20).

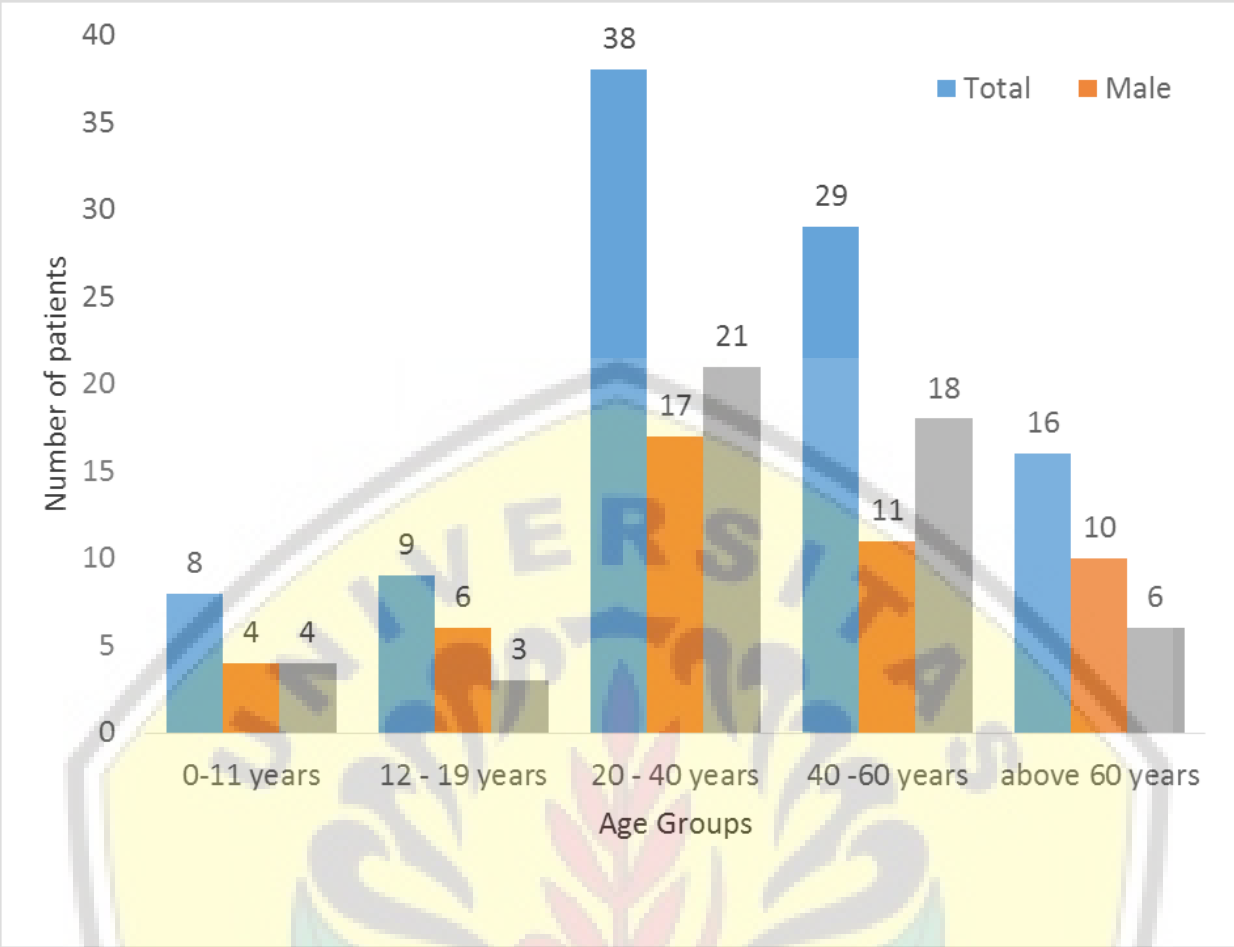

Figure 1: Gender wise age-distribution

Table 1: Antibiotic usage pattern

Medication class	Total number (n)	Percentage
Antacid	107	17.17%
Anti-allergic	13	2.09%
Anti-anemic	7	1.12%
Antibiotic	146	23.43%
Anti-emetics	47	7.54%
Anti-epileptic	20	3.21%
Anti-hypertensive	27	4.33%
Anti-thyroid	5	0.8%
Anti-viral	1	0.16%
Hypoglycemic	8	1.28%
Hypolipidemic	3	0.48%
Laxatives	21	3.37%
Multivitamins & supplements	78	12.52%
NSAIDS	70	11.23%
Others	45	7.22%
Probiotics	8	1.28%
Steroids	15	2.4%
Vaccine	2	0.32%

Table 2: Pattern of antibiotic usage in various systemic conditions

Systemic conditions	Total drugs (n1)	Antibiotic (n2)	Percentage (n2/n1)
Infectious	263	62	23.57
Gastro intestinal	147	37	25.17
Renal	56	11	19.6
CNS	47	10	21.27
Reproductive	41	11	26.82
Respiratory	37	10	27.25
CVS	14	2	14.28
Hematologic	10	1	10
Musco-skeletal	5	2	40

There were total 78 conditions in which antibiotics were prescribed empirically and 22 conditions in which antibiotics were prescribed prophylactically. The antibiotic count was maximum in Urinary tract infection (UTI) (n=16, 20.51%) following hepatitis (n=14; 17.94%), fever (n=12; 15.38%), dengue (n=7; 8.97%), pneumonia (n=6; 7.69%), cystitis (n=5; 6.41%), psoriasis (n=4; 5.12%), sinusitis (n=3; 3.84%), malaria (n=3.84%) and scabies (n=2; 2.56%). (Table 2)

Table 3: Various infection conditions

Infection condition	Total number (n)	Percentage
UTI	16	20.51
Hepatitis	14	17.94
Fever	12	15.38
Dengue	7	8.97
TB	6	7.69
Pneumonia	6	7.69
Cystitis	5	6.41
Psoriasis	4	5.12
Sinusitis	3	3.84
Malaria	3	3.84
Scabies	2	2.56

It was observed that, a total of 11 different antibiotic classes were used during the study. A major proportion of the antibiotics involved the usage of cephalosporin (n=54; 36.98%) (Table 3).

Table 4: Various classes of antibiotic used

Antibiotic	Total number (n)	Percentage	Cost
Cephalosporin	54	36.98	8894
Fluroquinolones	22	15.01	4403
Penicillin	16	10.95	3329
Beta-lactams	10	6.84	3304
Aminoglycosides	9	6.16	2250
Macrolides	9	6.16	1376
Nitroimidazoles	8	5.47	1260
Nitrofurantoin	7	4.79	451
Tetracycline	3	2.05	438
rifaximin	3	2.05	2347

The cumulative cost of 623 drugs was found to be INR 64,573. The average cost of total drugs was found to be INR 443 with a quartile range of 322.5-601 INR. The cumulative cost of 146 antibiotics was observed as INR 25,705. The average cost of antibiotic was found to be INR 224 with the quartile range of 144-288 INR. The ratio of cost of total drugs to the antibiotics was found to be 49.37% of total cost of the medication of a single patient was spent on antibiotic itself. Thus it was clearly evident that, a major portion of the medication cost comprises of antibiotics (Table 4).

Discussion

As India, the most populous country in the world, with over 1.21 billion people (2011 census), India houses more than a sixth of world's population. Already containing 17.5% of the world's population, India is projected to be the world's most populous country by 2025, surpassing China, with its population reaching 1.6 billion by 2050. India has more than 50% of its population below the age of 25 and more than 65% below age of 35. The life expectancy level has been improving over these decades for both male and female population[16]. The improvement among female is better than male population [17, 18]. Sex ratio has improved from 930 in 1961 to 940 in 2011 which is an appreciable improvement but still below the international levels. The country has a long way to go before attaining the levels achieved by developed countries and many developing countries [19, 20].

A majority of the study subjects were housewives (n= 44), followed by students (n= 27), workers (n=11), businessmen (n=8) and farmers (n=8).

The WHO prescribing indicators provided earlier, gives a comprehensive idea regarding the pattern of antibiotic use in this institution. The overall antibiotic encounter rate as per our study was 23.43%, which is not much different from the WHO standard of 20-26.8%. This is certainly a welcome attitude and could reflect the concern of the practicing doctors for the rapidly spreading bacterial resistance. This is significantly less than the values reported from many other parts of India – (47.6%, 73>1% and 81.8% from T.puram, Chennai, Vellore and Lucknow) respectively [21, 22, 24]. In another study from South India, the percentage of injections was as low as 1.6%. It is a well-accepted fact that parenteral therapy is significantly costlier, because of the higher price for the formulations, the cost of the syringes as well as nursing charges. The significant use of injectable in this institution requires pointed focus for the reduction of use of injectable to deserve appreciation[24].

The selection of individual agents in most instances raises a big question mark on their scientific basis. In our study, there were 78 conditions in which antibiotic were prescribed empirically and 22 conditions in which antibiotic were prescribed prophylactically. Lab reports from microbiology had not been given due to definitive line of management in majority of infections. This also appears to be the situation in many developing countries[25, 26].

The use of tetracyclines, however, was high in the rural hospital setup in the Vellore study.[27,28] Among the newer agents, meropenem, linezolid and tigecycline found only very little usefulness probably due to their high cost and because of exclusion of ICU patients from this study.

Management of infections like Urinary Tract Infection, Upper Respiratory Tract Infection as well as Skin Infection with a single antimicrobial could be appreciated, though this was probably feasible as the involved pathogen could be correctly guessed/ identified[29,30]. In management of Urinary Tract Infection, especially as an empirical therapy, use of flouroquinolones (15.01%) goes certainly against the currently accepted policy. Nitrofurantoin is now considered as the first line agent for treatment and prophylaxis of lower Urinary Tract Infection, based on its proved effectiveness and established safety accrued from its long term use[31, 32, 33]

Conclusion

The study highlighted the usage pattern of antibiotics. The average antibiotics prescribed was found to be low but there was an overuse of intravenous dosage form that had increased the cost of treatment. Also more antibiotic was prescribed based on the empirical therapy followed by the prophylactic therapy. Thus the study conclude that the Drug Utilization Study can help to understand the usage pattern and extra cost rendered by the patient due to antibiotic and thus providing a helping hand in the designing of antibiotic policies.

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Ethical Clearance: The Ethical approval has taken from IEC committee from department.

Conflict of Interest: The authors declare no conflict of interest, financial or otherwise.

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Effect of Modified Constrained Induced Movement Therapy Principles with Therapeutic Clay Moulding Exercises on Quality of Hand Function in Post-Stroke Individuals

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Abstract

Background: Stroke is a medical emergency and can cause permanent neurological damage. It is defined as the loss of focal neurological function caused due to interruption of the blood flow to the brain.

Objective: To evaluate effect of modified constrained induced movement therapy principles with therapeutic clay moulding exercises on quality of hand function in post-stroke individuals

Method: Ethical Clearance was obtained from Institutional Ethical Committee, KIMSDU, Karad. 42 subjects were selected and were equally divided into two groups. Group A was treated with conventional physiotherapy treatment and Group B was treated with conventional physiotherapy and Clay therapy exercises with modified CIMT principles.

Results : Statistical test was performed using paired test and unpaired test. Pre intervention analysis done for Chedoke Arm and Hand Activity Inventory showed no significant difference with p value= 0.9715, for Box and Block test p value=0.9125. Post interventional analysis done for Chedoke Arm and Hand Activity Inventory showed extremely significant difference, p= <0.0001, for Box and Block test showed extremely significant difference, p value= <0.0001.

Conclusion: The present study concluded that there is a significant effect of modified constrained induced movement therapy principles with therapeutic clay moulding exercises on quality of hand function in post-stroke individuals

Keywords: *Stroke, modified constrained induced movement therapy, Chedoke Arm and Hand Activity Inventory, Box and Block test, Clay therapy.*

Introduction

Definition: Stroke is a medical emergency and can cause permanent neurological damage. It is defined as the loss of focal neurological function caused due to interruption of the blood flow to the brain. Neurological signs/deficit must be present for at least 24 hours to be classified as stroke.[1]

Prevalence: Its prevalence is 84 to 262/1, 00,000 in rural area and 334 to 421/1, 00,000 in urban areas. There are two types of stroke mainly ischemic and hemorrhagic stroke. 1 Stroke is a common neurological conditions affecting 55-75% of upper limb persistent dysfunction. It is a leading cause of death and disability in India .

Clay Therapy: Principles for developing hand

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manipulative skills are as follows . Somato-sensory stimulus is

Provided[10]. Activities included for sensory awareness are as follows: finding out objects from the beans, sand or rice (finger movements which are graded are used to get grains out of rice or sand can be used off the object), to pull the pieces of clay out of the ball of the clay, by immersing finger and pushing the ball of the clay, by doing the flexion, extension activity of fingers into the clay[2]. Facilitation can be done to gain the function of hand which can be achieved by pulling the clay, facilitation of metacarpophalangeal with interphalangeal extension due to this required action can be gained . Spherical grasp should be emphasized by doing the combine action of long flexor activity and intrinsic activity [2].

ConventionalExercises: Previousstudiesconducted for rehabilitation included mainly conventional exercise which comprises of Positioning, Active and Passive range of motion exercise, Stretching[13] and Mat exercise, Perturbations training, Transfer training and Vestibular ball exercise, Closed kinematic chain exercise, therapeutic gymnasium training, Gait training[14]. Other treatment protocol included electrical stimulation[9], Ice/ Heat therapy as a part of conventional training.

Present studies done for hand rehabilitation compromises of Constrained induced movement therapy, Functional electrical stimulation, Upper extremity task oriented training, stretching and passive exercise . These exercise train the whole upper limb[11].

Constrained Induced Movement Therapy (CIMT): Various studies show CIMT improves upper limb function a cluster randomized controlled trial that examined improving activities of daily living of patients suffering from stroke in primary health care by modified CIMT[8].

Modified CIMT: The original CIMT devotes six or more hours for therapy researchers have observed that such schedule of CIMT is exhaustive and possibly resulting in non -compliance modified shorter version of CIMT has been designed to overcome such limitations. In literature large variety of mCIMT paradigm has reported . Duration of intervention varies from two to ten weeks and treatment time varies from as short as thirty minutes to three hours per day[5].

In this study we have made an attempt to investigate the efficacy of mCIMT principles with clay moulding exercises and comparing its result with only conventional rehab program in terms of quality of hand function[5].

Previous studies showed that hand function can be improved by strengthening exercise as well as electrical stimulation and use of robotics,[3] which work on whole upper limb but there is paucity of hand function training mainly skill full activities like fine movements and gross of hand[11].

Using a therapeutic clay as a part of hand rehabilitation can help in training of gross motor functions as well as fine motor function as it is moldable and can be used in varying sizes[4].

Moreover, the use of clay for hand function rehabilitation may be an interesting, cost- effective method for dexterity training as compared to robotics and other financially challenging technique.

Thus, this study focuses in the aspect of, fine movements as well as gross movement training by the use of application of modified constrained induced movement therapy principles with clay molding exercises on quality of hand function in post stroke individuals[7].

Materials and Method

A total 42 participants with history of stroke willing to take treatment for 4 weeks were recruited for the study. The subjects were screened and were put in either of the groups

Group A received conventional treatment and Group B received conventional treatment and Clay therapy with modified CIMT principles. By consecutive sampling method. A written informed consent was taken from each participant. Ethical Clearance was obtained from University's Institutional Review Board. Inclusion criteria were both male and female subjects between 35-65 years of age, Brunnstrom stage 3 and above, Involved hand Achieved proximal control.

Pre-Test: Chedoke Arm and Hand Activity Inventory was used to assess the Hand Function[6].

Box and Block test was used to assess Grasping Hand function[6].

- The treatment was given for 4 weeks with 5 session per week.

Procedure: The treatment session given with clay therapy is for 4 weeks each exercise had repetitions of 10 times * 3 sets with conventional exercises protocol.

By using consecutive sampling method participants were divided into two groups

Group A: Conventional treatment

Group B: Conventional treatment and Clay therapy with modified CIMT principles.

Conventional Exercises:

1. Passive or active assisted exercises will be given for upper limb
2. Cryotherapy: Icing should be done to the affected spastic muscle group.
3. Stretching: stretching should be given to the affected spastic muscle
4. Mat exercises.
5. Electric stimulation
6. Stretching
7. Weight bearing exercises
8. Ball exercise : Ask the subject to hold the soft ball in hand and perform gripping action.
9. Peg board:
10. Spring exercises
11. Rubber exercise
12. Elastic tubing bands
13. Towel exercise
14. Match stick exercise
15. Exercise on ADL table
16. Functional training:
    a. Lifting an empty glass and keeping on table followed by glass
17. filled with water
    a. Combing hairs.
    b. Holding different sizes of pen and writing.
    c. Dressing and undressing shirt.
    d. Eating activity with spoon .
    e. Lifting large objects to small objects

Group B: All the above mentioned conventional exercises with additional clay exercises.

Clay Exercise:

1. Full grip
2. Finger scissor
3. Finger spread
4. Finger pinch
5. Finger extension
6. Thumb press
7. Thumb extension
8. Thumb abduction

Exercise session were performed for 45 min.

Statistical Analysis: The statistical analysis was done using paired 't' test and unpaired 't' test.

- Paired 't' test was used for statistical analysis of pre and post intervention within group.
- Unpaired 't' test was used for between group statistical analysis of Group A and Group B.

Results

Table No. 1: Post interventional intragroup analysis–Chedoke Arm and Hand Activity Inventory

	Mean±SD	Median	'P'	Inference
Group A	38±21	38	<0.0001	Extremely significant
Group B	64.23±3.632	65		

Table No. 2: Post interventional intra group analysis– Box and Block test

	Mean±SD	Median	'P'	Inference
Group A	30.61904±3.993	31.000	<0.0001	Extremely significant
Groupb	51.4761±7.118	49.000		

1. **Chedoke Arm And Hand Activity Inventory:** In the present study pre interventional mean within group CHAI score was 24.1428+3.953 in group A and 24.1904+5.997 in group B whereas post-interventional mean of CHAI score was 38+8.141 in group A and 64.238+3.632 respectively. Comparison of Pre And Post Values of Chai Scale Between Group Pre interventional mean of CHAI score was 24.142+3.953 in group A and 24.190+5.997 in group B .whereas post interventional mean CHAI score was 38+21 in group A and 64.23+3.632 in group B respectively.
2. **Box And Block Test:** In the present study pre interventional mean within group for BB score was 17+2.702 in group A and 17.0952+2.879 in group B. whereas post interventional mean of BB score was 30.61+3.993 in group A and 51.47+7.118 group B respectively. Comparison of Pre and Post box and block test scores between group study pre interventional mean of BB sore was 17+2.702 in group A and 17.09523+2.879 in group B whereas post interventional BB score was 30.61904+3.993 in group A and 51.4761+7.118 in group B respectively.

Discussion

Stroke is a common neurological condition which affects 55-75% of upper limb persistent dysfunction . It is a leading cause of death and disability in India. Its prevalence is 84 to 262/1, 00,000 in rural area and 334 to 421/1, 00,000 in urban areas. Hand function is an important thing which is needed in day to day life and in stroke survivors it is lost hence to improve it by various treatment strategies this study was conducted. To gain the hand function proximal group of muscles should have proper control, when proximal control is achieved then only hand training can be done.

There are various technique used for training hand function of the studies showed CIMT is beneficial and as on as the concept of training hand function with clay molding exercise is beneficial for all the categories of the people i.e. from rural to urban population, hence the aim of our study was to gain hand function by using modified CIMT principles with clay molding exercise.

Modified CIMT shows Function-induced recovery (use dependant cortical reorganization) refers to the ability of nervous system to modify itself in response to changes in activity and environment. Hand training can be done when the proximal control is achieved as the control is achieved it becomes easier in training the gross motor and fine motor activity, CIMT supports the concept of redundancy.

Clay exercises are mainly used as they are cost effective, it has property of moldability and can also be used for strengthening purpose as it provides resistance. Also clay helps to improve recreational activity which helps in improving the mood of the subjects too, hence the use of clay is done.

In the present study 42 Participants were included according to inclusion and exclusion criteria. . Ethical Clearance was taken prior conducting the study from Krishna institute of medical sciences . An informed consent form was taken from the participants. Further they were classified according to Brunnstrom stages of Recovery as stage 3 and above.

By using consecutive random sampling method participants were divided into two groups: Group A and Group B. There were 21 participants in each group. Participants were assessed by Box and block test Chedoke arm and hand activity inventory. Group A was given conventional physiotherapy and Group B was given conventional physiotherapy with clay moulding exercise using CIMT principles.

The treatment protocol was for 5 days in a week for 4 weeks using Box and Block and Chedoke arm and hand function inventory as outcome measure. After completion of 4 week the outcome measures showed considerable changes. Statistical analysis was done by using instat – graph pad . There was significant difference between the group comparison for Box and lock test with P value of (<0.0001) which suggest extreme significance. The Chedoke arm and hand function inventory also showed extreme significance with p value of (<0.0001)

We have observed the changes in aspect of fine motor as well as gross motor activities like improvement in coordinated movements of hand.

Daily activities like holding a glass of water, transferring of objects, picking up of objects, pouring of water and writing.

In females improvement in wringing, grooming, cooking, household work has been reported.

Self care activities like brushing, combing, dressing, zipping the zip, folding clothes also improved.

Ahmed M Azzam studied and concluded Hand Function training with traditional physiotherapy program should be considered in improvement of hand grip motor control and functional abilities of the hand in hemiplegic cerebral palsy children.

Young-Sil Bae, Ph D, RN and Dong-Hee Kim, Phd, RN studied the effect of clay art therapy and concluded that clay activity can boost self-confidence, increase emotional stability and enhance quality of life for PD patients.

Virgil Mathiowetz, hand motor skills,Occupational therapy, tests studied Adult norms for the Box and Block tests of manual dexterity and concluded the box and block test is a simple low cost and efficient test of gross manual dexterity they suggest that it is a test to evaluate adult individuals with suspected impairmet in manual dexterity .

A. Siebers,U. Oberg, E. Skargren studied The Effect of modified constrained induced movement therapy on spasticity and motor function of the affected arm and concluded that following two weeks of modified CIMT the study found reduced spasticity, increased daily use of affected arm and functional improvement as measured by MAS AROM, grip strength, AL, Solerman hand function test and BBT.

The result imply that, clay molding exercises with principles of CIMT is more effective as Scores also showed highly significant changes in Group B.

This suggests that clay molding exercises with modified CIMT principles is effective in improving hand function in stroke patients as compared to conventional intervention by improving fine motor and gross motor skill full activities. It can be due to specificity of exercise program with property of clay i.e. moldibility that helped in achieving gross and fine motor activity.

Skilled performance is a delayed muscle activity but with added specificity of clay and Modified CIMT principles and variability helping in retention of the skilled activities. This clay molding method is also cost effective which can be beneficial to all the population to get the equal benefit of the treatment. This accounts to better improvement giving additional effect using clay molding exercises with CIMT principle's for hand training as compared to only conventional training.

Conclusion

The present study provided the evidence to support that modified CIMT principles with clay moulding exercise along with conventional physiotherapy has showed improvement in gaining hand function mainly fine motor and gross motor activity.

Conflict of Interest: The author declares that there were no conflicts of interest concerning the content of present study.

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Ethical Clearance: The study was approved by Institutional Ethics Committee, KIMSDU.

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Knowledge on Urolithiasis among Patients Attending OPDs in Selected Hospital of Udupi District Karnataka

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Abstract

Introduction: The increasing prevalence and high recurrence rate persuade to consider urolithiasis as thoughtful socio-medical issue and adequate knowledge is required to reduce the prevalence of urolithiasis.

Aim: To assess the knowledge on urolthiasis among patients attending OPDs in selected hospital of Udupi district Karnataka.

Materials and Method: A descriptive survey was conducted among 484 patients attending the out patients departments of a tertiary hospital in Udupi district Karnataka. The data were collected between 28th December 2017 and 16th March 2018 by using a structured knowledge questionnaire on urolithiasis. The inclusion criteria for subjects was age between 19-65 years (young adulthood and middle age) and able to read and write Kannada or English. Collected data were coded and analyzed by using descriptive statistics.

Results: Study revealed that out of 484 subjects, over half of the participants 358 (73.9%) were males and 298 (61.1%) were in the age group of 41 and 65 years. The mean knowledge score on urolithiasis was 11.6 out of maximum possible score of 30. Out of 484 participants 232 had knowledge score above mean and 252 had knowledge score below mean. The maximum obtained score was 6/7 in the area of introduction and 3/3 in signs and symptoms. In the area of management and prevention, participants obtained maximum score of 11/13. The maximum score obtained in the area of signs and symptoms.

Conclusion: Study showed that most of the participants were unaware about the risk factors, signs and symptoms, preventive measures. Majority of the subjects were below the knowledge mean score. Participants were aware about the signs and symptoms of urolithiasis where they obtained the maximum score. Hence, educating the general public is essential to improve the knowledge on urolithiasis and to decrease the burden.

Keywords: *Urolithiasis, kidney stone, renal calculi, urinary stones, knowledge.*

Introduction

Urolithiasis is one of the major diseases of the urinary tract and is a major source of morbidity. Stone formation is one of the painful urologic disorders that occur in approximately 12% of the global population and its re-occurrence rate in males is 70-81% and 47-60% in females[1]. Between 1% and 15% of people globally are affected by Kidney stones at some point in their life[2]. In 2015,22.1 million cases occurred, resulting in about 16,100 deaths (GBD 2015 disease and injury incidence and prevalence, 2016). They have become more common in the western world since 1970s[3].

The incidence of urolithiasis is universally increasing and contributes to an increasing economic and health care problem. The prevalence of urolithiasis is rising worldwide including both genders in different

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age groups. Urolithiasis is one of the utmost common illnesses seen in Emergency Departments (ED) worldwide, with an uprising frequency in geriatric patients (>65 years). Given the high costs of emergency medical urolithiasis treatment, the basic to optimise management is obvious. Since the time of Hippocrates, urolithiasis has produced a challenge for clinicians and is still one of the most common conditions seen in emergency departments worldwide, with an estimated lifetime risk of 15–25%[4].

Abbagani et.al (2010) reported that the effect of geography on the incidence of stone formation maybedirect, through its effect on temperature, high temperatures increase perspiration, which may result in concentrated urine, which in turn promotes increased urinary crystallization[5]. In 2016, a retrospective study was conducted in a speciality hospital in Arakonam Taluk, Vellore district of Tamil Nadu. A total of 105 subjects were chosen for the study. All were suffering from mild to acute pain due to the formation of renal stones. Study conducted over a period of 22 months from 21st January 2014 to 15th October 2015. May to August months showed increased number of reported cases of renal stone among men. Among females, July- September months was the peak period and peer reviewed literature clearly states that region of residence contributes significantly to the formation of renal stones. Improper hydration and profuse sweating particularly during summer months increases the concentration of the urine resulting in precipitation of stones[6].

A descriptive cross sectional study was conducted in 2015 over a period of one week at Pedeniya, Srilanka. There were 290 consented patients presented to the OPD with urolithiasis selected for the study by simple random sampling technique. The study was based on a patient's demographic data and knowledge on risk factors and symptoms. The study results showed that the mean knowledge score was 9.03 out of 22 (41.06%, SD=2.14). None of the participants scored zero and none of the participants had the maximum score. Thus the knowledge on urolithiasis was poor[7].

Urolithiasis could be treated and the occurrence is prevented by proper education and management. So investigator intended to assess the knowledge of urolithiasis among patients attended OPDs at selected hospital in Udupi district Karnataka.

Materials and Method

This study was a hospital-based, cross-sectional survey, which was conducted among 484 patients who attended a tertiary care hospital in Karnataka, during December 2017 to March 2018. The inclusion criteria for the subject was age between 19 and 65 years (young adulthood and middle age) and able to read and write Kannada or English. The data were collected after obtaining approval from institutional ethics committee and administrative permission. The purpose of the study was explained with participant information sheet and informed consent obtained from participants prior to the data collection procedure. The questionnaire had questions in two major sections. Section 1 data collection tool consisted of demographic questions and section 2 was knowledge questionnaire. The knowledge questionnaire consisted of 30 multiple choice items from the areas of introduction, causes and risk factors, signs and symptoms and preventive measures of urolithisasis with one correct answer for each. Each correct answer carried one mark and zero for the wrong answer. All items had four alternative responses. The highest possible score was 30 and minimum score was zero. The knowledge scores were categorized as knowledge above mean score and knowledge below mean score for analysis and the mean score was 11.6.

Statistical Analysis: The obtained data were coded and analyzed by using SPSS version 16. A descriptive statistics were used to analyze the data. Frequency and percentage were used for demographic data and mean was used to analyze the knowledge scores.

Results

Section 1 - Description of demographic characteristics: The demographic characteristics of study population are given in Table 1. Study revealed that, out of 484 participants, 358 (73.9%) were males, 298 (61.1%) were in the age group of 41-65 years. Majority 358(73.9%) of the participants were belonging to Hindu religion. Few 231(47.7%) of the participants had previous information on urolithiasis. The source of information for 98 (20.2%) of the participants was from hospital.

Table 1. Demographic characteristics of study participants N=484

Sample characteristics	Frequency	Percent
Age in (Years)		
19-40	186	38.4
41-65	298	61.6
Gender		
Male	358	73.9
Female	126	26.1
Religion		
Christian	26	5.4
Hindu	358	73.9
Muslim	98	20.3
Others	2	.41
Previous information on urolithisasis		
Yes	231	47.7
No	253	52.3
Source of information		
Internet	32	13.8
Hospital	98	42.5
Others	62	26.8
TV	39	16.9

Section 2- Description of knowledge scores: The maximum possible score was 30 and minimum possible score was zero in the scale, whereas obtained mean knowledge score on urolithiasis was 11.6. Out of 484 participants, 232 had knowledge score above mean and 252 participants had below mean [Table 2].

Table 2. Knowledge mean scores of participants on urolithisasis N=484

Minimum		Maximum		Mean	Above mean	Below mean
Possible	Obtained	Possible	Obtained			
0	1	30	23	11.6	232	252

Table 3. Knowledge scores of participants on different areas of urolithiasis. N=484

Areas	Maximum Possible score	Minimum Possible score	Maximum Obtainedscore	Minimum Obtained score
Introduction	7	0	6	0
Causes and risk factors	7	0	6	0
Signs & symptoms	3	0	3	0
Management & prevention	13	0	11	1

The area wise description of knowledge on urolithiasis showed in the [Table 3] reveals that the maximum obtained score was 6/7 in the area of introduction and causes and risk factors, 3/3 in signs and symptoms. In the area of management and prevention participants obtained maximum of 11/13. The maximum score obtained in the area of signs and symptoms.

Discussion

Over half of the participants 358 (73.9%) were males and in the age group of 41-65 years 296(61.1%). Most 358(73.9%)of the patients were belongs to Hindu religion. Few 231(47.7%) of the participants had previous information on urolithisasis. The source of information for 98 (20.2%) of the subjects was from hospital. The mean knowledge score on urolithiasis was 11.6 and maximum possible score was 30 and minimum possible score was zero. Out of 484 samples 232 participants had knowledge score above mean and 252 participants had below mean.

A study conducted by Abdhulrida et.al in Saudi Arabia on assessment of patients knowledge about avoidance of recurrent urolithiasis shows that patients have poor knowledge about fluid and beverage intake in all items except in item (Drink plenty of fluid in hot weather situation and intense sweating and doing great work or while doing exercise.), and (Check the amount of urine output which must not be less than (2.5) liter/24 hours) and related to dietary intake in all items except in items (Reduce the intake of table salt. Increased sodium intake increases the risk of formation of gravel. By increasing the levels of calcium and reduce the level of citrate in the urine) and (Avoid eating fatty substances or cooked in fat)[8].

A study conducted by Sofia et.al. (2016) in National Institute of Siddha, Chennai on prevalence and risk factors of kidney stone also found the similar findings that nephrolithiasis is more common in men (64.56%) than in women (35.44%) it is more prevalent between the ages of 20 to 40 in both sexes (57.50%) [9].

A descriptive cross sectional study was conducted on 2015 over a period of one week at Pedeniya, Srilanka. There were 290 consented patients presented to the OPD with urolithiasis selected for the study by simple random sampling technique. The study was based on a patient's demographic data and knowledge on risk factors and symptoms. The study results showed that the mean an knowledge score was 9.03 out of 22 (41.06%, SD=2.14). None of the participants scored zero and none of the participants had the maximum score. Thus the knowledge on urolithiasis was poor [7]. A descriptive study which is conducted among inpatients of urology ward by Shambhavi et.al in Madurai also shows similar statistical findings of having poor knowledge among 80% of the subjects[10].

Conclusion

The present study shows that most of the participants are unaware about the risk factors, signs and symptoms and preventive measures. Majority of the subjects were below the knowledge mean score. So, there is need to improve the knowledge of risk factors for urolithiasis among general population by either collaborative approach by health education programs for them. Hence, educating the general public is essential to improve the knowledge on urolithiasis and to decrease the burden.

Ethical Clearance: Taken from Institutional Ethics Committee of the research setting

Conflict of Interest: Nil

Source of Financial Support: Nil

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Efficacy of Menthol Infused Kinesiotaping in Forward Bending (Flexion) of Lumbar Spine in Mechanical Low Back Pain Patients: Interventional Study

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ABSTRACT

Background: In all developed countries low back pain (LBP) is a considerable health problem which is the commonest problem treated in primary healthcare setting. It is defined as pain, muscle tension, or stiffness localized above the inferior gluteal folds and below the costal margin, with or without sciatica. The major symptoms of nonspecific LBP are disability and pain.

Aims & Objectives: To evaluate the effect of menthol infused kinesiotaping and conventional therapy in forward bending (flexion) of the lumbar spine in mechanical low back pain patients. Sample size:138 Subjects Group A -69 Subjects & Group B – 69 Subjects Study Design: Interventional Study setting: Ravi Nair Physiotherapy College, Datta Meghe Institute of Medical Sciences (Deemed University), Sawangi (Meghe), Wardha Sample and Sampling Method: 138 Subjects were randomly selected and assigned in 2 groups, as Group 1(control group), Group 2 (Interventional group) in equal numbers. The Patients having mechanical low back pain, with the age group between 18-50 both genders & Willing to participate were included & the patients who were having PIVD with instability and radicular symptoms,Operated cases of spine, Lumbar spondylosis, lumbarcanal stenosis, spondylolisthesis, sensory deficits, Malignancy, Tuberculosis, Any infection or tumour around low back and pelvis were excluded.

Result: Mean pain on VAS in group A it was 3.52 ± 0.75 and in group B it was 5.53±0.76, Mean M-schobers test score in group A was 4.209±0.48 and in group B it was 3.653±0.25.

Conclusion: The inferences from the present study suggest that Menthol infused Kinesiotaping is more effective than Conventional therapy in management of Low back pain.

Keywords: *Menthol Infused Kinesiotaping, SWD, Low back Pain{LBP }, Melastatin, Chronic back pain (CBP).*

Introduction

In all developed countries low back pain (LBP) is a considerable health problem which is the commonest problem treated in primary healthcare setting. Therapeutic and diagnostic management of patients suffering from LBP has been characterized from so long by considerable variation between and within countries among practitioners, medical professionals and other healthcare professionals[1-2].

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Chronic LBP is most common and 23% of worldwide population is affected with it,24-80% of population has recurrence rate at one year[3-4]. Prevalence of LBP is 80% in the general population, from which 50% of population recover spontaneously in 2 weeks and on another side 90% of population recover in 6 weeks. However, up to 60% of population have recurrence rate[5]. Chronic back pain (CBP) is a complex, heterogeneous medical condition that includes a wide variety of symptoms[6]. The occurrence rate of low back pain in India is high, where an individual is having significant LBP some or the other time in their life[7-8]. Only 20% of times exact anatomic cause of low back pain of mechanical origin can be identified, sometimes strenuous activity or specific trauma may be the cause of pain. Specific source of the LBP is not found 80% of the time. Fortunately most people recover in a short period of time with simple treatment. Mechanical LBP implies the source of pain is in the spine and/or its supporting structure. Mechanical low back pain refers to back pain that arises intrinsically from the intervertebral discs, spine, or surrounding soft tissues. Repetitive trauma/overuse are common causes ofchronic mechanical LBP, which is often secondary to workplace injury [9].

Method and Materials

Participants: One hundred and thirty eight (138) patients with mechanical low back pain, between the ages of 18-50 both genders, Willing to participate were included. Patient having PIVD with instability and radicular symptoms, Operated cases of spine, Lumbar spondylosis, lumbarcanal stenosis, spondylolisthesis, sensory deficits, Malignancy, Tuberculosis, Any infection or tumour around low back and pelvis were excluded from the study.

Procedure-

After obtaining Institutional Ethics Committee clearance. After satisfying inclusion and exclusion criteria the patients were allowed to participate in the study. The informed consent was obtained. Each subject was then tested for Lumbar range of motion using modified schobers test and Pain using VAS Scale in specific order:

Group A received the menthol infused kinesiotaping application with two 30 cm "I" strips while the subjects were in position of maximum forward bending of the spine. This application was performed simply by applying the tape to the skin with 0% tension. The participants were assessed for baseline parameters before intervention and data was recorded. The participants were again reassessed after 5 days of intervention and data was recorded. Pre and post test were carried out using Schobers test and Visual Analogue Scale[40].

Group B received Short wave diathermy for 10 mins, participant was kept in supine position the 2 electrodes of Short wave diathermy were placed on lumbosacral region, there was 2-4cm of distance between the two electrodes, the participant flexed the knees in order to flatten the back so that there should be complete contact between the electrodes and the surface of the body which is to be treated. The method used in this study is coplanar method, this technique produces greater heating in superficial muscle and tissues close to the electrodes. The treatment duration was for five days with single session per day. The participants were assessed for baseline parameters on 0^{th} day before applying SWD and data was recorded. The participants were again reassessed after 5th days of SWD treatment and data was recorded. Pre and post test were recorded[24]

Observation and Results

The data was coded and entered in Microsoft excel spreadsheet. Descriptive statistics included computations of means and standard deviation. Inferential statistics using student's paired t test and unpaired t test were used for comparison of all clinical indicators. Software used in the analysis was SPSS 22.0 version. The results were concluded to be statistically significant with $p < 0.005$, very significant $p < 0.001$ and highly significant $p < 0.0001$.

Table 1: Modified Schobers test Comparison in Group A Group B

	Mean	SD	t-test	P-Value	Inference
Group A	4.209	0.48	8.486	0.0001	Significant
Group B	3.653	0.25			

Table 2: Visual Analog Scale (VAS) Comparison in Group A and Group B

	Mean	SD	t-test	P-Value	Inference
Group A	3.52	0.75	15.456	0.0001	Significant
Group B	5.53	0.76			

Result

The table 1 shows that there were significant difference between group A and group B. Mean value

of group A and group B Modified Schober test score are 4.20 and 3.65 respectively. The t value were 8.48 and p value < 0.0001. These values suggests there is significant improvement in giving menthol infused kinesiotaping than conventional therapy similarly table 2 shows that there were significant difference between group A and group B. Mean value of group A and group B VAS score are 3.52 and 5.53 respectively. The t value were 15.456 and p value < 0.0001. These values suggests there is significant improvement in giving menthol infused kinesiotaping than conventional therapy.

Discussion

The current study aims to find out the efficacy of menthol infused kinesiotaping in forward bending (flexion) of lumbar spine in mechanical low back patients. In this study the total number of participants were 132, after 6 droupouts. Group A experimental and Group B control, each group consisting of 66 participants. The patient population was from the age group of 18-50 years. In the experimental Group A, the mean age was 34.68 and in the control Group B, it was 33.65. The justification for the selection criteria for the age group is supported by Kelle et al (2016), in their study the age group was of 18-65 years and Precee et al (2016) had the age group of 30-60 years.

The total number of participants in the study included both the genders, male and female. The male population in the A Group was 39 and the B Group was 29 respectively, whereas the female population was 27 and 37 respectively. Kelle et al had 109 participants, Precee et al (2016) took only 34 males, Alvarez Alvarez et al (2014) took 99 healthy subjects, Castro Sánchez et al (2017) took 60 subjects and Thiago et al (2014) took only 45 female.

Menthol is well known for its topical analgesic, antiseptic and cooling properties because it has a part in mediated activation of a melastatin of the transient receptor potential which is a super family of ion channels. It binds to TRPM 8 membrane channel causing menthol to induce cooling sensations to inflamed areas of skin/muscle via its anti nociceptive effects of capsaicinsensitive fibers which de-sensitize the peripheral neurons to signal from agitation and pain. Topical applications of menthol to a pain site have been shown to produce similar sensational effects to application of half a kilogram of crushed ice, along with similar blood flow reductions and breathing[24].

Short wave diathermy is a deep heating modality used for relief of pain. This significant effect is due to increased temperature in body tissues because of heat which causes increased arteriolar and capillary dilatation followed by increased blood flow to the area. Short wave diathermy (SWD) is a deep heating modality used in physical therapy treatment. Shortwave diathermy produces electric and magnetic fields alternating at high frequency due to which heat is produced in the body tissues when applied using a suitable method. Most of the physiological effects are produced because of heat generated in the tissues which has therapeutic benefits. The basic therapeutic mechanism being considered here is induction of relatively high frequency currents in the body tissues by alternating electric or magnetic field which produce the physiological effects and therapeutic benefits. The direct effect of heat causes relaxation of the muscle fibers which also helps in alteration in the physical characteristics of fibrous and muscular tissue such as in the tendons, muscles, joint capsules. The tissues yields more readily stretch, when heated [25].

Conclusion

In the present study, we found that both techniques Menthol infused kinesiotaping and conventional therapy are effective in increasing lumbar range of motion and reducing pain in mechanical low back pain patients. Results of this study suggests that there was improvement throughout the session. The pre and post score of Visual Analoq Scale (VAS) and Lumbar flexion showed improvement in both the groups i.e Group A and Group B but more significant improvement was observed in Group A receiving Menthol infused kinesiotaping. The present study rejects the null hypothesis and accepts the alternate hypothesis i.e Menthol infused Kinesiotaping is more effective than Conventional therapy in management of Low back pain.

Ethical Clearance: It has been obtained by Datta Meghe Ethical Committee, Dmims, Sawangi Meghe Wardha.

Conflict of Interest: Nil.

Source of Funding: Datta meghe institutional ethical committee.

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Comparative Evaluation of Antimicrobial Efficacy of Chlorhexidine and Aloe Vera against Enterococcus Feacalis: An in Vitro Study

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Abstract

Aim: To compare and evaluate the antimicrobial efficacy of Chlorhexidine (CHX) and Aloe Vera extracts as a root canal irrigant against Enterococcus faecalis.

Materials and Method: The bacterial E. faecalis (ATCC) culture was grown overnight in brain heart infusion (BHI) broth and inoculated in Mueller-Hinton agar plates. Antibacterial inhibition was assessed using agar well diffusion method. All five study irrigants were added to respective wells in agar plates and incubated at 37°C for 24 h. Bacterial inhibition zone around each well was recorded. Results were tabulated and statistically analyzed using Statistical Package for the Social Sciences software for Windows, version 19.0. (IBM Corp., Armonk, NY.

Results: Highest inhibitory zone against E. faecalis was seen in Highest inhibitory zone against E. faecalis was seen with 2% CHX followed by 5% Aloe Vera while 100% Aloe vera showed least inhibition.

Conclusion: Aloe vera showed inhibitory action against E. faecalis but was not as effective as 2% CHX.

Keywords: *Antimicrobial, root canal irrigants, herbal, aloe vera, chlorhexidine*

Introduction

The complete elimination of microorganisms from the root canal and the three-dimensional obturation of the canal space results in a successful root canal treatment.[1] Pulpal and periradicularpathosis occurs due to invasion of he root canal by microrganisms. Enterococcus faecalis (E. faecalis) is the most commonly isolated microrganim from failed root canals. It is an anaerobic gram-positive bacterium which has the ability to invade dentinal tubules and its existence does not depend on the presence of other bacteria. It is highly resistant to intracanalmedicamnets which lead to its virulence allowing it to have obligatory role in persistent failure of endodontic therapy. [2] Cleaning and shaping of canals alone is not sufficient for the success of an endodontic treatment. It should be always assisted with chemical debridement, which consists of using various irrigating solutions.[3] Sodium hypochlorite is the most commonly used as root canal irrigant due to its various advantageous properties. Disadvantages include the allergy, sodium hypochlorite accident, metallic taste and toxicity.[4]

Chlorhexidine (CHX) is a broad spectrum antimicrobial which has been used as irrigant due its sustained broad spectrum action and low toxicity. Chemically CHX is a synthetic cationic bis-guanide that owes its effectiveness due its positive charge which interacts with the negative charge of the phoshate group on the microbial wall, resulting in alteration of osmotic equilibrium of the cell.[5]

The use of herbal products has been as irrigants is gaining acceptance due its safety, efficiency and acceptability. One such herb that has been investigated is Aloe Vera (Aloe barbadensis Miller), owing to its antibacterial effect against E. faecalis.[6] There is a deficiency of adequate studies regarding the use

of aloe vera as a root canal irrigant. Hence this study was undertaken to evaluate the antimicrobial efficacy of different concnentrations of Aloe Vera against Chlorhexidine using agar diffusion test.

Materials and Method

Ethical Clearance was obtained from the Institutional Review Board before the start of the study.

Source of Data: The bacterial stock culture of Enterococcus faecalis strain (ATCC 29212) was obtained from JP Laboratories, Davangere, India and the extracts Aloe vera were prepared.

Aloe Vera extract preparation: Leaves was taken from fresh Aloe Vera plants and its pulp was extracted by hand. Aloe Vera plant pulp was then mixed with Chloro form water i.e. 2.5 ml of Chloroform in 1000 ml of purified water (Indian Pharmacopoeia) and mixture was filtered using a double filter paper and the supernatant was then centrifuged at 8,000 rpm for 40 min to obtain the extract.

The concentrated solutions thus prepared from all the above ingredients was weighed and using distilled water, serial dilutions of 5 ml/95 ml, 25 ml/75ml,50 ml/50 ml and 100 ml (volume/volume) was made in order to obtain 5, 25, 50 and 100% concentrations,respectively, for the evaluation of antimicrobial activity against E. faecalis. The antimicrobial testing was done on the same day of extracts prepared.

Agar diffusion test: The bacterial stock culture of Enterococcus faecalis (ATCC 29212) was obtained from JP Laboratories, Davangere India. The standards train of Enterococcus faecalis (ATCC29212) was grown on Brain Heart Infusion (BHI) broth overnight and turbidity was adjusted to 0.5 Mc Farl and scale to obtain a cell density of 1.5X108 bacterial/mlandinoculated in Mueller Hinton Agar plates. Inoculation was performed by using sterile swab brushed across the media. Four round wells measuring about 4 mm deepand 8 mm in diameter was punched using a sterile stainless steel template and they are numbered as 1, 2, 3 and 4 consecutively for the different concentrations used for the each test group to be evaluated. As control 0.2% chlorhexidine gluconate solution was taken for the evaluation.

Group A was allocated for Chlorhexidine and Group B was Aloe Vera extract consisting of 15 inoculation agar plates in each group. After making serial dilutions of the extract and four round wells in each agar plate, 50uL of specific concentration of each extract was dispensed into each well using a sterile micro pipette. This was done in triplicate fore very concentration so as to overcome any inadvertent technical errors. This was done for each group in the same way. All agar plates was then incubated at 37°C for 24 hours, according to Clinical Laboratory Standard Institute guidelines. Following 24 hours of incubation at 37°C, zones of inhibition (that is areas where no growth of bacteria is present)was examined around each well. They appeared as a clear, circular halo surrounding the wells. Diameters of the bacterial growth inhibition zones or halos was measured using a Hi Antibiotic Zonescale in millimeters and this represented the inhibition value.

Results

The antibacterial activity was evaluated using Agar well Diffusion test by measuring the zone of inhibition around each of the four wells.. The results were subjected to statistical analysis by applying Analysis of Variance and Post Hoc Tukey HSD tests for multiple comparisons. On applying one way Analysis of Variance, a statistically significant difference was seen between the zone of inhibitions of different samples within groups and between groups i.e. $P < 0.001$.

The meanzone of inhibition for positive control that is Group A (0.2% Chlorhexidine) was 18.36 mm, with which all other values was compared.

Comparison between Group A (0.2% Chlorhexidine) and Group B (Aloe vera) with different concentrations of 5%, 25%, 50% and 100%was 0.52 mm, 0.98 mm, 3.02 mm, 5.43 mm respectively (Table 2) which was less than Group A (0.2% Chlorhexidine) - 18.36 mm and the difference was statistically significant because of P value < 0.001 which is tabulated in Table 1 .

It is was seen Aloe Vera did not have mean zone of inhibition more than Group A (0.2% Chlorhexidine) it showed minimum effectiveness at 100% concentration.

Table 1: Analysis of Variance for Group A (0.2% Chlorhexidine), with Group B (Aloe vera) (including all concentrations)

ANOVA					
Aleovera extract	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	3247.530	4	811.882	8.004E3	.000
Within Groups	7.100	70	.101		
Total	**3254.630**	**74**			

Table 2: PostHoc Turkey HSDTests (Multiple Comparisons)

	Concentration	Mean ± SD	Mean Difference (I-J)	Sig.
Group A (0.2% Chlorhexidine)	5%	0.53±0.25	17.83333*	0.000**
	25%	0.99±0.30	17.37333*	0.000**
	50%	3.02±0.34	15.34000*	0.000**
	100%	5.43±0.33	12.92667*	0.000**

*The mean difference is significant at the 0.05 level, **p<0.001; Significant

Discussion

The prime objective of root canal treatment is to eradicate the microorganisms from the root canal and to intercept their recontamination in the post treatment period. Hence irrigant solutions must accompany the action of the mechanical instruments to ensure the complete cleanliness of the canal.[7]

The success of endodontic treatment can be seen in the quality of the obturation. Root canals that are unsatisfactorily obturated provide greater space and nutrition than well-obturated canals and the available space may create a facultative anaerobic environment. In contrast, well-obturated canals maintain an obligate anaerobic environment that does not favour the survival and growth of E. faecalis. Inadequate cleaning and shaping may also have left infected debris behind. Microorganisms such as E. faecalis can survive within the small canals of apical ramifications or in the space between the root filling and canal wall. In fact, E. faecalis strains can survive for at least 6–12 months in an environment where nutrients are scant and when commensality with other bacteria is reduced. E. faecalis is also extremely resistant to chemicals, including calcium hydroxide.[8] E. faecalis has an inheret ability to adhere to dentin and invade dentinal tubules and to forms communities organized in biofilms, which may contribute to bacterial resistance and persistence after intracanal antimicrobial procedures. It also has the capacity to survive in an environment in which there are available nutrients and in which commensality with other bacteria is minimal.[9]

Using root canal irrigant solutions has proved to be essential in endodontic treatment as they aid in disinfecting and lubricating the root canal, flushing out debris from the canal system and dissolving organic and inorganic tissues. To effectively clean and disinfect the root canal system, an irrigant should ideally: (a) have a broad antimicrobial spectrum and high efficacy, (b) be able to digest proteins and necrotic tissue, (c) prevent the formation of a smear layer during instrumentation or dissolve the latter once it has formed, (d) present low surface tension to reach areas inaccessible to the tools (dentin tubules), (e) offer long-term antibacterial effect, (f) keep dentinal debris in suspension, (g) provide a lubricating action for root canal instruments, (h) be non-antigenic, non-toxic and non-carcinogenic. In addition, it should have no adverse effects on dentin or the sealing ability of filling materials. Furthermore, it should be relatively inexpensive, convenient to apply and cause no tooth discoloration.[9,10]

Chlorhexidine is used extensively as a root canal irrigant because of its substantivity and antimicrobial effects against Gram-positive and Gram-negative organisms. The property of substantivity allows prolonged time of action for CHX. CHX is less toxic compared to sodium hypochlorite and does not have foul taste. · It has excellent antibacterial, antifungal and acts on the biofilm.[10] It has been proposed that CHX should

be used in open apex cases. However disadvantage is inferior tissue dissolving properties. If Chlorhexidine is extruded through the apex, it does not induce pain to the patients. However, the structure of the Chlorhexidine molecules poses a systemic risk because it is likely to decompose into reactive byproducts, such as para-chloroaniline.[9]

CHX is a synthetic cationic bis-guanide consists of two symmetric 4-cholorophenyl rings and two biguanide groups connected by a central hex am ethylene chain. CHX is a positively charged hydrophobic and lipophilic molecule that interacts with phospholipids and lipopolysaccharides on the cell membrane of bacteria and then enters the cell through some type of active or passive transport mechanism . Its efficacy is due to the interaction of positive charge of the molecule and negatively charged phosphate groups on the microbial cell walls, thereby altering the cells' osmotic equilibrium. This increases the permeability of the cell wall, which allows the CHX molecule penetrate into the bacteria. CHX is a base and is stable as a salt. The most common oral preparation, chlorhexidine gluconate, is water-soluble and at physiologic pH, readily dissociates and releases the positively charged CHX component. At low concentration (0.2%), low molecular weight substances specifically potassium and phosphorous will leak out. On the other hand, at higher concentration (2%), CHX is bactericidal; precipitation of cytoplasmic contents occurs resulting in cell death.[10,11]

Aloe vera is a naturally occurring herbal medicament having antibacterial properties, anti-inflammatory, antibacterial, antifungal and antiviral properties. The presence of anthrax quinine allows it to inhibits E.faecalis and Streptococcus pyogenes.[12] Karkare et al[13] concluded that Aloe Verashowed the highest zone of inhibition against E. faecalis which is in contrast to our results. Our results are similar to Babajiet al[14] and Jose et al[15], who have shown that CHX has superior antimicrobial efficacy when compared to Aloe Vera. The probable reason for the decreased antimicrobial efficacy of Aloe vera could be due to change in weather where the plant was grown and where it was prepared.[16] Second, tooth structures themselves might lessen the antibacterial effect of Aloe vera solution. Lawrence et al. stated that microbial toxicity of Aloe Vera is related to the site and number of hydroxyl groups in the phenol groups.[17] Hydroxyl groups are responsible for alkalinity and antibacterial action of calcium hydroxide but its effect is relatively neutralized by dentin buffering action. Therefore, the antibacterial activity of Aloe Vera was suppressed by this mechanism. Third, the gel-like consistency of Aloe Vera could cause limited flow of the substance through the irregularities of the root canal system

Limitations of the study are that it was an invitro study with a limited sample size and biofilm protection produced by endodontic microflora could not be employed.

Conclusion

Aloe vera showed inhibitory zone against E fecalis. However, it was less than 2% CHX. Hence, these can be used as root canal irrigating solutions but furtherin vivo research is required to test these herbal medicines and to modify its content for acceptability by patients.

Conflict of Interest: Nil

Source of Funding: Nil

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A Study To Assess The Knowledge Regarding Refractive Errors Among High School Students In Selected High Schools Mangaluru With A View To Prepare Information Booklet

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Abstract

Objectives: The objectives of the study were to assess the knowledge regarding refractive errors among high school students, to find the association between knowledge score and selected demographic variables and to prepare informational booklet.

Method: A descriptive survey was conducted among 100 students from selected High Schools at Mangaluru on August 2019. Non probability convenient sampling technique was used in the study to select the sample. The structured questionnaire was used as the tool for finding the knowledge of the students regarding refractive errors.

Result: The result showed that the mean percentage of knowledge score was 68.2%.The study also shows that there is significant association between knowledge score and selected demographic variables such as standared of study and type of electronic media. Also no association between knowledge score and selected demographic variables such as age in years, gender, type of family, place of residence, hours spending in front of electronic media and awareness regarding refractive errors.

Conclusion: The findings of the study revealed that the students had average level of knowledge on refractive errors and there was significant association between knowledge and some selected demographic variables.

Keywords: *Refractive errors, students.*

Introduction

Eye is like a camera. The external object is seen like the camera, takes the picture of any object. Light enters the eye through a small hole called pupil and is focused on the retina which is like a camera film. Eye also has a focusing lens which focuses images from different distances of the retina. When the eyes are exposed to excessive strain, develops abnormality in normal functioning of the eye. It is common among children as well as adults. The highest risk of eye disorder occurs due to the excessive strain in the eye is refractive errors. and it is commonly found in students. Refractive error is a very common eye disorder it occurs when the eye cannot clearly focus the images from the outside world. The result of refractive errors is blurred vision which is sometimes so severe, that causes visual impairement.[1]

The most common types of the refractive error are near sightedness (myopia), far sightedness (hyperopia), astigmatism and presbyopia. Myopia results in far objects being blurry, hyperopia results in close objects being blurry, astigmatism causes objects to appear stretched out or blurry and presbyopia results in poor ability to focus on close objects.[2]

Today refractive error is a very common eye disorder in all over world. Especially these problems commonly

seen in adolescents. According to WHO(world health organization) it is estimated that globally 153 million people over 5 years of age visually impaired as a result of uncorrected refractive errors of whom 8 million peoples are blind.[3]

The overall prevalence of refractive errors is 44.1%.Estimates of people worldwide with refractive error range from 800 million to 2.3 million and5-15% of all children are considered to have refractive errors. The highest prevalence of refractive error is in China. The prevalence of refractive error has been reported as high as 70-90% in some Asian countries, 30-40% in Europe and the United states and 10-20% in Africa. In India about 40% of the population in the age group of 6-10 years is having eye disorders. In Karnataka, the prevalence of refractive errors among school children is about 9-10%.Myopia accounts the highest, hyperopia 5.3% and astigmatism 1.18%.[4]

Now a days the prevalence of refractive errors has been increased. The rise of refractive errors may be due to the excessive use of electronic media. The effort to decrease the refractive errors is very critical because adolescence are the highest population who using electronic media[5]. According to the World Health Organization (WHO), over 340 million children and adolescence aged 10-15 years were having spectacles[6]. Limiting the duration of use of electronic media will help adolescence to maintain eye health and prevent vision problems.

Materials and Method:

The study was conducted in a school at Mangaluru and the school were selected based on the feasibility of conducting the study and the availability of samples. The non probability convenient sampling technique was used for the selection of samples. The study samples were consisting of 100 high school students. The structured knowledge questionnaire was used to assess the knowledge regarding refractive errors. The data were analyzed using descriptive statistics.

Result

Section 1: Demographic data: The section deals with characteristics of 100 students in terms of frequency and percentage. The data is presented in Table 1.

Table 1 shows that, frequency and percentage distribution of subjects on the basis of their demographic data. In this, 56% of the students were in the age group of 13 years, 58% of them were males, 76% of the students belongs to nuclear family, 54% of the students studying at 8th standared, 78% place of residence is rural area,75% have television as type of electronic media at home,70% spent 1 hour in front of media and 63% has awareness regarding refractive errors.

Table 1. Frequency and percentage distribution of subjects on the basis of their demographic data. N=100

Sl.No.	Variables	Frequency (f)	Percentage (%)
1.	**Age in Years**		
	a. 13 years	**56**	56
	b. 14 years	37	37
	c. 15 years	7	7
2.	**Gender**		
	a. Male	**58**	58
	b. Female	42	42
3.	**Type of family**		
	a. Nuclear	**76**	76
	b. Joint	24	24
	c. Extended	00	00
4.	**Standard of study**		
	a. 8th standard	**54**	54
	b. 9th standard	46	46
	c. 10thstandard	00	00
5.	**Place of residence**		
	a. Rural	**78**	78
	b. Urban	22	22
6.	**Type of electronic media at home**		
	a. Television	**75**	75
	b. Computer	25	25
	c. Mobile phone	00	00
	d. Laptop	00	00
7.	**Hours spent in front of media**		
	a. 1 hour	**70**	70
	b. 2 hours	22	22
	c. 3 hours	5	5
	d. >3 hours	3	3
8.	**Awareness regarding refractive error**		
	a. Yes	**63**	63
	b. No	37	37

Section 2: Distribution of subjects according to their knowledge score.

Table 2. Frequency and percentage distribution of subjects according to their knowledge score. N=100

Level of Knowledge	Frequency (f)	Percentage (%)
Poor	0	0
Average	44	44
Good	56	56

Table 2 illustrates that the majority of the students (56%) had good knowledge,44% had average knowledge and 0% had poor knowledge about refractive errors.

Section 3: Association between level of knowledge and selected demographic variables.

In order to find out the association between knowledge and selected demographic variables, the following hypothesis was stated.

H_1: There will be significant association between knowledge and selected demographic variables.

Table 3. Association between knowledge and selected demographic variables.

Sl.No.	Variables	Rating			Df	Chi square (x^2)	Inference
		Good	Average	Poor			
1	**Age in years**						
	13	35	21	0	2	4.080	NS
	14	16	21	0			
	15	5					
2.	**Gender**		2	0	1	2.064	NS
	Male	36	22	0			
	Female	20	22	0			
3.	**Type of family**						
	Nuclear	40	36	0	1	1.458	NS
	Joint	16	8	0			
4.	**Standard of study**						
	8th standard	30	24	0	1	0.009	S
	9th standard	26	20	0			
5.	**Place of residence**						
	Rural	47	31	0	1	2.607	NS
	Urban	9	13	0			
6.	**Type of electronic media**						
	Television	42	33	0	1	0.000	S
	Mobile phone	14	11	0			
7.	**Hours spent in front of electronic media**						
	1 hour	43	27	0	3	4.599	NS
	2 hour	10	12	0			
	3 hour	1	4	0			
	>3 hour	2	1	0			
8.	**Awareness regarding refractive errors**						
	Yes	50	13	0	1	37.725	NS
	No	5	31	0			

NS = Not Significant; S = Significant

The data presented in the table 6 shows that, there was association between 2 demographic variables such as standard of study, type of electronic media at home and knowledge score of students, since the calculated value was greater than the table value at 0.05 level of significance, Hence H1 is accepted for these variable. and there was no association between age in years, gender, type of family, place of residence, hours spending in front of electronic media and awareness regarding refractive errors and knowledge score of students, since the calculated value was lesser than the table value at 0.05 level of significance. Hence H_1 is rejected; H_0 null hypothesis is accepted for these variables.

Discussion

Part – 1: Demographic characteristics of sample: The findings of the study revealed that among 100 students majority (56%) of students were belongs to the age group of 13 years, around 58% were males, majority (76%) were belongs to nuclear family. In that around (54%) of students studying in 8th standard. The place of residence was rural area for 78% of the samples. Majority 75% were using Television and 70% of they were using electronic media for 1 hour. Majority 63% of students were having awareness about refractive errors.

Part–2: The knowledge of students regarding refractive error.

Section A: assessment of the level of existing knowledge: The findings of the present study reveal that the mean percentage of the student's knowledge regarding refractive errors is 68.2%with mean and standard deviation is 20.46,±4.217 respectively. Most 56% of the samples had good knowledge and 44%had average knowledge regarding the refractive errors.

Section B: Area wise analysis of the existing knowledge: The overall knowledge of students regarding refractive errors is 68.2% with mean 20.46 and standard deviation±4.217. Area wise analysis revealed that the samples scored highest in the area of "Anatomy, physiology, meaning and incidence "with mean percentage of 76.6%, mean and SD is 6.90,±1.636 respectively; In the area of risk factors, causes, types, signs and symptoms the mean percentage was 59.7%and in the area of diagnostic evaluation, treatment, complications prevention the mean percentage was 69.9%.

Part 3: Association of knowledge score of students with selected demographic variables: The findings of the study revealed that there is significant association between the knowledge score and demographic variables such as standard of study, type of electronic media at home, since the calculated value was greater than the table value at 0.05 level of significance, Hence H1 is accepted for these variable. and there is no significant association between the knowledge score and demographic variable like age, gender, type of family, place of residence, hours spent in front of electronic media and awareness regarding refractive errors, since the calculated value was lesser than the table value at 0.05 level of significance. Hence H_1 is rejected; H_0 null hypothesis is accepted for these variables.

Conclusion

The study result showed that the mean percentage of the student's knowledge regarding refractive errors is 68.2% with mean 20.46 and SD±4.217. Most 56% of the samples had good knowledge and 44% had average knowledge regarding refractive errors.

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Ethical Clearance: Yenepoya Ethics committee-1 approved our study protocol number2018/056 titled "A study to assess the knowledge regarding refractive errors among students of selected high schools in Mangaluru with a view to prepare information booklet" on 23/06/2018 under the chairmanship of Dr.Vikramshetty.

Source of Funding: Self

Conflict of Interest: Nil

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Effect of Foot Reflexology on Lactation

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Abstract

Background of the study: Soon after delivery till 6 weeks lasts the postnatal period. Mothers undergoes with many physiological and emotional changes during this period and learn that how to overcome with these problems. From the mammary glands, mother produces breast milk during postnatal period called as lactation. Breast feeding is important to provide complete nutrition to baby. Most of the women are able to produce enough breast milk to support the growth of their child, but some women face difficulty to produce breast milk because of many factors. Foot reflexology has been considered as a complementary therapy by many western countries from 1930 onwards. It is a non pharmacological method which includes the application of firm continuous pressure at specific points of the body which in turn help release endorphins, promote lymphatic flow in the body and even promote blood circulation. It also has significant effect on hypothalamus for hormone production.

Methodology: A Quasi- experimental study was done on 90 participants (45 participants in each experimental and control group)who were recruited from selected hospitals of central Gujarat. Tools of data collection included performa of demographic and maternal variables and Infant breastfeeding assessment tool. The intervention was given to experimental group participants by application of foot reflexology 2 times per day for 3 consecutive days. Investigator assessed the lactation after 30 minutes of the last intervention.

Result: Wilcoxon signed rank test was used to determine the effect of foot reflexology on lactation among postnatal women of experimental group and control group. There was statistically significant difference found on all the parameters of Infant breastfeeding assessment tool among experimental group at p value <0.001.

Conclusion: The study concluded that foot reflexology were effective in improving lactation among postnatal women. Hence, it can be used as a non-pharmacological method of improve lactation.

Keywords: *Foot reflexology, lactation, postnatal women.*

Introduction

The postpartum period begins from delivery of fetus till 6 weeks. Mothers undergoes many physiological & emotional changes during postnatal period and learn how to overcome with the minor health ailments that arise during this period.[1] According to WHO, there exists Scientific evidence that support the importance of breastfeeding practices for reducing child mortality and morbidity, malnutrition and noncommunicable diseases in adult life. The world breastfeeding week 1–7 August focused on "Empower Parents, Enable Breastfeeding" in the year 2019. According to UNICEF (2018), only 41.6% of babies are breastfed within an hour of being born. The India New-born Action Plan (INAP) developed by Ministry of Health & Family Welfare in 2014, is also targeting a 75% rate of initiation of breastfeeding within

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an hour of birth by 2017 and a 90% by 2025. [2]All these statistics suggests the importance of lactation in the lives of the postnatal mother and the newborn.

Lactation is very important as it provides the pivotal and ideal nutrition to the newborn in the form of breastmilk. Prolactin stimulates the production of breast milk during lactation whereas oxytocin is responsible for stimulation of milk ejection. But there exists many reasons which can affect the entire process of lactation leading to its failure.[3]

For the treatment of inadequate breastfeeding there are mainly two method: Pharmacological and non-pharmacological. Non-pharmacological method take longer time to cure problem but it provide complete relief from the problem with minimal or no side effects. It is a non pharmacological method which includes the application of firm continuous pressure at specific points of the body which in turn help release endorphins, promote lymphatic flow in the body and even promote blood circulation.[4] It also has significant effect on hypothalamus for hormone production.There are few researches that show the efficacy of foot reflexology for early initiation of breast feeding but such studies in India and Gujarat are not much in number. Hence the researcher felt the need take up this research.

Material and Method

A Quasi- experimental study was undertaken at selected hospitals of Central Gujarat. Ethical clearance and formal permissions were obtained prior to conduction of the study. 90 postnatal mothers were conveniently recruited and then randomly allocated to experimental and control group (45 each). Researcher developed baseline data performa and Infant breastfeeding assessment tool was used to collect data. Pre- intervention assessment was done for both the groups. For experimental group along with routine care, the researcher administered foot reflexology by application of pressure with the thumb and index finger using acupressure thumb on the big toe of the each foot for 10 minutes each with a rest interval of 5 minutes in between each feet pressure session. This was done twice a day for 3 consecutive days. Whereas for control group only routine care was provided. Post intervention assessment was done for both the groups after third day.

Result

Wilcoxon signed rank test was used to determine the effect of foot reflexology on lactation.

Table 1: Comparison of Infant breastfeeding assessment tool in experimental group and control group. N=90

Infant Breastfeeding Assessment Tool					
Tool	**Group**	**Day 1 Median**	**Day 3 Median**	**Wilcoxon test**	**P value**
In order to get baby to feed	Experimental	1	3	6.018	<0.001
	Control	1	1	2	0.056
Rooting	Experimental	1	3	5.899	<0.001
	Control	1	1	0.816	0.414
Placing baby on breast to latch and suck	Experimental	1	3	5.858	<0.001
	Control	2	2	1.55	0.257
Sucking pattern	Experimental	1	3	5.929	<0.001
	Control	1	1	1.155	0.248

The data presented in table indicates that there was statistically significant difference found on all the parameters of Infant breastfeeding assessment tool among experimental group with p value <0.001. Hence, the research hypothesis stands accepted which state that there is statistically significant effect of foot reflexology among postnatal women at 0.05 level of significance.

Fisher's chi square test was used to find the association between pre- intervention lactation of

postnatal women of both experimental and control group with their socio demographic and maternal variables. There was statistically significant association found between rooting with Gravida (df= 6 and P value= 0.048) and Sucking pattern with breastfeeding after delivery (df= 6 and P value=0.021) of experimental group. Whereas Sucking pattern with breastfeeding after delivery (df= 4 and P value=0.047) and Sucking pattern with frequency of breastfeeding (df=4 and p value= 0.04) of control group too showed association. Remaining variables were statistically independent as they did not have any association.

Conclusion

The study concluded that foot reflexology are effective on lactation. Hence, foot reflexology can be used as a non-pharmacological method to improve lactation.

Conflict of Interest: None

Source of Funding: Self

Ethical Clearance: Permission was obtained from ARIP Institute Ethical Committee, Charotar University of Science and Technology, Gujarat, India.

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Ceftazidime-Resistant Burkholderia Cepacia: An Unusual Case in a Paediatric Patient

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Abstract

Intensive care unit (ICU) sepsis in paediatric patients is a common clinical entity in tertiary care settings. Emergence of pathogens showing multidrug resistance pattern and causing ICU sepsis is widespread and poses a severe threat to physicians in treating them. At times, physicians find a pathogen they have never encountered before. Burkholderiacepacia infection in small children admitted in paediatric Intensive care unit (PICU) is rare. This infection is common in immunocompromised patients and underlying other debilitating disorders. We report a case of a 3-year and 06 month-old female child diagnosed with ceftazidime-resistant Burkholderiacepacia in an PICU setting.

Keywords: *Burkholderia, ceftazidime, drug resistant, sepsis.*

Introduction

Burkholdriacepacia has emerged as an important cause of hospital-acquired infections. The bacterium is known formerly as *Pseudomonas cepacia*, a gram negative aerobic, glucose, non-fermenting, motile bacillus. Immunocompromised and hospitalized patients are especially prone to this type of infection, leading to severe bacteremia that may also resultin death[1]. We present a case of a 3-year and 06 month-old female child who was found to have signs of respiratory tract infection followed by Burkholderia sepsis in a healthcare setting. We faced lots of difficulties in treating the patient because the pathogen was found to have resistance to ceftazidime which is usually considered as the mainstay of treatment. Informed consent was obtained from the patient's parents to report this case.

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Case Presentation: A 3-year and 06 month-old female child was brought to the paediatrics emergency with high grade fever with convulsions and vomiting which was non-projectile and non-bilious. She was apparently alright five days back when she developed fever which was of sudden onset, high grade and not associated with chill and rigor. The fever was subsiding with medication and recurring again. In this current episode the fever was very high grade with convulsion and watery diarrhoea. She had developed swelling of both lower limbs and abdominal distension for 3 days which was gradual in onset.

On examination, the patient was drowsy with no signs of meningeal irritation. She was looking sick with presence of pallor and koilonychia. She had a respiratory rate of 25/min, a blood pressure of 72/54 mm Hg and a pulse of 92/min, which was regular with good volume and no radio-radial or radio-femoral delay. Systemic examination was unremarkable, including the cardiovascular, gastrointestinal and central nervous systems. Respiratory system examination was positive for left lower lobe crepitation.

Her laboratory investigations revealed a total leukocyte count (TLC) of 26,000 cells per microliter, hemoglobin -10 g/dL, platelets – 2,24,000 per microliter,

creatinine – 0.5 mg/dL, blood urea - 86 mg/dL, serum albumin – 1.4 gm/dL, total bilirubin - 0.2 mg/dL, serum total protein -3.4 gm/dL, serum albumin – 1.4 g/dL, serum globulin 2.0gm/dL, international normalized ratio (INR) - 1.6, activated partial thromboplastin time (a PTT) of 56 seconds and a prothrombin time (PT) of 19 seconds. The viral markers like HIV, HCV and HBsAg were all negative. To rule out other causes of fever like Dengue and Scrub typhus which is also seen in Odisha; samples were sent for testing by ELISA and it came to be negative.

She was put on piperacillin/tazobactam empirically. Her respiratory distress worsened over the next day; a decision was made to put her on mechanical ventilation because of acute respiratory distress syndrome (ARDS). Chest X-ray showed bilateral infiltration. Before starting the antibiotic, clinical samples like blood, urine, endotracheal tube aspirate were sent for culture sensitivity using automated BacT Alert and Vitek-2 systems. Over the coming days, her leukocytosis worsened with a TLC up to 46,000 per microliter and her condition became critical with deranged renal function tests, liver functions tests, prothrombin time and international normalized ratio (INR). Her antibiotic was changed to meropenem. The blood culture and endotracheal tube aspirate revealed the presence of ceftazidime resistant *Burkholderiacepacia* showing resistance to other antibiotics like Colistin, Imipenem, Piperacillin/Tazobactam, Ticarcillin/Clavulinic acid. As the isolated organism was sensitive to Meropenem, Cefepime, Cefoperazone/sulbactam, Ciprofloxacin, Levofloxacin and Trimethoprim/Sulfamethoxazole; the antibiotics were also changed to Meropenem. On the ninth day, the patient was weaned off from the ventilator, as the signs of sepsis were decreasing and she started with oral feeding. The antibiotic was continued and she was discharged from the hospital on the 16th day. She was advised to take oral Trimethoprim/Sulfamethoxazole with a regular follow-up.

Discussion

Burkholderiacepacia is an important nosocomial pathogen in hospitalised patients, particularly those with prior broad-spectrum antibacterial therapy. It causes infections that include bacteraemia, urinary tract infection, septic arthritis, peritonitis and respiratory tract infection[2].The respiratory tract is the most common route for an infection by *Burkholderiacepacia*, followed by intravascular catheters[3]. Our patient appeared to have an infection in the lungs accompanied by bacteremia. *Burkholderiacepacia* can also be spread directly or indirectly from saliva or fomites of patients with cystic fibrosis[4]. Risk of spread is higher by direct exchange of respiratory secretions due to kissing or intimate social contact[5].The ability for *Burkholderia* species to thrive in the diverse range of environments is testament to the fact that they can be considered as one of the most versatile groups of gram-negative bacteria.

In the present case, the initial symptoms of headache, convulsions and bilateral pitting edema with abdominal distension can be explained by the septicaemia. She was put on broad-spectrum antibiotics and assisted ventilation. With the help of culture and sensitivity testing, we were able to identify ceftazidime-resistant *Burkholderiacepacia*, but we were unable to identify the source of infection. We thought of bacteremia due to hospital acquired infection as the child was taking medication for the fever from several physicians on several occasions. The drug of choice for the empirical treatment of Burkholderiacepaciabacteremia, in this case, was meropenem as it also covered the other suspected causes of sepsis.

A similar case of an outbreak of Burkholderiacepaciabacteremia in a pediatric intensive care unit has been reported by Antony, et al. from South India[6]. The source of this outbreak was found to be contaminated distilled water.Most of the infections caused by *Burkholderiacepacia* are found in immunocompromised patients with opportunistic infections and especially those with HIV infection and cystic fibrosis[7].

Ribonucleic acid (RNA) sequencing revealed that the overexpression of resistancenodulation-division (RND)-3 pump activity was attributed to mutations in the efflux pump regulator gene. This can account for the mechanism of ceftazidime resistance in this pathogen. In a recent study, it has been found that avibactam can restore the activity of ceftazidime in ceftazidime-resistant Burkholderia species[8].

The success of this combination of Avibactam with ceftazidime as a combination therapy is due to the ability of avibactam to inhibit class A and C β-lactamases, including class Acarbapenemases (e.g., Klebsiellapneumoniaecarbapenemase (KPC)-2). This type of combination chemotherapy may also be considered in ceftazidime resistant *Burkholderiacepacia*

cases[9]. Ceftazidime-resistant *Burkholderiacepacia*; should also be considered as an important differential for the sepsis patient who initially presents with high grade fever with respiratory complaints; so that appropriate investigations can be performed in time to improve the treatment outcome.

Conclusion

The emergence of Ceftazidime resistant *Burkholderiacepacia* sepsis in patients, especially in a healthcare setting, poses a significant threat to our community. More and more cases infected with *Burkholderiacepacia* are being reported from our Institution and this pathogen is becoming an increasingly common source of infection in healthcare settings. Such type of pathogenic organism is also very difficult to diagnose using conventional diagnostic method. Availability of automated culture and sensitivity system in the hospital set up has improved the isolation and identification of such organisms. Getting the sensitivity pattern with minimum inhibitory concentration (MIC) is an added advantage for such pathogens. A high index of suspicion is required to diagnose and treat this pathogen to prevent fatal outcomes related to its disease course.

Conflicts of Interest: Nil

Source of Funding: Nil

Ethical Clearance: Taken from institutional ethics committee of Kalinga Institute of Medical Sciences, Bhubaneswar, Odisha.

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Knowledge, Attitude and Awareness of School Teachers Residing in Meerut District (UP) towards Oral Health of Children

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Abstract

Context: School teachers by virtue of their training can influence a large number of children thereby play major role in the planning and implementation of oral health preventive programs.

Aims: To assess the knowledge, attitude and awareness of school teachers towards oral health.

Method and Material: This was a cross-sectional survey conducted among school teachers of the city of Meerut. A structured questionnaire was used and 215 teachers were assessed on their knowledge on oral health, attitude and practice regarding their personal oral health, attitude regarding oral health of children and status of oral health education at the schools.

Results: Though 97% of the teachers considered oral health as important as general health, but only 58% knew about the importance of fluoride . Also only 66% of teachers admitted that their school was prepared for any dental emergency and 54% teachers were unaware about avulsion.

Conclusions: The knowledge Regarding Oral Health amongst school teachers was fair. Oral health awareness modules should be incorporated in School curriculum .

Keywords: *Knowledge, Attitude, Oral Health, School Teachers.*

Introduction

Children are at a high risk for dental diseases predominantly dental caries. Hence, Oral health education and promotion is considered as a priority.[1,2] As children spend most of their time with teachers, they play a pivotal role in the growth of young minds.[3,4] As School education plays an important role in behavior shaping of children, many countries have introduced School Oral Health Education Programs in curriculum, thus incorporating self hygiene practices in children.[5]

School teachers, often looked up as role models for children, have proved to be the most influential in transmitting oral hygiene preventive measures in children. In response to the World Health Organization (WHO) guidelines in the year 1978, many countries utilized school teachers as health education promoters for school children, to serve as an alternate personnel in primary health care approach in combating preventable diseases.[6] Despite the willingness to impart general oral health education, they seem to lack formal basic training in oral health matters which will hinder the effectiveness of teachers role in promoting oral health.[7] So, adequate knowledge of teachers towards oral health is of great

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significance so that they can impart that knowledge and instill a positive attitude towards maintenance of good oral health in the children.[8]

Against this background, this study was undertaken with the objective to assess the school teacher's knowledge concerning oral health and disease and their attitude towards dental emergencies.

Subjects and Method

A cross-sectional questionnaire study was conducted in Meerut which is situated in the eastern part of Uttar Pradesh. Ethical clearance was obtained to conduct the study. Permission to conduct the study was obtained from the concerned authorities. A sample of in service teachers was selected by simple random sampling procedure and each teacher was a unit for analysis. The sample of 215 teachers were selected from private and government schools. A questionnaire was framed in English language and distributed to school teachers by a trained dental personnel. The questionnaire was formulated to ascertain oral health knowledge of participants and their teaching experience.

The questionnaire included 12 questions which had 2 – 4 options to assess the knowledge of the school teachers regarding importance of oral health, etiology of decay, their prevention, role of fluoride, handling of dental emergency, awareness about a paedodontist and organization of dental camps in the school. After taking permission, questionnaires were distributed among teachers for assessing their oral health knowledge and oral hygiene practices. The teachers were asked to tick one option to each question. One of the investigators was always available during the completion of the questionnaire and the participants were encouraged to approach her whenever they needed clarification of any point.

Statistical Method: Descriptive statistics were obtained and means and frequency distribution were calculated. The data was analyzed using the Statistical Package for Social Science 21.0

Results: In the present study, the number of participants were 215 which included both male and female teachers averaging 32 years of age (Table 1).

The results revealed that 97% of the teachers considered oral health as important as general health, however only 54% were aware of a Paedodontist thus more awareness needed to be spread amongst school teachers regarding the various branches of Dentistry. Out of 215, 169 teachers (78.6%) considered primary teeth to be as important as primary teeth whereas 46 teachers (21.4%) considered them to be insignificant.

Table 1: Socio demographic characteristics of study population

Socio demographic characterstics	Frequency	Percentage
Gender		
Male	47	21.87%
Female	168	78.13%
Years of Teaching Experience		
0-5 years	137	63.42%
6-10 years	41	18.98%
11- 15 years	37	17.12%

71.6% teachers considered both bacteria and sugar to be a causative agent for caries, however, 13.5% and 9.8% considered bacteria alone and others to be a causative agent for caries respectively. The general consideration of school teachers is that tooth decay can be prevented by avoiding sweet, along with regular tooth brushing and regular visits to the dentist (75.8%), however only 24.2% considered tooth brushing alone in prevention of caries. 58.6% thought that fluoride helps in prevention of tooth decay, whereas 31.6% thought it had a role in prevention of gingival disease, 7% in prevention of malocclusion and according to 2.8% it had no effect on teeth.

Regarding dental facilities in school to handle emergencies, only 142 out of 215 were prepared, however 205 teachers admitted that there is a need for school to have its own dental clinic in school. As expected, awareness regarding avulsion was least and 54% of the teachers thought of throwing the avulsed teeth and only 46%(99) teachers thought of preservingit and giving to the dentist.

Discussion

This study presented a comprehensive view of the oral health knowledge, attitude and practices of school teachers representative of the Meerut city, India. According to the best of our knowledge it represents the 1st study of its kind among school teachers in Meerut (UP). Previous studies conducted on school teachers in other parts of India are indicative of the fact that there is need to improve their oral health education.

Around 78% of the school teachers in our study were females. This is in accordance with a study conducted by Kompalli et al, in which female accounted for 82 % of the study population.[9] The mean age of the teachers in our study is 32 years, which is in contrast to the study by Shodan et al [6], in which it was 40 years. Thus it can be revealed that teachers in our study had less experience.

Around 97% of the teachers were aware of the importance of oral health, however only 50 % knew about a paedodontist. Approximately 75% of the subjects had knowledge of the cause of dental caries namely bacteria and sugar. Around the same number also agreed that regular visits to dentist, regular brushing and avoidance of sweets reduce the incidence of. However this is in contrast with studies conducted by Nyandindi et al[10] and Khan et al [11], in which only 50% of the teachers had knowledge regarding cause and prevention of dental caries, thus the teachers in present study had knowledge regarding the causation and prevention of tooth decay .

Around 58.6% teachers know that fluoride protects against tooth decay. Thus Knowledge about fluoride could be shared with the Teachers in school, where kids have a higher incidence of dental caries. Thus It is the role of the dentist to impart basic preventive knowledge other than doing preventive measures alone. The results were low as compared to study by Shekhar et al [3], in which 74.5 % teachers had knowledge regarding Fluoride.

In cases of avulsion or complete tooth loss 46% of the teachers knew that it can be reimplanted, whereas 54% thought that it need not be stored or preserved and can be thrown. Though the direct or indirect experience of dental trauma to the teachers is not an uncommon phenomenon they had little knowledge regarding its prevention and immediate management and was in accordance with earlier studies.[12,13]

Schools are the place where children spend most of their time, thus school teachers are considered pivotal in educating children about oral health awareness and prevention programs. Not only this but children consider their teachers as their role models Hence, in the present study an effort was made to assess school teacher's knowledge, attitude and awareness regarding Oral health by means of self-administered questionnaire.

With the aim to utilize the potential of teachers, the dental profession should attempt to encourage the inclusion of the knowledge about oral-health, diseases, their method of prevention and oral-health promotion within the curriculum of school-teachers. In Indian scenario, it's been recommended in national oral-health policy[14] that, schoolteachers should be trained in giving Oral-health Education. Implementation of primary prevention package through the school health schemes in the different urban and rural areas. Regular oral-health promotional activities in form of health education, regular dental check-up, demonstration of brushing and rinsing technique and preventive and interceptive treatment can be undertaken at school level and 95.5% teachers in our study admitted that there should be a setup of dental clinic within school premises.

Oral health is as important as general health of an individual. Children need to be constantly monitored and shaped in all aspects of life. School teachers should emphasize about healthy eating habits and food in parent teachers meeting. Furthermore, it might be appropriate to include the oral health related message in daily routine teachings as a very recent Indian study has shown that schools where teachers were trained for health education, their children had significantly lower prevalence of dental caries and mean plaque index.[15] As, results in the present study showed medium knowledge among teachers regarding role of fluoride in dental decay and how to manage cases of avulsion in school, it can be improved by providing them accurate knowledge about oral-health and preventive measures.

Recommendations: The study should be conducted on a larger sample size and Pan India, in order to get the clear picture of knowledge, attitude and awareness of school teachers .

Conclusion

Oral health is as important as general health of individuals. Oral hygiene knowledge and awareness should be incorporated in children as early as possible and the best educators for them, apart from their parent, can be the school teachers as students consider them as their role model. In the present study teachers were aware of causative agent of dental caries, however they were unaware about the role of fluoride in caries prevention. The teachers had little knowledge regarding avulsed tooth and majority of them agreed for a dental clinic in the school premises. Hence, keeping this information as baseline data further educative and motivational programs can be planned and school curriculum should include school teacher training regarding oral health promotion and prevention . The change to healthy

practice can occur by giving enough education and motivation to the children[16].

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Effect of Tabata Protocol on Exertion Level and Lower Limb Explosive Strength in Recreational Footballers: An Experimental Study

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Abstract

Purpose of the Study: To find the effect of Tabata protocol on exertion level and lower limb explosive strength in recreational footballers.

Materials and Methodology: Subjects fulfilling the inclusion and exclusion criteria were included. After taking consent from, the footballers were assessed for their exertion level and lower limb explosive strength using rate of perceived exertion scale(RPE) and vertical jump height (VJH).The footballers were then asked to perform 8 tabata exercises 4 times per week total duration of session is 4 weeks. Prior to tabata exercise the footballers had to do warm up and post exercise, cool down. The entire protocol was supposed to be performed before their practice. After 4 weeks, post assessment was taken for their exertion level using the RPE scale and lower limb explosive strength using VJH. Statistical analysis was done using the paired t -test.

Result: The statistical analysis showed considerable extremely significant improvement in RPE and VJH with p value <0.0001.

Conclusion: The above study concluded that On the basis of the result of the study, it was concluded that Tabata Protocol is effective treatment protocol on recreational football players. Lower limb explosive strength and exertion level was improved, both clinically and statistically.

Keywords: *Footballers, RPE, VJH, Lower limb explosive strength, Exertion level.*

Introduction

In the 1950s, high interval intensity training (HIIT) was introduced by Reindell and Roskamm.[1] High –intensity interval training is an exercise program characterized by relatively short bursts of vigorous activity, with periods of rest or low- intensity exercise for recovery.[2] Safe and effective high intensity interval training involves repeated exercise at a high intensity for 30 seconds to several minutes, with 1-5 minutes of recovery (either no or low intensity exercise) in between.[3,4] HIIT is relatively a difficult program for the subjects to perform. One of the merits of HIIT is that it is time efficient and enhances performance and improves overall health.These are identical to the benefits obtained from more traditional low-medium intensity, long duration continuous training [5,6,7]

Football, one of the most multifactorial sport requires an amalgam of body composition, strength, power, quickness, reaction time, speed, agility and endurance. [8]

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Muscular strength training has increased available force of muscle contraction in appropriate muscle groups as a result of these explosive performances.[9,10] Use between both lower and upper limb decreases physical demand of the specific part of the body.[11]

Tabata is one of the best and effective HIIT method. It is time saving as well as Comparitively more intense[12]. The popularity of high intensity interval training has rised up in recent times. Tabatatraining, a kind of HIIT,was found out by Japanese scientist Izumi tabata in 1996. The session goes as follows,20 seconds exercise bouts,10 seconds rest and is continue for 4 minutes. Tabata training as grown up to include various exercises perform between the classic 20-10 pattern.[13]

Original Tabata Protocol:

Warm up -5 minutes.

Ultra high intensity exercise- 20 seconds

Rest- 10 seconds

Duration:- 4 minutes

No of Intervals-8

Cool down- 2 minutes [12]

Tabata protocol includes 20-minutes of exercises. It is divided into four segments. Each segments consist of 4 different exercises and It last for 4 minutes:-

1ST segment includes one minute of high knee run followed by plank punch for another one minute, Jumping Jacks for third minute and side skaters for last one minute.

2nd segment includes one minute of Jump Rope followed by In\out Boat for another one minute,Line Jumps for 3rd minutes and push-ups for last one minute.

3rd segment includes one minute of Burpees followed by Russian Twists for another one minute squats for 3rd minute and Lunges for last one minute.

4th segment includes one minute of Mt. Climbers followed by Push-ups for another one minutes Split-Squat for 3rd minute and Box Jumps for last one minute.[13]

Explosive Strength: In several studies, effect of HIIT on explosive strength (power) is examined using various jump tests. Explosive strength is the ability to attain maximal muscle contraction in short time. The jump tests used in assessment of lower limb are Counter movement jump (CMJ); drop jump (DJ); Standing broad (long)jump (SBJ); squat jump (SJ) and vertical jump (VJ).

Jumping ability is a useful assessment tool to assess explosive strength.[14] Thus, the motto of this study is to find out most effective treatment protocol in recreational football players. In this research, if tabata exercises are effective than this programme can be used as a routine treatment for professional footballers.

Materials and Methodology

After ethical clearance, the footballers were screened for their inclusion and exclusion criteria. Accordingly, 23 footballers were selected. For assessment of exertion level and lower limb explosive strength, RPE and VJH were used. The footballers were asked to perform exercises prior to their practice. The exercise protocol was as follows-

Warm-Up Exercises:

- Straight Leg March
- Butt Kicks
- Power Shuffle(Step Slide)
- Jogging with Squats.[15]

Tabata Protocol:

1. **Burpees:**
   - Feet shoulder width apart with hands by your side. 1st
   - Bend knees while pushing your hips back such that your body is in a squatting position.
   - Move into a squat position with your hands on the ground. 2nd
   - Kick your feet back into a plank position with your arms extended. 3rd
   - Return back to squat position such that your hands are on the ground. 4th
   - Jump up and extend your arms into the air.
   - Come back to standing position.
2. **High knee run:**
   - Stand tall with your legs shoulder apart.
   - Relax your upper body
   - Assume a running posture

- Run on the spot, such that you bend your knees as thighs you can (90-degree angle from your thighs to your ankle)
- Keep your hands relaxed, elbows bent and shoulder down while swinging your arms back and forth

3. **Push-Ups:**
   - Go in prone position.
   - Hands by your side at chest level.
   - Raise your upper body by keeping your legs straight with the arms extended.
   - Repeat lowering and raising at a steady pace out.
4. **Squat:**
   - Stand straight with feet shoulder-width apart
   - Bend your knees into a squat position.
5. **Mountain Climbers:**
   - Begin in plank position with your abs pulled in.
   - Bending right knee, bring it towards your arms while keeping the other straight.
   - Quickly bring the left knee forwards, simultaneously taking back the right one.
   - Continue to Switch Knees. Pull the knees simultaneously in a "running" motion
6. **Lunges:**
   - Stand with feet shoulder width apart.
   - Position one leg forward with knee bent and foot flat on the ground while other leg is positioned behind.
   - Repeat with the other leg.
7. **Side Skaters:**
   - Start in a small squat. Jump sideways to the left. Bring your right leg behind your left.
   - Reverse direction. This completes one rep.
8. **Jump Rope:**
   - Choose a rope that reaches upto your shoulders when it is folded in half.
   - Hold the rope's handle in each of your hand. extend your hand and forearm at a 45 degree angle.
   - Step over the rope.
   - Swing the rope over your head by moving your wrist.
   - Stand on your tip toes and when the rope is coming towards the front of your feet hop over it by pushing off the balls of your feet.[13]

Cool Down Exercises:

Standing Quadriceps Stretch

Standing Calf Stretch

Standing Hamstring Stretch

Seated Cross-Legged Gluteus Stretch.[15]

After a duration of 4 weeks, the footballers were again assessed for their exertion level and lower limb explosive strength using RPE scale and VJH. Statistical analysis was done using the paired t test and confirmed with instat software.

Results

1. Rate of Perceived Exertion Scale

Interpretation: The pre-intervention RPE was 11.913±2.109 and post intervention RPE was 8.783±1.906. The P value was<0.0001 which was statistically considered extremely significant (t=10.543) This shows improvement in Rate of perceived exertion scale.

The analysis was done using 'paired t test'.

2. Vertical Jump Height

Interpretation: The pre intervention VJH was 31.826±3.473 and post intervention was 34.957±3.140. The P value was<0.0001 which was statistically considered extremely significant (t=8.501)This shows improvement in Vertical jump height.

The analysis was done using 'paired t test'.

Discussion

The study Effect of Tabata protocol on exertion level and lower limb explosive strength in recreational footballers" was conducted to find out the effect of 4 minutes of Tabata protocol i.e., fat burning workout protocol. Football,one of the most multifactorial sport requires an amalgam of body composition, strength, power,quickness, reactiontime, speed agility and endurance.[8] The most common lower limb injuries

occur in ankle. The treatment plan is designed for patient to improve exertion level and lower limb explosive strength. Previous study shown that HIIT exercise has maximize strength gains without an increase in body mass.[16]

Football players lower limb strengthening is important because all activities done by lower limb. Recreational footballers are unaware of importance of exercise. The objectives of the study were to determine the effect of 4 minutes of tabata protocol.

The study was conducted in Karad. In this study 23 Samples Size Were taken. They were selected on their inclusion and exclusion criteria. Inclusion criteria was both male and female,15-21 age group. Individual who play football as a recreational activity for at least 1-2 hours/day. Exclusion criteria was any previous history of on -field/off-field injuries, any musculoskeletal or neurological disorders, any previous history of surgeries, Subject not willing to participate. A prior written consent was taken from football players. After which they assessed for exertion level and lower limb explosive strength using RPE scale and VJH.

Before giving the treatment, Pre test of RPE scale can be done with the help of 6 minute walk test. In this test ask the subject to walk 6 min in 100 meters yard and time should be noted with the help of Stopwatch and Pre test of Vertical Jump Height can be done by asking the Subject to stand on wall side and reach up as high as you can with the hand closest to the wall. Make note of how high you can reach. Stand little away from the wall and jump high as possible using both arms and legs to assist in projecting the body upwards. With the help of chalk mark a point, as high as you can reach. Pre values of RPE, VJH can be collected and treatment can be given.

Prior to the treatment Subject participates Warm up program program so as to prepare the body for activity therby preventing injuries. The most common means for pre-activity warm up is the static stretch. Warm –Up exercise include: Straight leg March, Butt Kicks, Power Shuffle, Jogging with Squats (total duration 5 min). [15]

Recreational footballers 4 minutes of tabata protocol given total duration 4 weeks.8 tabata exercises given to footballers as per guided.4 times per week treatment session can be done. Each exercise performed for 30 seconds.8 exercise include: Burpees, High Knee Run, Push Ups, Squat, Mountain Climbers, Lunges, Side Skaters, Jump Rope.[13]

This was followed by Cool down exercise given Cool down exercise include:-Standing quadriceps Stretch, Standing Calf Stretch, Standing Hamstring Stretch, Seated Cross-Legged Gluteus Stretch.(total duration 2 min)[15]

Post test can be done and Post values can be Collected. Pre and Post value Comparison can be done. Statastical analysis can be done with the help of Outcome measures Paired t-test can be used.

The results of the present study supported our hypotheses that tabata protocol improve exertion level and lower limb explosive strength . The mean RPE pre intervention was 11.913 which decreased to 8.783. The p value was found to be($p<0.0001$)which was extremely significant. The mean VJH pre intervention was 31.826 which increased to 34.957. The p value was found to be($p<0.0001$) which was extremely significant. This study showed that RPE ($p=<0.0001$) considered Extremely significant. VJH ($p=<0.0001$) considered Extremely Significant. The results of the present study show that footballers exertion level and lower limb explosive strength show substantial progression.

The present study was a relatively short training intervention (only 4 week) and Longer training intervention is needed to observe improvement of professional footballers.

Conflict of Interest: Nil

Sources of Funding: Self

Ethical Clearance: Ethical clearance was given by Institutional Ethical Committee.

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A Study to Assess the Effectiveness of Stress Management Training on Stress among Mothers of Mentally Disabled Children

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Abstract

Background: The birth of a child with mental retardation could lead to deep impact on families, thus parents of children with special needs are facing more problems than parents of normal children which affect their psychological well-being[1,2]. The continuing care of children with mental retardation is often stressful for parents. Researchers have indicated that parents of children with mental retardation are generally at risk for a variety of emotional difficulties . Keeping this in view the investigator aimed to assess the effectiveness of stress management training on stress among mothers of mentally disabled children.

Method: 50 mothers were selected randomly based on the inclusion exclusion criteria. Quasi experimental design was adopted for this study. 10 session of 60 minutes stress management training was given to the mothers after the pre test.

Results: The findings of the study depicted an evidence of significant difference in the pre test mean score of 25.29 and post test mean score of 14.38 with mean difference 10.91. It was highly significant at $p<0.001$ level .**Conclusion :** stress management training is effective in improving mental health, stress and social interaction among mothers of mentally disabled children.

Keywords: *Stress management training, mentally disabled children.*

Introduction

The birth of a child with a disability affects the dynamic and interaction among family members which could leads to crisis within family. Specially issue of mental retardation in children is very serious because family with mental retarded children have problems in parental system, marital relationships, sibling relationships, even it affects their external system such as friend, family, neighbors, school and will cause more pressure within the system, at this point emotional state and physiological thoughts become abnormal then leads to vulnerability in cognitive activities which outcome of these behavioral problems will bring out depression and anxiety[3]. Regarding to this issues affiliates could internalize their stigma and affect their life, so they might face with contagious stigma which is complex phenomenon. The birth of a child with mental retardation could lead to deep impact on families, thus parents of children with special needs are facing more problems than parents of normal children which affect their psychological well-being[4,5]. This kind of birth is one of the most stressful events among individual's life .Some factors such as advances in medicine and technology, effect mental retarded children to live longer and

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healthier. The continuing care of children with mental retardation is often stressful for parents [6].

The effects on family unit can be economic, social and emotional in nature. Researchers have indicated that parents of children with mental retardation are generally at risk for a variety of emotional difficulties.[7] The cumulative impact of daily hassles and difficulties in dealing with disabled children represent significant stressors that may subsequently affect parents and family functioning. In particular, a great deal of evidence points to associations between the severity and frequency of behavior problems of children with intellectual disabilities and parental stress and psychiatric problems such as depression and anxiety.[8]

Stress management increases the ability of individual in order to coping with stressful situation to reduce the level of stress. This method of intervention consist of elements such as raising awareness about stress, relaxation training, identifying inefficient thoughts, cognitive restructuring, problem solving, anger management, self management and planning activities[9] interventions are necessary because the level of psychological well-being of parents directly associated with positive and effective interaction between them[10]. Keeping this in view the investigator has taken up this study to assess the effectiveness of stress management training on stress among mothers of mentally disabled children.

Conceptual Framework: The conceptual framework for this study was adopted from Ernestine Wiedenbach's "THE HELPING ART OF CLINICAL NURSING" (1964). Wiedenbach's model focuses on the concept of implementing need based care.

Method

The Sample and Sampling Present study is quasi-experiment designed as pre-test and post-test with control group. Samples consist of all parents with mental retarded children from city of Chennai, Quasi Experimental design was adopted for this study. population was mothers who attended vidhya sudha special school and the sample size was 50 mothers that were selected by purposive sampling technique .

Research Tools: It has three sections.

Section A: Consists of Demographic variables of mothers, age education, income,occupation and place of residence .

Section B: Consists of Demographic variables of Demographic variables of child age, sex of the child and diagnosis of the child

Section C: Parental Stress Scale by Berry and Jones (1995) . It has 18 item self report 5 – Point scale (strongly disagree, disagree, undecided, agree, strongly agree.)

Score Discription: Parental stress score items 1, 2, 5, 6, 7, 8, 17 and 18 should be reverse scored as follows: (1=5) (2=4) (3=3) (4=2) (5=1). low score to signify a low level of stress and a high score to signify a high level of stress. Overall possible scores on the scale range from 18 – 90. The higher the score the higher the measured level of Parental stress

Sampling criteria:

Inclusion criteria:

- Mothers with mentally disabled children
- between the age group of 20 to 45 years.
- Who come regularly to school
- who are willing to participate in the study

Exclusion Criteria:

- Who cannot understand and follow Tamil or English.
- Who have severe mentally disabled children.
- Who have undergone any complementary therapies

Introducing the Intervention Program: After running the pre-test on the both groups, experimental group attended in stress management program by using cogni- tive-behavioral method and after intervention, test scores were collected. Program of stress management by using cognitive- behavioral method includes 10 session of 60 minutes was performed as follows: In general, each session consists of two parts, first steps contains techniques of stress management and second part includes relaxation exercises.

First Session: Describe the factors of causing stress, response to factors of causing stress, awareness of the physical effects of stress and its possible consequences on health-muscle relaxa- tion for 16 groups of muscles.

Second Session: Stress and awareness (of automatic thoughts and physical sensations)—muscles relaxation for 8 muscles.

Third Session: Describe the relationship between

thoughts and emotions-diaphragmatic breathing, muscle relaxation for 4 groups of muscles.

Fourth Session: Identification of negative thinking and cog- nitive distortions-breathing, illustration and passive muscle re- laxation.

Fifth Session: Replacement of logical thoughts—Self-training for being heaviness and heat.

Sixth Session: Learn to deal effectively—Self-training for heart rate, respiration, abdomen and forehead.

Seventh Session: Implementation of effective coping re- sponse—Self-training with illustration and self-induction.

Eighth Session: Anger management training and mantra me- ditation.

Ninth Session: Gary expresses training—Counting breath meditation.

Tenth Session: Social Support—Overview of program and personal stress management program.

The presentation of material in each session was first to re- view the material of last meeting, then materials of that session were presented and at the end of that session the new materials were reviewed and finally new task has been given to them. After completing program, post-test were administrated to both groups in order to determine the level of stress

Results

Table 1: Frequency and Percentage Distribution of Mothers According to Demographic Variables (N=50)

S.No.	Demographic variables	Frequency	Percentage (%)
1.	**Age of Mothers**		
	a. 20-24	7	14
	b. 25-28	15	30
	c. 29-32	25	50
	d. 33-37	3	6
2.	**Education of Mothers**		
	a. Primary	-	-
	b. High school	15	30
	c. Higher secondary	15	30
	d. Graduate	20	40
3.	**Occupation**		
	a. House wife	50	100
	b. Coolie	-	-
	c. Private	-	-
	d. Govt	-	-
4	Family Income		
	a. Rs.15000-20000	15	30
	b. Rs.20001-25000	15	30
	c. Rs. > 25000	20	40
5	**Residence of the Mothers**		
	a. Rural	25	50
	b. Urban	25	50

Table 2: Frequency and Percentage Distribution of Child According to Demographic Variables (N=50)

S.No.	Demographic variables	Frequency	Percentage (%)
1.	**Age of the Child**		
	a. 1-2	15	30
	b. 3-4	15	30
	c. 4-5	20	40
2.	**Sex Of The Child**		
	a. Male	35	70
	b. Female	15	30
3.	**Diagnosis of the Child**		
	1. MR	25	50
	2. ADHD	15	30
	3. Autism	10	20

Table 3: Mean Difference of Stress in the Sample before and After Training

Experimental Group	Mean (SD)	Mean Difference	t
Before Training	25.29 (5.40)	10.91	24.85**
After Training	14.38 (4.70)		

** Significant at 0.01 level

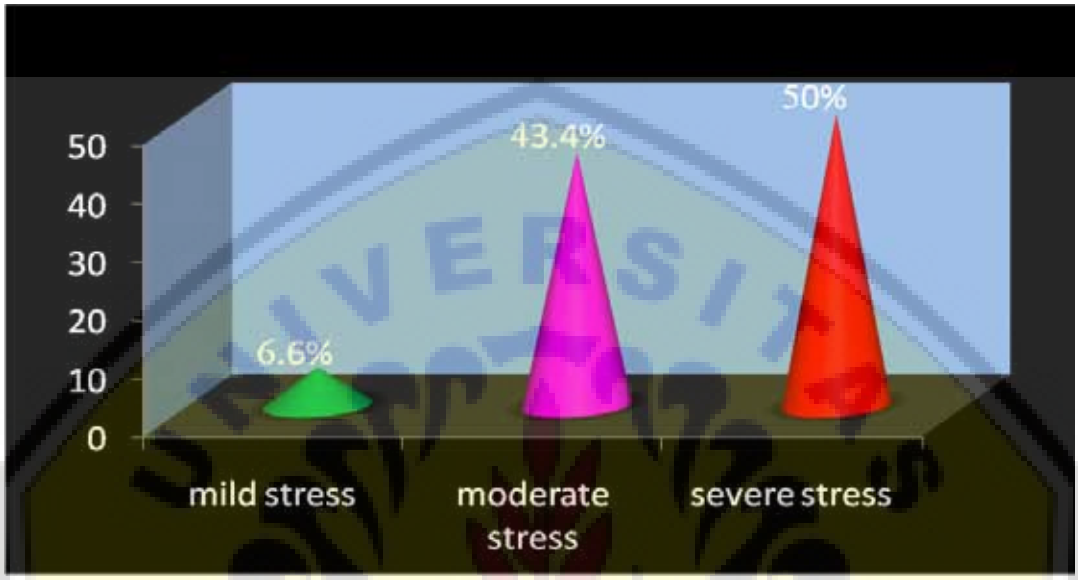

Fig. 1: Level of stress before intervention

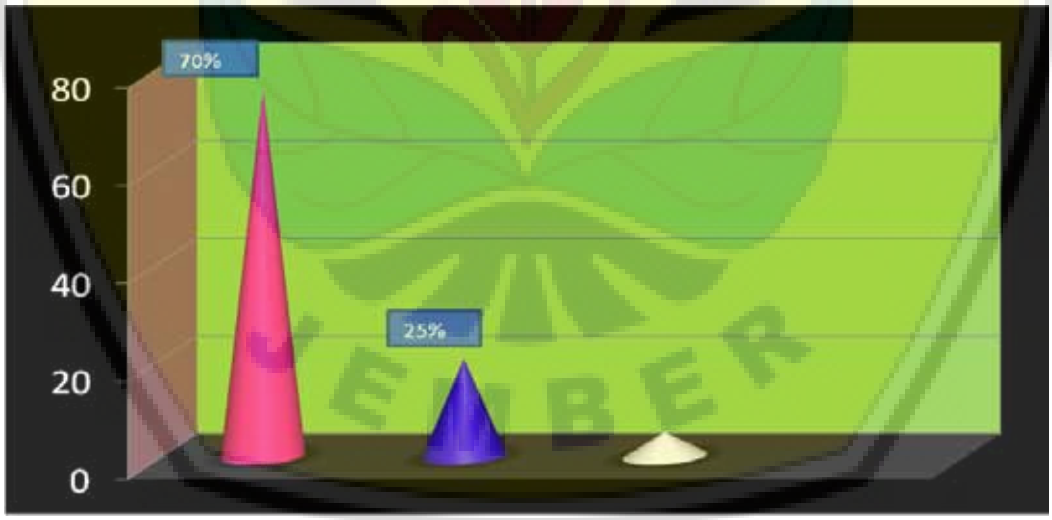

Fig. 2: Level of Stress After Intervention

Discussion

A family who has a child with an mentally disabled, experiences many challenges such as repeated physical and emotional crises, interactive family issues, ruined schedules and additional expenses, which can create financial burden and emotional distress for a family. Having a child with mentally disabled often requires a reorientation and reevaluation of family goals, responsibilities and relationships[11,12]. A significantly high proportion of parents of children with mentally disabled depression or both, needing mental health

services and support. Nearly 60% of the mothers were moderately depressed . In a study done in Turkey, Firat et al. reported high rates of depression in mothers of children with autism (72.5%) and in mothers of children with mental retardation (44.7%)[13]. The high level of stress or mental health problems experienced by parents of children with mentally disabled could be related to subjective factors such as feeling social isolation and life dissatisfaction[14],[15].

Parents of these children may struggle with a multitude of emotions interchangeably over years and often have feelings of guilt that somehow they caused the child to be disabled, for logical or illogical reasons [16].Other factors related to parenting a child with an mentally disabled that may negatively impact parent mental health may include disappointment that their child will not reach the career ideals they had envisioned or feelings of embarrassment, shame and isolation. .

Conclusions

There was a high rate of stress among parents of children with mentally disabled in this study. Mental health providers need to be aware of these issues, so appropriate mental health screening can be utilized among the care givers of children with mentally disabled.

Educational activities for parents on parenting a disabled child, the availability of services and how to utilize them. All these services should start once the mentally disabled child is born to help the parents in coping and should be extensively provided form others at more risk to develop psychiatric morbidity, such as mothers of children with multiple disabilities and chronically ill, as well as mothers of more than one disabled children and those with preschool age disabled children.

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Conflicts of Interest: There are no conflicts of interest.

Ethical Clearance: Got from intuitional ethics committee (No- IEC-PhD/12/RR/2012).

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Etiological Factors of Failure in Endonasal Dacryocystorhinostomy

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Abstract

Background: External dacryocystorhinostomy was first performed by Addeo Toti in 1904. Before, in 1893 Caldwell did mention about endonasal approach in lacrimal surgery. In 1989, the first endonasal dacryocystorhinostomy (DCR) performed by McDonogh and Meiring. The knowledge about etiological factor of failure of DCR would immensely help in its prevention.

Aim: To find out the causes of failure of endonasal DCR.

Materials and Method: All the cases having epiphora following endonasal DCR surgery which completed minimum one year period irrespective of their gender were included in the study. A total of 50 cases from otorhinolaryngology and ophthalmology having epiphora were enrolled in the study. All cases were subjected to diagnostic as well as therapeutic endoscopy using '0' degree endoscope, causes like deviated nasal septum, intranasal synaechia, cicatricial closure as well as inadequate size or non- dependant position of neo-ostium, inadequate sac marsupialization, etc. leading to failure were searched and corrected. All cases were followed for six months.

Results: There were 12 male and 38 female, epiphora was commonest symptom in all cases and the least common was redness and swelling of eyelid in 1.The most common etiological factor for failure of endonasal DCR was inadequate ostium size in 41, followed by inadequate sac marsupialization in 31, cicatricial closure of ostium in 26, intranasal synechia and ostium malposition in 18 each, ostium stenosis in 13, common canalicular obstruction in 11 and deviated nasal septum in 8 cases.

Conclusion: The most common aetiological factor responsible for failure of endonasal DCR was inadequate ostium size whereas; the least common was malpositioning of neoostium. The number of female having failed DCR was more than three times higher than male.

Keywords: *Endoscopy,Lacrimal apparatus, Lacrimal duct obstruction.*

Introduction

Endonasal dacryocystorhinostomy (DCR) is procedure for obstruction in lacrimal drainage system by way of nasal approach, with the help of a nasal endoscope. In 1904 the surgical modality by way of external dacryocystorhinostomy was first performed by Addeo Toti.[1] Before, in 1893 Caldwell mentioned endonasal approach in lacrimal surgery but due to narrowness of cavity it did not come in to practice.[2] With the development of the rigid fiberoptic endoscope the first modern endonasal endoscopic DCR procedure

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was described by McDonogh and Meiring in 1989.[3] Various causes of its failure are known like obstruction of the nasal ostium, canalicular obstruction, functional epiphora, granuloma formation in the nasal ostium etc. The precise knowledge of such causes would immensely help in prevention of failure in endoscopic DCR.

Objective: To find out the causes of failure of endonasal DCR.

Materials and Method

All the cases having epiphora following endonasal DCR surgery which completed minimum one year period, irrespective of their gender were included in the study. All pregnant or lactating mothers, previous nasal injury at ostium site, neoplastic lesions of nose and lacrimal apparatus and known cases of immunodeficiency were excluded from the study.

A total of 50 cases from otorhinolaryngology and ophthalmology OPD of tertiary care teaching hospital, as per set inclusion and exclusion criteria and willing to participate were enrolled in the study. In all cases demographic characteristics, clinical history and past medical history etc were recorded. The nose and eye examination for any obvious deformity, turbinate hypertrophy, nasal polyposis, watering or purulent discharge in the medial canthal area etc. was carried out in all cases. Regurgitation on pressure over lacrimal sac (ROPLAS) test was done in all cases for diagnosis of nasolacrimal duct (NLD) block. Also probing and syringing was carried out for testing the patency of tract. Further, all cases were subjected to imaging and laboratory tests like dacryocystography, CT-PNS and routine CBC, BT, CT, PT, urine, BUN, creatinine and blood sugar. Both diagnostic as well as therapeutic nasal endoscopy was performed under anaesthesia using '0' degree endoscope in every case. Diagnostic nasal endoscopy (DNE) was done to note various etiological factors in nasal cavity like, deviated nasal septum, intranasal synaechia and non- dependant neo-ostium of previous surgery. At revision endoscopy as a part of corrective surgery additional causes like inadequate size of ostium, inadequate sac marsupialization, cicatricial closure of ostium etc. leading to failure were searched and corrected. After revision surgery during immediate follow up the crust were looked for and removed. Patency check of new stoma was made in all cases by syringing weekly for 1 month, monthly for 3 months and then at 6 month.

Statistical Analysis: Using statistical analysis the frequency distribution of collected data was obtained with the help of SPSS (Statistical Packaging for Social Sciences) IBM, INDIA software version 22.0.

Observation and Results

Amongst 50 cases, there were 12 male (24%) and 38 female (76%) in the ratio of 1: 3.16. All study participants were between age group of 20-70 years (table-1). Most of the cases 15 (30%) were of age between 51-60 years and the least 5 (10 %) belonged to the age group of 20-30 years. Amongst all cases the commonest presenting symptom (table-2) was watering of eyes in 50 (100 %), followed by pain in lower corner of the eye in 38 (76 %), swelling at medial canthus in 33 (66 %) and lacrimal abscess in 2 (4%) cases, whereas the least common symptom was redness and swelling of eyelid consequent to preseptal cellulitis in 1 (2%) case. In all cases using dacryocystography and CT-PNS the cause of failure noted was common canalicular obstruction, deviated nasal septum in 11 (22%) and 8 (16%) cases respectively while in 31 it could not be ascertained. At DNE in all cases of revision endonasal DCR the most common etiological factor for failure noted was inadequate ostium size in 41 (82 %), followed by inadequate sac marsupialization in 31 (62 %), cicatricial closure of ostium in 26 (52 %), intranasal synechia and ostium malposition in 18 (36 %) each, ostium stenosis in 13 (26%) -(table-3). The mean duration between first surgery and revision surgery amongst all cases was 5.08 years ± 2.23 years. The mean duration of symptom free period between two surgeries was 8.42 months ± 3.38 months.

Table 1: Age wise distribution of cases.

Years of Age	Number of subjects	Percent
20-30	5	10
31-40	9	18
41-50	10	20
51-60	15	30
61-70	11	22
Total	**50**	**100**

Table 2: Distribution of cases according to their symptoms

Signs and Symptoms	Number of Cases	Percent
Watering of eyes	50	100
Local pain	38	76
Swelling of medial canthus	33	66
Lacrimal abscess	2	4
Redness and swelling of eyelid	1	2

Table 3: Distribution of cases according to Causes of failed DCR

Causes of failed DCR	Number of Subjects	Percent
Cicatricial closure of ostium	26	52
Common canalicular obstruction	11	22
Intranasal synechia	18	36
Ostium stenosis	13	26
Deviated nasal septum	8	16
Inadequate ostium size	41	82
Ostium malposition	18	36
Inadequate sac marsupialization	31	62

Discussion

This study of failed DCR cases stressed up on finding different etiological factors such as opening of ostium, site of ostium, various other intranasal and septal pathologies. In study by Dave TV et al the majority of the cases are females 66.6% and males 33.3%.[4] and in the study of Baek JS et al, out of the total 61 cases, 46 are female i.e. 75% of the sample and the overall mean age is 54 years.[5] The percentage of gender distribution of participants in this study was 24 and 76% amongst male and female respectively in the ratio of 1: 3.16. The majority of the study participants belonged to the age group of 51-60 years i.e. 15(30%) and the least in 20-30 years i.e. 5 (10%). Dacryocystitis is more common amongst females due to narrow lumen of the bony canal and it often results in partial or complete closure of the NLD.[6] Acute dacryocystitis is more common in 5th decade.[6] Acute dacryocystitis presents with complaints of local pain, watering and purulent discharge from eye, swelling of the lacrimal sac region and occasionally there may be pre septal cellulitis and lacrimal abscess. In the similar study by Dave et al the epiphora is commonest presentation in 100% of cases.[4] The study by Goyal R et al, persistent watering from affected eye in 44 cases, regurgitation of pus from sac in 34, mucocele in 18 and pyocele and fistula formation in 8 each.[7] In majority of the cases of this study the clinical presentation was epiphora in 50 (100%) and it was in accordance with above two studies, pain in lower corner of the eye in 38 (76%), swelling at medial canthus in 33 (66 %) and lacrimal abscess in 2 (4%) cases, whereas the least common was redness and swelling of eyelid consequent to preseptal cellulitis in 1 (2%) case. In study by Dave TV et al, majority of previous DCR cases are having inadequate ostium size (82%), commonest cause of failure is insufficient osteotomy 85.1% followed by inadequate marsupialization of sac 77.7% and cicatricial closure of the ostium 55.5%.[4] In this study the causes leading to failure of DCR were inadequate ostium size in 41 (82 %) cases, followed by inadequate sac marsupialization 31 (62 %), cicatricial closure of ostium 26 (52 %) and it was in accordance with above two studies. Further, in this study the intranasal synechia and ostium malposition in 18 (36 %) each, ostium stenosis 13 (26%), common canalicular obstruction 11 (22%) and deviated nasal septum 8 (16%) were the additional causes.The study conducted by Choussy et al revision endoscopic DCRs in 17 patients and reported ostium scarring in 13 (76.47%) patients and improper ostium site in 3 (17.64%) patients.[8] In this study the commonest cause of failure was inadequae ostium size in 41 (82%) cases.Hull et al in their study of failed endonasal DCR found 14 (74%) cases with failure due to ostium blockage as a result of scarring and the least common cause was high ostium 1(5%).[9]

In study by Goyal R et al, the patency of NLD is 85.10 %, whereas, partial block and clear fluid regurgitation in 06.38 % during 12 months follow up after surgery. In this study the NLD patency was confirmed by sac syringing at all follow ups after 1 week, 1 month and 3 months and 6 months post-operatively. Our findings was not in accordance with the study by Goyal R et al which could be due to almost double the period of follow up and sample size in their study.[7] In the study by Goyal R et al, during follow up over period of 1 year amongst their cases the complications are scarred and fibrosed ostium in 08, intranasal synechia formation in 07, ostium site granuloma with narrowing in 06, whereas common canalicular duct obstruction in 1.[7] Amongst all cases in this study, intra-operative complication were hemorrhage in 4 (8%), post-operative epistaxis 3 (6%) and local infection in 1(2%). However, no such complications mentioned by Goyal R et al were noted in this study.

Amongst 31 out of 50 cases of failed endonasal DCR in this study at dacryocystography and CT-PNS

the cause of failure could not be ascertained whereas, the common canalicular obstruction, deviated nasal septum was found in 11 (22%) and 8 (16%) cases respectively.

Conclusion

The aetiological factors responsible for failure of endonasal DCR noted being many, the most common noted in this study during DNE was inadequate ostium size in 41 (82%) followed by inadequate marsupialization of sac 31 (62%), cicatricial narrowing of ostium 26 (52%) and intranasal synechia and ostium malposition in 18 (36%) each, ostium stenosis in 13 (26%). The pre-operative dacryocystography and CT-PNS per say in failed cases of DCR could not ascertain the cause for failure in 31 (62%) cases. The total number of female having failed DCR was more than three times higher than male (F: M -3.16 : 1).

Summary: The commonest aetiological factors for failure of endonasal DCR in this study was inadequate size of ostium followed by inadequate marsupialization of sac, cicatricial narrowing of ostium and intranasal synechia around ostium site whereas, the least common was malpositioning of neo ostium. The total number of female having failed DCR was more than three times higher than male. The findings of the present study suggests preoperative work up like paranasal sinus-CT scan and dacryocystography should be routinely undertaken for discovering the intranasal structural abnormalities so that the failure rate of endonasal DCR can be minimised. Meticulous endoscopic evaluation must be included as a part of preoperative work up in all cases for preventing failure of DCR.

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Conflict of Interest: None.

This study was undertaken after prior ethical clearance from institutional ethics committee, vide letter No. KIMSDU/IEC/03/2017 dated 23/11/2017.

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Cerebellar Dysfunction a Rare Complication of Dengue

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Abstract

Dengue is a benign syndrome caused by several arthropod-borne viruses transmitted to humans by aedes aegypti mosquito. Clinically the disease may present as mild viral fever which may get complicated by the development of hemorrhage and shock. Involvement of liver, kidney and other organs are well known complications of dengue. In recent times due to modification in virological properties of dengue virus an increased number of neurological complications are increasingly reported. CNS manifestations in dengue are rare but can have deleterious complications like encephalopathy, meningitis, cranial nerve palsy, post infectious acute disseminated encephalomyelitis, cerebellar syndrome and transverse myelitis. Here we present a case of Cerebellar dysfunction, a rare complication of dengue.

Keywords: *Dengue fever, neurological manifestation,cerebellar dysfunction, neuroimaging in dengue.*

Introduction

Dengue fever is an arboviral infection, commonly transmitted to humans by Aedes aegypti mosquito. Globally 50 million dengue infections are reported annually. According to the WHO case fatality rate of dengue is 5%.[1] Clinically the disease presents as common viral fever which gets complicated with the development of bleeding manifestation and shock. CNS involvement in dengue infection was thought to be less common. However, in recent years neurological manifestations of the dengue infection have been increasingly reported but their exact incidence remains unknown. Neurological manifestation has been reported in the 25 countries spanning all the continents and involving the age group from 3 months to 60 years.[2] High body temperature, elevated hematocrit, thrombocytopenia and transaminitis are reported to be independent risk factors for neurological complications.[3] Autoimmune reaction and metabolic alterations has been demonstrated in most neurological complication of dengue fever cases. Common neurological complaints in dengue fever include complications due to involvement of the central nervous system like encephalopathy, meningitis, cerebellar syndrome transverse myelitis and due to involvement of peripheral nervous system such as GBS, hypokalemic paralysis and myositis.[4] Here we present a rare case of dengue infection with cerebellar involvement.

Case Summary: A 15-year-old female child was admitted to PICU at MMIMSR, Mullana (Ambala) with a history fever for 5 days, vomiting and melena for two days with active nasal bleed at the time of admission. The patient was referred from a nearby private hospital as a case of fever with thrombocytopenia with Hb 9.8g%, PCV 45%, TLC 2300 cells/mm^3 (48% PMN) and platelets 45000 cells/mm^3. On examination, the patient was hemodynamically unstable with tachycardia, feeble pulses and hypotension.The patient was conscious of GCS 15/15 and no signs of meningeal irritation. The patient was probably kept under-diagnosis of dengue shock syndrome, i/v lines were established samples were

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sent. The patient was treated as per the WHO guidelines of Dengue shock syndrome. The patient responded well to fluids. Blood investigations of child showed Hb 9.1 gm%, TLC 4600 cells/mm^3 (54% PMN), Platelets 30000 cells/mm^3, transaminitis (SGOT 566 IU/dl and SGPT 205 IU/dl), CRP 37mg/L, Dengue Serology positive for NS1 antigen, Ig M and IgG. After the patient was hemodynamically stable complete neurological examination was done which revealed signs of impaired cerebellarfunction i.e. patient was not able to perform dysdiadochokinesia, finger-nose test and finger-finger nose test. The patient had ataxic gait, pendularknee jerk and micrographia. CEMRI showed features of dengue encephalitis with marked diffuse restriction in frontal parasagittal region, midbrain, right cerebellar folia and punctate hyper-intense foci in subcortical white matter and more in the frontal region.

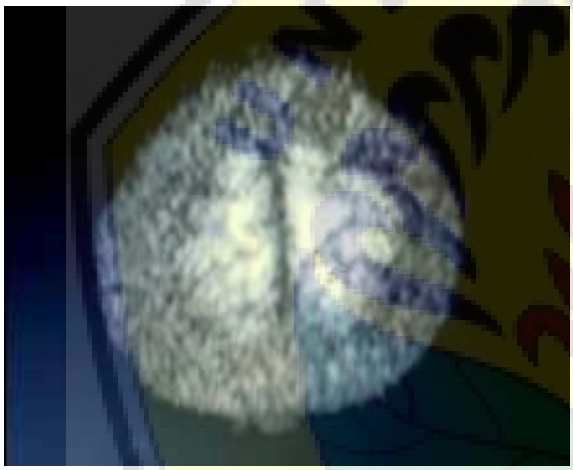

Figure 1: DWI axial view showing diffusion restriction in high frontal parasagittal region

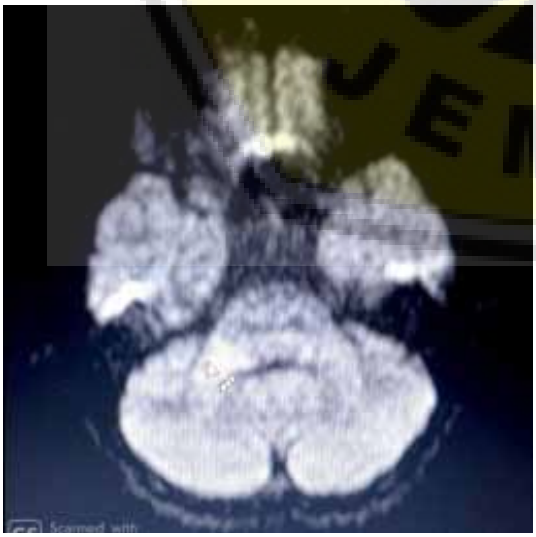

Figure 2: DWI axial view showing marked diffusion restriction right cerebellar folia

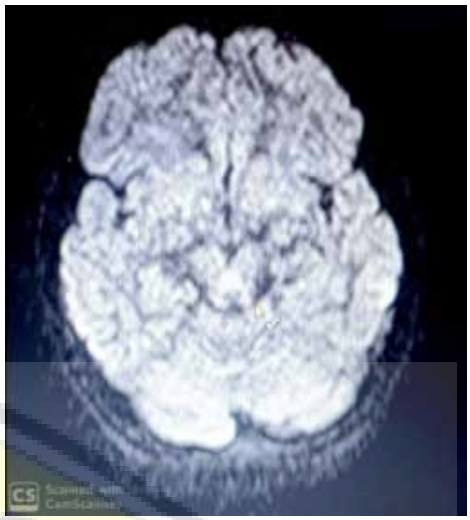

Figure 3: DWI axial view showing diffuse restriction in midbrain

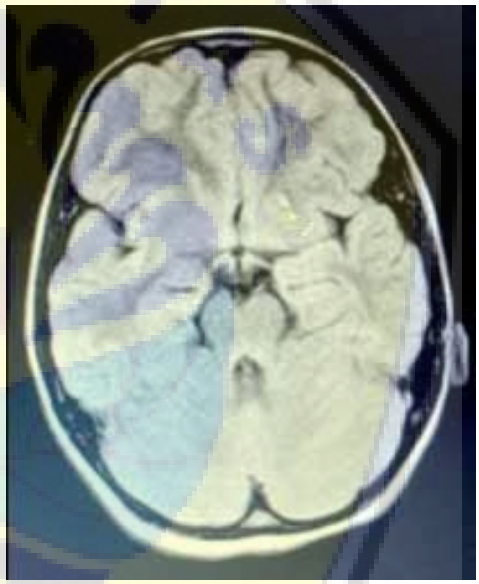

Figure 4: Flair axial image showing small punctate hyper-intense foci in subcortical white matter and more in the frontal region.

Lumbar puncture showed five cells, Glucose 140mg/dl and protein 82 mg/dl. CSF culture was sterile.

The patient was regularly monitored for progression of symptoms patient was discharged on the 10^{th} day of hospital stay with improvement in cerebellar function and advised follow up. The patient came in OPD after two weeks with further improvement in cerebellar function.

Discussion

With the availability of better imaging tools, neurological complication and its neuroimaging

evidence of dengue fever are increasingly reported. Dengue fever may lead to neurological complications involving both the central nervous system and the peripheral nervous system. A possible mechanism of neurological complication in dengue has been proposed due to direct invasion of the virus, autoimmune reaction and metabolic alterations. Weeratunga et al in 2014 have described cerebellar syndrome in dengue consisting of bilateral vertical and horizontal nystagmus with dysarthria bilateral limb and gait ataxia with normal CSF and hyperdense lesion on MRI. Low-grade inflammatory response was proposed as the cause of cerebellar symptoms.[5] A study done by Vinay et al on neuroimaging of 8 dengue cases had found cerebellar involvement in all the cases. Involvement of the brainstem was noted in four cases, thalamus in six cases, basal ganglia in two cases, internal capsule in three cases, insula in one case with frontoparietal regions being most commonly involved.[6] Varicella-zoster, Epstein Barr virus, mumps, measles and rubella are other important causes of acute cerebellar involvement.[7] Patel et al have also reported a similar case of cerebellar involvement along with dengue.[8] Our case presented with a sign of cerebellar dysfunction with clinical, lab investigations suggestive of dengue and MRI findings suggestive of dengue encephalitis.

Conclusion

Our case reports one rare case of cerebellar dysfunction in dengue which will help in the widening spectrum of neurological complications of dengue. Detailed neurological examination should be done in severe cases of dengue so that neurological manifestation is not missed.

Ethical Clearance: Consent taken from parents of case.

Source of Funding: Nil

Conflict of Interest: None

Reference

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Empathy and Interpersonal Relationship among Institutionalized Children

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Abstract:

Background: The arena of child vulnerability is taking complex shapes in the new socio-cultural situations .Institution children are those who deserve special care and attention in order to fulfil their basic and secondary needs both with equal importance, which later on make an impact if it's not satisfied. As humans are called as social being there are some expected qualities which makes us to be connected with each other in appositive way both in family and society. Empathy thus makes the people to be connected which further leads to form an interpersonal relationship.

Aim: The aim of the study was to assess the level of empathy among the participants and to assess the level of interpersonal relationship also the correlation between empathy and interpersonal relationship among institutionalised children.

Materials and Method: A total of 214 subjects aged 12-18 years were selected for study based on lottery method of Simple random sampling. The study was based on the Questions pertaining to socio-demographic profile of age, gender, mother tongue,good friendship in the institution, educational qualification, situation before being in the institution, interest in education and time period for being in the institution. The data collection was done in an interview schedule. The standardised tool used in the study was, the Self-esteem scale developed Life Skills Assessment Scale (LSAS) by A. Radhakrishnan Nair, R. Subasree & Sunitha Rajan.

Results: The result shows that there is significant difference between the variable, having good friendship in the institution and Empathy also there is a positive correlation between Empathy and Interpersonal relationship.

Conclusion: The result led to a conclusion that both empathy and interpersonal relationship has a common feature as both has difference in level of measurement among children by analysing its level through different socio demographic variables also there is a correlation between Empathy and Interpersonal relationship.

Keywords: *Empathy, Interpersonal relationship, Institutionalized children.*

Introduction

A study with focus on child institutionalization deserves higher research attention due to the fact that there are a growing number of children who are being seeking this service. The arena of child vulnerability is taking complex shapes in the new socio-cultural situations .Institution children are those who deserve special care and attention in order to fulfil their basic and secondary needs both with equal importance, which later on make an impact if it's not satisfied. Interpersonal relationship is a process which grow and develop throughout our life which forms its basement during the first few years

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of child's life and later enrich in different stages of developments .Interpersonal relationship is a process which extends in wide range which has to start from ones very close circle such as family, dears and nears and extends to society. As humans are called as social being there are some expected qualities which makes us to be connected with each other in appositive way both in family and society. Empathy and interpersonal relationship can be called as the basic element among them .Empathy always helps to be connected with others and as a result the tendency of caring will also be developed.[1] Empathy thus makes the people to be connected which further leads to form an interpersonal relationship.

Materials and Method:

This is a descriptive research conducted among 214 children from different Institutions for Children at Kannur district .Kerala, India. The samples selected for the study were under the age group of 12-18 years. The sampling technique adopted for the selection of the respondent subjects was by lottery method under Simple random sampling method.

The tool of data collection used for the study was an interview schedule that included questions pertaining to socio-demographic profile and standardised Life Skill Assessment scale developed by A. Radhakrishnan Nair, R.Subasree & Sunitha Rajan[2]. Among the 10 components of life skill the components empathy and interpersonal relationship was assessed, the component empathy and interpersonal relationships have 11 items each.

Statistical Analysis: ANOVA Test for Comparing Empathy and interpersonal relationship score is based on educational qualification, situation before being in the institution, interest in education and time period for being in the institution. The independent sample T-test was used to compare Empathy and Interpersonal relationship with age, gender, mother tongue and about good friendship in the institution. Chi-Square Test was used to test the correlation between Empathy and Interpersonal relationship.

Result

The Empathy score was compared by with educational qualification, situation before being in the institution, interest in education and time period for being in the institution by using ANOVA (Table-1). The independent sample T-test was used to compare Empathy with age, gender, mother tongue and about good friendship (Table-2). The empathy score was high among male children,children who are 12-15 years old, children who are in secondary schools, whose mother tongue is Malayalam, those who were studying before being in the institution and those who are interested in studies, also among the children those who are being in the institution for1-5 years and the children those who are having good friendship in the institution. There is a significant difference between the variables having good friendship in the institution and Empathy

Table 1: ANOVA Test for comparing empathy score based on educational qualification, situation before being in the institution, interest in education and time period for being in the institution

Variables	Groups	N	Empathy score		F-vale	P-value	
			Mean	Std. Deviation			
Educational qualification	Primary	33	31.33	5.15	2.435	3.039	Not significant
	Secondary	115	33.25	4.81			
	Higher secondary	66	32.23	4.49			
Situation before being in the institution	Studying	181	32.86	4.60	1.846	3.039	Not significant
	Working	4	34.00	5.48			
	Wandering	29	31.10	5.73			
Interest in education	Interested in studies	160	32.51	4.62	1.255	3.039	Not significant
	Not interested	6	35.67	4.23			
	Get training in any type of vocation	48	32.69	5.39			
Time period foe being in the institution	1-5 years	137	32.40	4.96	.482	3.039	Not significant
	6-10 years	38	32.97	4.22			
	Above 10 years	39	33.15	4.81			

Table 2: Significance Test (T-test) For Comparing Empathy with age,gender, mother tongue and about good friendship

Variables	Groups	N	Empathy score		t-value	P-value	
			Mean	S.D			
Age	12-15	151	32.64	4.73	10.010	1.971	Not significant
	16-18	63	32.63	4.99			
Gender	Male	117	151	4.73	0.010	1.971	Not significant
	Female	97	63	4.99			
Mother tongue	Hindi	7	31.86	4.41	0.438	1.971	Not significant
	Malayalam	207	32.67	4.82			
Good friendship	Yes	209	32.52	4.77	2.364	1.971	Significant
	No	5	37.60	3.13			

Table 3: ANOVA Test for Comparing Interpersonal relationship Score Based On educational qualification, situation before being in the institution, interest in education and time period for being in the institution

Variables	Groups	N	Interpersonal relationship score		F-vale	P-value	
			Mean	Std. Deviation			
Educational qualification	Primary	33	32.48	5.37	1.668	3.039	Not significant
	Secondary	115	33.31	4.10			
	Higher secondary	66	34.11	3.99			
Situation before being in the institution	Studying	181	35.00	5.89	.504	3.039	Not significant
	Working	4	33.38	4.24			
	Wandering	29	33.43	4.30			
Interest in education	Interested in studies	160	33.29	4.34	.499	3.039	Not significant
	Not interested	6	32.83	4.22			
	Get training in any type of vocation	48	33.96	4.20			
Time period for being in the institution	1-5 years	137	33.39	4.27	.806	3.039	Not significant
	6-10 years	38	32.87	4.55			
	Above 10 years	39	34.10	4.16			

Table 4: Significance Test (T-test) For Comparing Interpersonal relationship with gender, mother tongue and about good friendship

Variables	Groups	N	Interpersonal Relationship Score		t-value	P-value	
			Mean	S.D			
Age	12-15	151	33.15	4.08	1.467	1.971	Not significant
	16-18	63	34.10	4.74			
Gender	Male	117	33.67	4.36	0.885	1.971	Not significant
	Female	97	33.14	4.23			
Mother tongue	Hindi	7	33.00	5.89	0.983	1.971	Not significant
	Malayalam	207	33.38	4.24			
Good friendship	Yes	209	33.35	4.24	1.676	1.971	Significant
	No	5	36.60	6.02			

Table 5: Correlation between empathy and interpersonal relationship

Chi-Square Test:

		Interpersonal Relationship						Total	
		Low (<= 30)		Moderate (31-36)		High (>=37)		No.	%
		No.	%	No.	%	No.	%		
Empathy	Low (<= 29)	17	31.5	30	55.6	7	13.0	54	100.0
	Moderate (30-35)	25	24.8	59	58.4	17	16.8	101	100.0
	High (>=36)	10	16.9	30	50.8	19	32.2	59	100.0
Total		**52**	**24.3**	**119**	**55.6**	**43**	**20.1**	**214**	**100.0**

Interpersonal relationship was compared with educational qualification, situation before being in the institution, interest in education and time period for being in the institution by using ANOVA (Table-3). The independent sample T-test was used to compare Interpersonal relationship with age, gender, mother tongue and about good friendship in the institution (Table-4). There is no significant difference between any of the variables and interpersonal relationship. But the interpersonal relationship score was high among children under the age group 12-15, among boys, those who are in secondary school, children whose mother tongue is Malayalam, those who were studying before being in the institution and those who are in interested in studies, also the interpersonal relationship is high among the children those who are being in the institution for 1-5 years and the children those who are having good friendship in the institution.

The correlation test also agrees that there is a positive correlation between empathy and interpersonal relationship. The children who have low level of empathy are also having low level of interpersonal relationship. Those who are having moderate level empathy shows moderate level of interpersonal relationship and children having high level of empathy shows high level of interpersonal relationship, which is significant at 1% (Table-5).

Discussion

Mathies Allemand et al in their study states that during adolescent years there is a tendency of increase in empathy, the present study shows that there is no significant difference between empathy and age even though among 1-18 years old children who are 29% among total respondents and other children who are below that also having same level of empathy[3].

The present study shows that female children are empathetic than male children, which comes only 45% among total respondent,Loren Toussaint and Jon R. Weeb In their study among 127 respondents states that females are more empathetic than males[4].

Suk Chun Fung in his study states that education is a significant factor of humans empathy same as this in the present study also the respondents having empathy are secondary school children (53%) comparing with primary school children[5].

The present study shows that the empathy is comparatively less among the children who were wandering (13%) before being in the institution than those who were working (2%) and studying (84%), this result shows that the children who are not getting proper parental care, love and attention without fulfilling their basic needs are lacking empathy as emphasised in the study of Paulina Akpan-Idiok and Aniebietabasi in their study which states that family type, good parenting and home atmosphere influences child's social adjustment[6] .

Ravneet Kaur et al in their study states that the children who were being in the institutionalised for 1-5 years have more empathy but in the present study the children who are having empathy are those who are institutionalised for above 10 years, the respondents who are being in the institution more than 10 years are only 18% among total respondents[7].

Aarti Thakkar et alin their study states that compared to the attachment of institutionalised children between their inmates, care givers and mentors, it shows that the

children are more attached and have understanding with their inmates as like in the present study the children those who don't have good friendship in the institution have empathy than those who have good friendship in the institution, that's only 2% among total respondents[8].

According to the present study all the children are having moderate level of Interpersonal relationship, which can be supported by the study of Kim Maclean et al which states that even though less optimal development which includes intellectual, physical, behavioural and social development, which is one of the risk factor of institutionalisation, it may not lead a child to psychopathology during their process of development[9].

The present study shows that both male(55%) and female(45%) children have, interpersonal relationship, Rebecca A .Colman and Cathy Spatz Widom in their study states that during adulthood both males and females are incapable to form a healthy interpersonal relationship as they were exposed to physical abuse or neglect during their childhood[10].

The present study shows the result, higher secondary school students (30% of the respondent)have interpersonal relationship than secondary and primary school students,which can be supported by the study result of R.Steve Mc Callum and Bruce A, Bracken which states that there is a increased risk of dropping out of school,criminality and even marital maladjustment among children who are having poor interpersonal relationship which means once the interpersonal relationship is developed the rate of adjustment problems also decrease thus they continue the education[11].

The present study says that the children who were wandering and working before coming to the institution have interpersonal relationship than the children (84%) who were studying before being institutionalised have interpersonal relationship but in the study of S.N .Maduet al which states that as the street children have lower purpose in life the quality of interpersonal relationship is also low than non-street and part –time non street children[12].

David Zandvliet et al in their studies concluded that the self-interest of the students in learning is promoted by among students once they feel they are connected with their teachers which makes them to believe that they are competed and experience and thus they experience a substantial support of autonomy from their teachers, in the present study also as mentioned in the above study majority the children who are interested in studies or to get training in any type of vocation have interpersonal relationship than those who are not interested in studies[13].

Robert Winston and Rebecca Chicot in their study reported that if children have insecurity feeling about their attachment to their primary caregivers which effects the child to form and maintain healthy relationship throughout life, in the present study it states that for children who are being in the intuition for 1-5(64% of respondents) years and 6-10(18%) years have low level of interpersonal relationship as it is said in the above study as they are comparatively younger than others[14]. The present study states that even if the children don't have good friendship in the institution the interpersonal relationship is high among them (2% of the respondents), but on the other hand in the study of Kwame S.Sakyiand et al in their study they concluded that the psychological difficulties in later stage of development is associated with childhood friendship such as those who are having at least one good friend may reduce the psychological difficulties in young adulthood[15].

The present study shows that there is a positive correlation between empathy and interpersonal relationship, also the study of Ruiying Li, Tao Jianget al states that selfless concern about others is the outcome of good interpersonal relationship[16].

Conclusion

The research states that many of the socio demographic variables have influence on both empathy and interpersonal relationship among institutionalised children even though it's very slight. The study also reveals that there is relationship between empathy and interpersonal relationship.

Ethical Clearance: Ethical clearance was obtained before commencing the study.

Source of Funding: Self

Conflict of Interest: Nil

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Assessment of Root Canal Morphology of Mandibular Premolars in North Indian Population Using Different Techniques: An in-Vitro Study

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Abstract

Introduction: Mandibular premolars have shown higher percentage of root canal failures. The aim of this study was to explore numerous variations in canal morphology seen in mandibular premolars for localization and negotiation of canals as well as their subsequent management in the studied population.

Materials and Method: 400 human mandibular premolars in North Indian population were taken and analyzed to record the canal configuration using Spiral CT and Clearing techniques.

Statistical Analysis: The comparison of different types by Vertucciwas done using Wilcoxon and Mann Whitney test and found to be significant with Spiral CT.

Results: Spiral CT is better in visualizing root canal anatomy as it had shown the presence of Type VI, Type VII and C-shaped canals.

Conclusion: A good understanding of external and internal root anatomy helps to reduce the number of missed roots and root canals during treatment, thus increasing the rate of favorable outcomes following root canal treatment.

Keywords: *Mandibular premolars; Root canal; Clearing technique.*

Introduction

The internal anatomy of root canal exhibit lateral, accessory or diverse canals, fins and isthmuses which harborbacteria, tissue and necrotic debris, obscures cleaning and shaping procedures. Failure of knowledge of these variations in canal configurations leads to incomplete cleaning and shaping, thus leading to failure of root canal treatment.[1]

Mandibular premolars are morphologically similar and generally have single root canal but it is often seen that they are not as simple as it looks on a plain radiograph.[2] **Ghiasi J et al**, stated that variations in canals of these teeth make them the most difficult one out of all other teeth to treat endodontically because of high failure rate and flare ups.[3]

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Root canal system of mandibular first premolar is wider buccolingually than mesiodistally and has large buccal horn and rounded small lingual horn.[4]

Mandibular second premolar is almost related to mandibular first premolar apart from that the lingual pulp horn is larger, root canal and roots are frequently more oval than round, buccolingually wider pulp chamber and number of canals canbe 2, 3 or 4.[4]

In vitro method of studying root canal anatomy include direct observation, microscopic observation, macroscopic sectioning, microscopic sectioning, dye filling, decalcification, filling and clearing, radiography, contrasting media (hypaque) and cone beam tomography and Spiral CT(Spiral computed tomography). [5]

Spiral CT acquires a raw projection data with a spiral-sampling focus in a relatively short period, by employing a translation of the subject through the X-ray source, with continuous rotation of the source-detector assembly. Without any additional scanning time. These data can be viewed as conventional transaxial images, multiplanar and three-dimensional reconstructions.[6]

Staining of the root canals followed by tooth clearing is a gold standard for evaluation of root canal morphology as it analyses the root canal anatomy and depicts the 3D view of pulp cavity in relation to the exterior of the tooth.[7, 8,9]

Data on root and canal morphology of mandibular premolars from indigenous Indians is scarce and till date there is no sufficient published data on root canal morphology of North Indian population. Therefore, the aim was to evaluate the canal morphology of mandibular premolars in North Indian population using two different techniques.

Materials and Method

This in-vitro study was conducted in Department of Conservative Dentistry of M.M.C.D.S.R. college Ambala. 400 mandibular premolar teeth from various colleges were collected. Teeth with fracture, metallic restoration, deep caries and incompletely formed apex were excluded. Teeth were cleaned with ultrasonic scaler and stored for 30 minutes in 5.25% NaOCl for debridement of organic debris. Samples were then stored in normal saline till usage.

Spiral CT Evaluation: Two 2"x2" thermocol sheets were taken each holding 200 teeth for evaluation which were arranged in rows of 20 and columns of 10. A 64-slice spiral CT scan (5th generation SIEMENS SOMATO DUO) was used. A section thickness of 0.6mm and a section position of 0.3mm were obtained at 120kVp and 190m A. The software used to view the scanned teeth was SIENETS Sky-DICOM CD Viewer. Canal patterns were observed in the cross section views of Spiral CT. **(Figure 1).**

Clearing Technique: Access cavity preparation was done with air-rotor using endo access bur and canals were negotiated using 8 and 10 K files. The shape of canal orifices was observed with naked eye. The samples were placed in 2.5% sodium hypochlorite for 2 days. After 2 days, teeth were washed in running water for 2hrs and then placed in 5% Nitric acid for decalcification for next 3 days at 37°C.

The Nitric acid was changed every day and samples in container were agitated several times a day. After decalcifications, these samples were washed in running water for 2 hrs and submitted for dehydration in 70% ethyl alcohol solution whole night, followed by 90% solution for one hour and rinsed thrice with 100% ethyl alcohol for consecutive three hours. At the end of this period, no opacity remained in this sample.

The samples were kept in methyl salicylate for 3 days for completion of clearing procedure. After the procedure, the samples were washed and dried. Then Indian ink dye was injected into the root canals with the help of 27-gauge needle. Once the dye was dried, root canal morphology was analyzed to record the canal configuration and photographs were taken. (Figure 2).

Root canal patterns were evaluated using Vertucci's classification.

Type I- A single canal extends from the pulp chamber to the apex.

Type II- Two separate canals leave the pulp chamber and join, short of the apex, to form one canal.

Type III- One canal leaves the pulp chamber and divides into the root; two then merge to exit as one canal.

Type IV- Two separate, distinct canals extend from the pulp chamber to the apex .

Type V- One canal leaves the pulp chamber and divides short of the apex into two separate, distinct canals, with separate apical foramina.

Type VI- Two separate canals leave the pulp chamber, merge in the body of root and redivide short of the apex to exit as two distinct canals.

Type VII- One canal leaves the pulp chamber, divides and then rejoins in the body of the root and finally redivide into two distinct canals short of the apex.

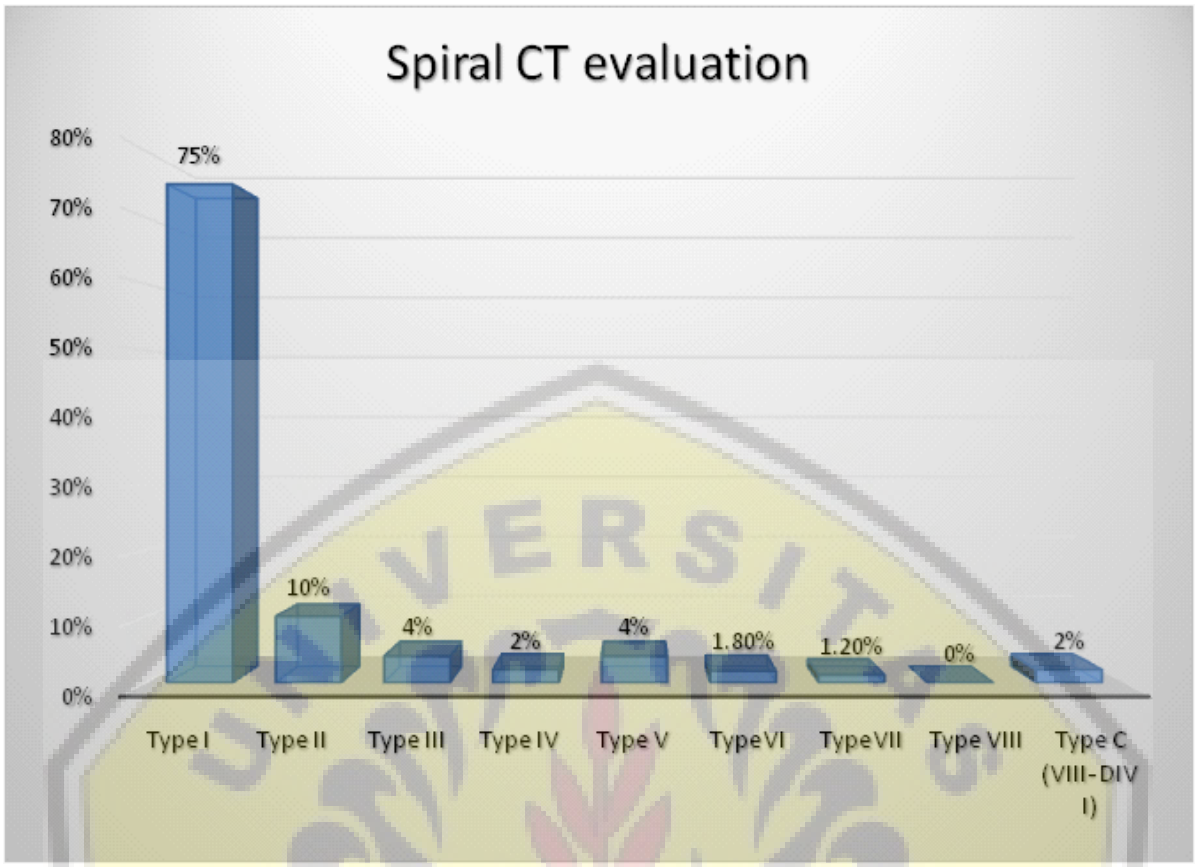
Type VIII- Three separate, distinct canals extend from the pulp chamber to the apex

Statistical Analysis: The data was analyzed by SPSS (21.0 version). Shapiro Wilktest was used to check the normal distribution.

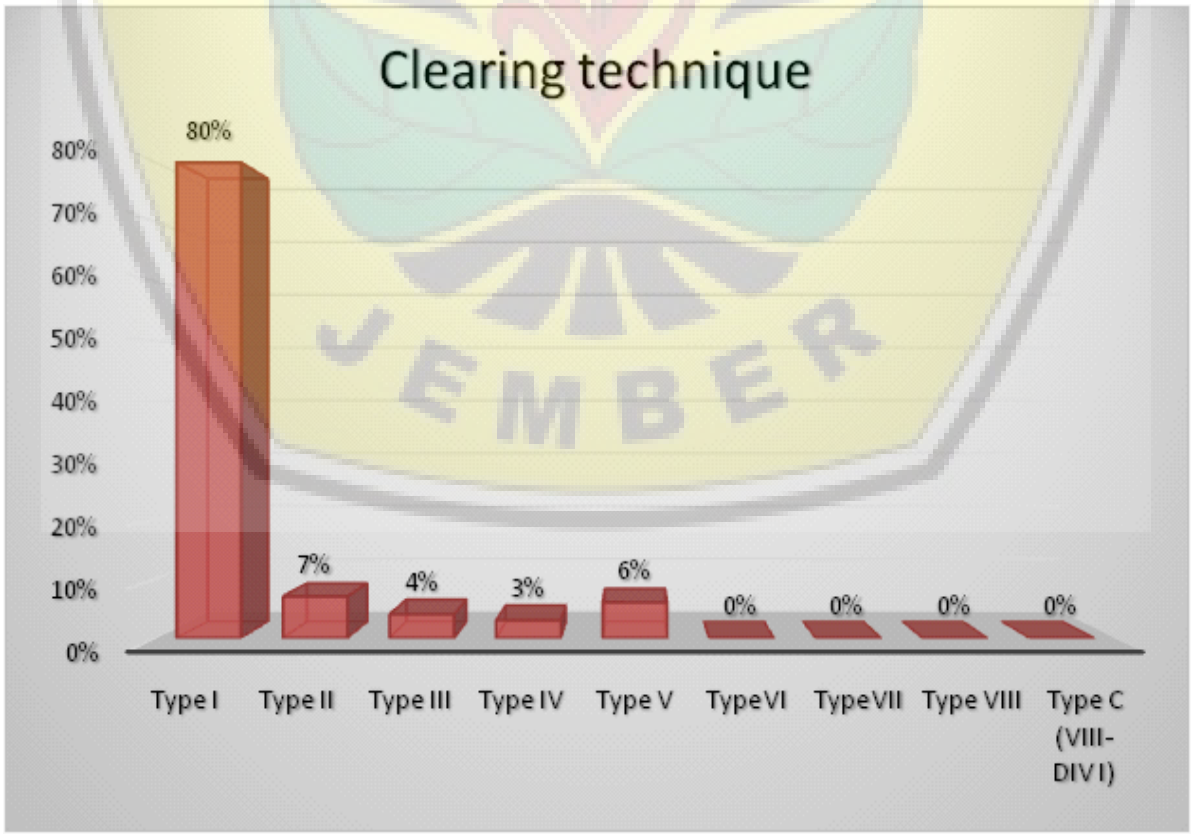
The comparison of types of canals was done using Wilcoxon paired t test and Mann Whitney test. It was found to be significant with Spiral CT. Type VI, type VII and C-shaped canals were shown by Spiral CT and not by Clearing technique. (Graph-1, 2) (Table-1, 2).

Fig. 1: Spiral CT Axial sections

Fig. 2: Teeth after clearing



Graph 1: Distribution of root canal morphologies of mandibular premolars using Spiral CT



Graph 2: Distribution of root canal morphologies of mandibular premolars using Clearing technique

Table 1: Comparative evaluation between 2 techniques in each type

Types		Method	N	p value
I	Types	Clearing	320	1.000
		CT	300	
II	Types	Clearing	28	1.000
		CT	40	
III	Types	Clearing	16	1.000
		CT	16	
IV	Types	Clearing	12	1.000
		CT	8	
V	Types	Clearing	24	1.000
		CT	16	
VI	Types	Clearing	0[a]	-
		CT	7	
VII	Types	Clearing	0[a]	-
		CT	5	
Category III C (Sub division 1)	Types	Clearing	0[a]	-
		CT	8	
a. Mann-Whitney Test cannot be performed on empty groups.				

Table 2: Depicts the mean ranks, sum of ranks, Z value and P value

	N	Mean Rank	Sum of Ranks	Z value	P value
Negative Ranks	132[a]	114.35	15094.00	-2.075	0.038
Positive Ranks	96[b]	114.71	11012.00		

Discussion

The mandibular premolars show a lot of variations in the number of roots, canals and pulp cavity configurations. Serman & Hasselgreenin 547 full mouth radiographs of patients, found that 15.7%of patients had at least one first mandibular premolar with either a divided canal or a root, whereas second premolar had an incidence of 7%.[10] Rodig & Hulsmann[11] Shapira & Delivanis[12] observed 2 canaled mandibular premolars, whereas Wong[13] Holtzman[14] Rhodes[15] Macri & Zmener[16] and Sachdeva GS et al[17] observed 4 canaled mandibular second premolar.

In the present study, the canal configuration of samples were classified according to Vertucci, as it is the most accepted method.[18]

Indian ink was used for staining asit is a perfect staining substance that can be easily applied, quickly fixed, durable, inexpensive, contains no potential contaminants, doesn't stain surrounding tissues and look brighter under the microscope.[19]

Spiral CT provides a better resolution as compared with CBCT and allows clinician to observe multiple slices of tooth roots and their canal systems.[20] Mushtaq M et al successfully managed mandibular first molar endodontically with 3 distal canals with help of Spiral CT.[21]

Mandibular second molar fused with a paramolar was endodontically managed with the aid of Spiral CT by depicting the presence of very rare three independent mesial roots and one distal root.[22]

This is the first study where Spiral CT has been used and compared with Clearing technique, so direct comparison with other studies is not possible.

The results of root canal configuration evaluated by Spiral CT showed that Type I canal pattern was found in 75% and 80% by clearing technique. **Banga KSet al[18]** found 70% of Type I canal configuration in mandibular premolars, **Jain A and Bahuguna R[23]** observed 67.39%, **Singh and Pawar[24]** found 80%, **Vertucci F J et al[25]** reported the same pattern in 70% of mandibular first

premolars, **Sandhya R et al[6]** in 72%, while **ZillichR et al[26]** reported an incidence ranging from 67.2% to86.3%. Type I is the most prevalent canal pattern becausethis canal configuration is the commonest and easy to visualize through naked eye.

The Type II canal patternevaluated by Spiral CT was 10% and by Clearing technique it was seen in 7% of teeth. It was found higher in **Banga KSet al[18]** that was 11.36%. **Jain A and Bahuguna R[23]** observed in 7.97% of teeth whereas **Sandhya R et al[6]** reported 6% and **Rahimi S et al[4]** 5.6%.Type II canal was better visualized in Spiral CT through axial sections.

Type III canal patternwas seen in 4% of teeth both by Spiral CTand by Clearing technique, which is in accord with the findings of **Parekh V et al[9]** who found 5% of Type III canal configuration. **Al-Qudah AA and Awawdeh LA**[27] who reported the same pattern with 1.4% in mandibular first premolars and 1% in second premolars. **Jain A and Bahuguna R[23]** observed Type III canal pattern in 3.62% of teeth which was almostsimilar to 4% in findings of **Vertucci F J et al[25]**

Due to better dye penetration and easily visualization results were found to be same by both method.

Type IV canal pattern evaluated by Spiral CT was seen in 2% and by Clearing it was found in 3% of mandibular premolars which is in accord with **Vertucci F J et al[25],** who observed this configuration in 1.5%. **Jain A and Bahuguna R[23]** observed Type IV canal pattern in 2.89% of teeth, **Sandhya R et al[6]** in 10% and **Rahimi S et al[4]** in 22%.

This can be due to presence of two roots and of two canals in mandibular first premolars, which can be easily visualized by naked eye.

Type V canal pattern evaluated by Spiral CT was seen in 4% and by Clearing it was observed in 6% of teeth. 8% was the pattern observed by **Sandhya R et al[6]** in mandibular first premolars. **Caliskan M K et al[28]** observed same pattern in 9.32% of cases.**Jain A and Bahuguna R[23]** observed Type V canal pattern in 17.39% of teeth while **Vertucci F J et al[25]** found this system in 24% of teeth.

Type VI pattern evaluated by Spiral CT was seen in 1.8% and by clearing it was seen in 0% of teeth which was in accord with findings of **Jain A and Bahuguna R[23]** i.e. 0.72%.

Type VII pattern evaluated by Spiral CT was seen in 1.2% of teeth while 0% was seen by Clearing technique. Type VIII canal pattern was not observed by any technique. This finding was in accord with the studies done by **Rahimi S et al[4], Sandhya R et al.[6]**

Vertucci F.J et al[25] inferred that it is difficult to locate type VI VII and VIII canal pattern through clearing technique.

The differences in the incidence of canal systems in the present study and others could be attributed to racial difference, since this study was carried out on a North Indian population, **Rahimi S et al[4]** on Iranian population, **Sandhya R et al[6]** on South Indian population, **Banga KSet al[18]** on Marathi population, **Jain A and Bahuguna R[23]** on Gujarati population.

Out of 400 mandibular premolars, 2% teeth showed presence of C-shaped canals at coronal third level with help of Spiral CT that was not visualized through Clearing technique.**Lu T Yet al[29]** reported 18% incidence of C shaped canal in Chinese population. **Baisden M K et al[1]** reported incidence of C shaped canal in 14% of mandibular first premolars.C shaped canal configurations can be difficult torecognize, prepare and obturate. It occurs more often in mandibular 2nd molars.

Similar studies with large sample size and latest radiographic techniques like CBCT are needed, that would help todevelop a standardized baseline point for root canal anatomy, making endodontic therapy to be more predictive and effective.

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Second Hand Smoke: A Survey of Knowledge Attitude and Practice among People of South India

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Abstract

Aim: The aim of the present study was to assess knowledge, attitude and practice towards passive smoking among south Indian population.

Method: A cross sectional study had been conducted using a pre-validated questionnaire through google forms. The questionnaire was divided separately according to whether they were a smoker or not. The questionnaires were collected and the data were analyzed.

Result: There were total of 651 individuals of ages 15-60 years. Out of the whole analysis, there were 77% of people who knew what passive smoking was out of 76 smokers 7 were females and 69 males. Many did know the harmful effects of smoking among both smokers and non-smokers.

Conclusion: Smoking is always harmful and hence, this survey can be used to create more knowledge on passive smoking so as to make people more careful and ensure that others around them are also not affected. It should be made mandatory to create more awareness on smoking and passive smoking to have a better future generation.

Keywords: *Passive smoking, Second hand Smoke, Tobacco.*

Introduction

Smoking is a deadly habit that not only risks the life of the people addicted to it but also the people around them. WHO Report on Global Tobacco Epidemic 2011 states that 6 million people are killed annually along with a high amount of economic plunge.[1]

There is a misbelief that passive smoking is not as harmful as active smoking which is contradicted by this statement that there are a very high amount of people, including children, who die due to second hand smoking every year.[2-4] Second Hand Smoking (SHS) has been known to cause potential health disorders such as cardiovascular problems, chronic obstructive pulmonary disease and malignancies.[5-8] Middle ear disease, sudden infant death syndrome (SIDS), lower respiratory ailments are some of the dangers faced by children exposed to second hand smoking.[9,10] Some studies show that, there is a directly proportional relationship between low birth weight in infants and mothers exposed to second hand smoking.[11]

Various anti-smoking measures have been taken by the government of India to bring down the usage of tobacco products. The Global Adult Tobacco Survey 2 [GATS 2] uncovered that there are an equal number of men and women affected by passive smoking with a 52.3% of adults among them. GATS-2 has also provided information that there is relative decrease in the amount of people who undergo passive smoking.[12]

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Although number of studies focus on the perception and attitudes of smokers on smoking, not many studies focus on the perception of non-smokers. This study is aimed to assess the perceptions and attitudes of smoking and also non-smoking adults towards second hand smoking.

Method

A cross sectional study was conducted from September 2017 to January 2018 on google forms with an aim to assess awareness and attitudes towards passive smoking conducted. A pre-validated questionnaire was used which consisted 10 questions to assess the knowledge about tobacco and its usage. The questionnaire also consisted of separate set of questions to assess the attitude of smokers and non-smokers.

Questionnaire was forwarded to the participants, on Google docs. The filled questionnaires were returned and collected data was analysed using descriptive statistics and chi square test was used to check the association of perception of passive smoking between smokers and non-smokers.

Results

The result of this study includes 651 adults of age between 15 -60 years of data were included in this analysis. The responders for smokers in which male are 69 (90.8%) and female are (9.2%). The responders for non- smokers in which male are 329(57.2%) and female are (42.8%)

Perception of Non-Smokers: Most of the non-smokers (75.8%) minded if someone smokes around them and some of about 24.1% don't mind if they smoke around them. About 85% of non-smoker walk away when someone smokes around them and people of about 15% won't walk away.

Majority of people of about 76% thought that they have right to ask people not to smoke near them and about 34% of people have thought that they have no right to ask about 56% of people asked a smoker to stop smoking in their presence. Nearly 72% of people feel a smoker should ask for their permission before they smoke around them. About 62.4% of people usually when they are in car or public transport ask people around them not to smoke and about 57.5% of people usually talk to smokers about their health risk while some of about 42.5% won't talk about it.

Perception of Smokers: Majority of people of about 60.5% won't light up a cigarette when non-smokers are around and some of about 39.5% will light up. Most of the smokers of about 72.3% attempted to quit the smoking in the past. About 84.2% of smokers plan to quit smoking later. Most of the people among smokers (92%) knew that smoking is dangerous to their health. Some people of about 34.2% had withdrawn from the smoking by the pictorial health warnings on the cigarette packs.

Table 1: Gender distribution between smokers and non-smokers

	Gender	Frequency	Percentage
Smoker	Male	69	90.8%
	Female	7	9.2%
	Total	**76**	**100%**
Non smoker	Male	329	57.2%
	Female	246	42.8%
	Total	**575**	**100%**

The percentage of people who knows about passive smoking are 77.1% and who doesn't know are 22.9% Also the percentage of people who smoke are 11.7% and who doesn't smoke are 88.3%.

The percentage of people who walk away when someone smokes around them are 75.8% and who doesn't are 24.1% and also the percentage of people who asked a smoker to stop smoking in their presence are 56% and who doesn't are 44%

The percentage of people won't light up cigarette when non-smokers are around is 60.5% and who will light up are 39.5% and also the percentage of people are planning to quit smoking later is 84.2% and who won't are 15.7%

The p-values were calculated in order to identify the significance of responses related to whether children have respiratory problems due to passive smoking and whether smoke from hookah is harmful or not proved to be significant whereas, other responses were not significant.

Discussion

Passive smoke is the smoke that fills the air in many places when a person lights a cigarette or beedi or any other smoking tobacco product and this can be inhaled by anyone.[1] The ill effects of passive smoking were

not known to the people for a very long time and were thought to have no effect on the health.[2] But, there were much harm that can happen due to it. Passive smoking can cause irritation and damage of the respiratory epithelium and had an effect similar to normal smoking.[3,4] There were not only ill effects on adults but children too had multiple complications due to passive smoking which would eventually cause a change in their lifestyle.[5] Cardiovascular ill effects are also on par with respiratory effects where endothelial damage is primary effect of toxins in the smoke to the body. These later can become complicated leading to acute coronary syndrome and other cardiovascular diseases.[6] Women during their pregnancy, on inhaling the smoke can cause damage not only to their bodies but also the baby developing in them. There can be alterations that can occur in their psychomotor development later in their life.[11] Various measures had been taken by the Indian government to cut down usage of tobacco products which relatively cuts down passive smoking.[12]

A survey was conducted to assess the perception and attitude on the ill effects of passive smoking among individuals residing in southern India. The survey was a cross sectional study and consisted of a questionnaire that questioned individuals first whether they know what is passive smoking and its ill effects and then divided them based on whether they are a smoker or non smoker. Further questionnaire was prepared to separately question smokers and non smokers. The sampling was a snowball sampling and individuals who were interested could participate as the questionnaire was forwarded to them online. In the conducted survey there were 88.3% non smokers and 11.3% smokers with a sample size of 651.

Among the individuals 77.1% were aware of what is passive smoking and was also reported in the global youth tobacco survey that 61% of school students were taught about passive smoking.

There was a higher population of males (90.8%) who have been addicted to smoking compared to the population of females (9.2%) and such an outnumbering result of males over females were also reported in study of prevalence of tobacco use in Chennai city (Kolappan et.al)[13] where the males had a higher count of 39.6% and females a much lower count of only 5%. Another similar study on prevalence and prediction of smoking and chewing tobacco (Rani et.al)[14] was showing that the incidence of smoking among males (47%) were higher than females (14%).

There was a total of 72.3% people who had attempted to quit smoking when compared to a similar study conducted on awareness, attitude and use of tobacco among medical students in Chennai (Ramkumar et.al)[15] where it was 26.9% among that population.

Advantages to our survey were that many people were more aware about smoking and passive smoking. The other advantage in the survey was that the data collection was much faster as it was circulated via internet and the reach was much further among the southern regions. The likelihood of a person after conducting such a survey on awareness can help the person to be more educated on such an issue and improve their lifestyle and the ones surrounding them.

There were few limitations to our study, the first being the method of circulation itself, where the questionnaire was provided to everyone through online circulation and there could have been chances of mix and match of personal views. Secondly, the only population that was included were the southern people of India which cannot give an idea or perception on passive smoking about the people residing in the other parts of India.

Ethical Clearance: Taken from Institutional Review Board, Sathyabama Dental College and Hospital, Chennai.

Source of Funding: Self

Conflict of Interest: Nil.

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Assess Knowledge and Attitude Regarding Child Abuse among Mothers in Selected Areas of Gurugram with a View to Develop Pamphlet

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Abstract

Childhood is the primary stage and the golden period of life. It is said that God resides in a child's heart. Abusing a child is like insulting the God you preach. Government of India study on child abuse (UNICEF) the findings of the Study on Child Abuse clearly indicate that a very large number of children in India are not even safe in their homes. It is here, in the home, that we must start tackling the problem of child abuse. Interventions are needed to bring about change in the ways family members behave towards children in the home. The latest data from India's NCBR recorded a 12% rise in number of rape related cases up from 34,651 cases in 2015 to 38,947 in 2016. Haryana, a state known to be unsafe for women and children according to NCRB report a total of 224 minor rape cases in 2015 and in 2016 the number had risen shockingly to 532. The number and rate of maltreated children continued to decline until 2012, but both began to rise in 2016. Guru gram 3,768 sexual assault cases against girls were recorded between august 2014 and September 2018. Present study aims to assess knowledge and attitude regarding child abuse among Mothers in selected areas of Gurugram.

Keywords: *Child, Abuse, Knowledge, Attitude.*

Introduction

Biologically, a Child is a human between the stage of birth and puberty[1]. A child is a tender human being which needs support in all forms for its all round development[2]. Child abuse is a universal problem with grave lifelong outcomes. According to WHO "child abuse or maltreatment constitutes all forms of physical and/or emotional ill-treatment, sexual abuse, neglect or negligent treatment or commercial or other exploitation resulting in actual or potential harm to the child's health, survival, development or dignity in context of a relationship of responsibility, trust or power".There are four major categories of child abuse: physical abuse, neglect, sexual abuse, psychological/emotional abuse.[3]

According to a report one girl in every 5 and one boy in every 10 faces sexually abuse globally[4]. A total of 7,112 cases of child rape were reported during 2011 as equated to 5,484 in 2010 depicting a growth by 29.7%. Studies propose that over 7,200 children, including infants, are raped every year and it is believed that several cases go unreported. Every 2nd child is being exposed to one or the other form of sexual abuse and every 5th child faces critical forms of it[5]. Looking specifically at the incidence of child sexual abuse against children, percentage increases in number of cases in 2016.

The latest data from India's NCBR recorded a 12% rise in number of rape related cases up from 34,651 cases in 2015 to 38,947 in 2016 [6]. Haryana, a state known to be unsafe for women and children according to NCRB report a total of 224 minor rape cases in 2015 and in 2016 the number had risen shockingly to 532. The number and rate of maltreated children continued to decline until 2012, but both began to rise in 2016. Guru gram 3,768 sexual assault cases against girls were recorded between august 2014 and September 2018[7].

Statement of Problem: To assess knowledge and attitude regarding child abuse among Mothers in selected areas of Gurugram with a view to develop pamphlet

Objectives:

1. To assess the level of knowledge and level of attitude regarding child abuse among mothers.

2. To develop and validate information booklet on child abuse.
3. To find out the association of knowledge and attitude with selected demographic variables.

Assumptions: Mothers have some knowledge and have some positive attitude towards child abuse.

There is a significance association between socio demographic variables and awareness of child abuse.

Research Approach: This research approach used for this study is non-experimental research approach. Mothers knowledge and attitude towards child abuse was assessed by structured questionnaires.

Research setting: The study was conducted the selected areas around the Gurugram.

Research design: A descriptive design was used.

Sampling technique: Convenient sampling technique was used to select a sample.

Population: The population included who are all having children.

Sample size: A sample of 100 mothers who met the inclusion criteria were selected.

Ethical Considerations: Approval from the research and ethical committee of SGT University, faculty of nursing was taken to conduct the research to assess knowledge and attitude regarding child abuse among mothers.

Description of the Tool:

Section I: The first section of the tool consisted of 5 items of selected demographic variables like age, education, religion, occupation, no of child.

Section II: It consisted of 21 multiple choice questions about awareness of child abuse.

Date collection procedure

For collecting the date, the following steps were taken, informed consent from the participants. The objectives of the study were explained to each subject and a structured questionnaire was used to collect the information via interview. The confidentially was assured.

The tool consists of three sections:

Section A: It consist of 10 questions on selected socio-demographic variables of the mothers

Section B: This section consists of 26 question regarding knowledge of mothers.

Section C: This section consists of attitude scale to assess attitude regarding child abuse. It consists of 26 items. 5 point likert attitude scale was used..

Findings: Table 1 The data collected were analyzed based on the objectives of the study. Frequency and percentage distribution of knowledge score.

Table 1: Distribution of knowledge score regarding child abuse among mothers N=100

S.No.	Items	F	%
1.	A child is	44	44
2.	What is child abuse?	86	86
3.	What can be the causes of child abuse?	77	77
4.	What are the types of child abuse?	39	39
5.	Which of following attributes in a parent is a risk factor for child abuse?	77	77
6.	Who are the common child abusers?	78	78
7.	What is physical abuse?	36	36
8.	What are the forms of physical abuse?	77	77
9.	What are the possible signs of physical abuse?	65	65
10.	How to prevent the physical abuse?	53	53
11.	Which type of children is more prone to child abuse?	79	79
12.	Which of following is not considered as sexual abuse?	91	91

S.No.	Items	F	%
13.	What are the possible physical sign of child sexual abuse?	16	16
14.	What are the suggestive behaviors of children's with sexual abuse?	67	67
15.	What action will you take if you suspect a child is being sexually abused?	85	85
16.	What is difference between the sexual touch and normal touch?	96	96
17.	How to protect the child from sexual abuse?	97	97
18.	Which of following is the priority treatment for child abuse?	35	35
19.	Which is not a treatment of child abuse?	82	82
20.	What can be the one way to prevent child abuse?	89	89
21.	How do you discipline your child?	61	61
22.	How frequently child care program should be revised?	30	30
23.	Who all are responsible for the prevention of child abuse?	79	79
24.	What is the child helpline no?	31	31
25.	Which of following actions can help to stop child abuse?	75	75
26.	What is the function of child helpline?	95	95

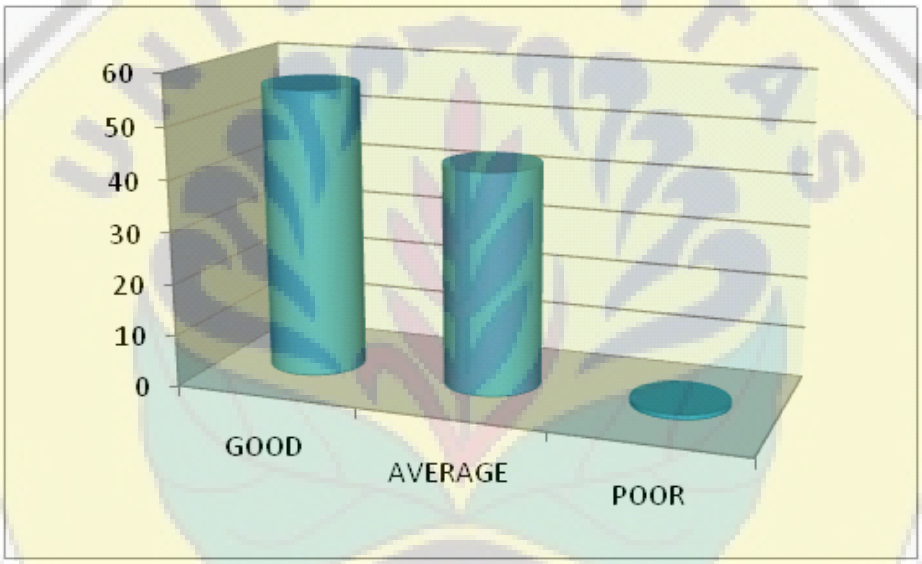

Figure I: Knowledge score of mothers regarding child abuse

Figure (I) revealed that (56%) of mothers had good knowledge regarding child abuse, (43%) had average knowledge and only (1%) of mother had poor knowledge regarding child abuse. The next objective is to assess the attitude regarding child abuse (pie chart 1).

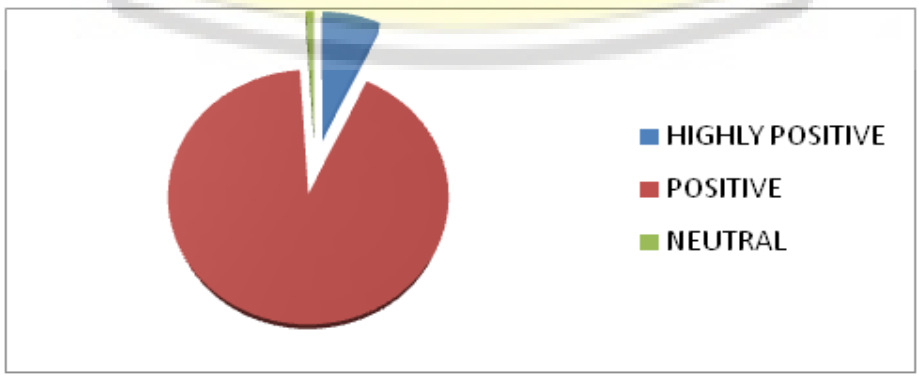

Figure II: Attitude Score od mothers regarding child abuse

Pie chart i.e. figure (II) depict that (92%) of mothers had positive attitude, (7%) had highly positive attitude and (1%) had neutral attitude towards the child abuse.

Third objective of the study was to find the association of Knowledge and attitude regarding child abuse and it was found that age of the mother was significantly associated.

Discussion

Children are one of the greatest gifts to humanity and their abuse is one of the cruelest crimes imaginable. It is a violation of their trust and an ugly breach of our promise to protect the innocent. Reliable estimates are hard to come by since this is a secretive form of abuse, often causing victims to suffer in dark and claustrophobic silence. We urgently need legislation that specifically addresses child abuse with its all form. The necessity for such a law is underlined in government data which shows that more than half of India's children have been subjected to such abuses. Regarding Child abuse, two institutions play a very important role in a Childs life: there is protection and there is prosecution. Protection is the job of the parent. Prosecution is the job of the state. Different studies and their reports indicate that there is a traditional conservative family and community structure that does not talk about this topic. This silence encourages the abuser so that he is safe to sexually abuse. So, there is always a need to discuss with the family members regarding child abuse. With no information being available about child abuse, many children are growing up not knowing their rights have been violated.

Conclusion

Child abuse is one of the dark realities that routinely inflict our daily lives but in majority of cases it goes unnoticed and unreported as well. Merely enacting legislation will not be enough unless it should be followed by strict enforcement of the law with well defined accountability. Parents, family members, teachers and others in the community individuals play a vital role to protect children from sexual exploitation and abuse. As we all know that children are the country's greatest human resource and directly measure for country's social progress. So, sensitizing parents regarding child abuse and having a positive attitude regarding available resources to prevent child abuse. It is our duty that Child Abuse should be combated as early as possible. This will help India shine bright and develop in a crime free way, as children are the leaders of tomorrow.

Source of Funding: Self

Conflict of Interest: Nil

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Fixing the Removable: A Case Report

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Abstract

Various treatment options can be planned for a completely edentulous patient including implant fixed and removable prosthesis. But, the trident factors: mastication, phonation and esthetics should be given prime consideration while doing any dental procedure so as to achieve good prognosis. Though, prognosis depends majorly on the underlying residual bone as well as the mucosa,which helps the prosthodontist to determine the choice of a suitable prosthetic treatment option for a particular patient. Various studies over the past decade have shown the advantages of a mandibular implant over denture rather than conventional denture - as the first treatment option for a completely edentulous mandible. An implant supported hybrid prosthesis is an acrylic resin complete fixed dental prosthesis and supported by implants might be a solution in extreme cases that the need of the restoration for esthetics, function, lip support and speech.

Therefore, this clinical report aims to present the esthetic and functional prosthetic rehabilitation of a mandibular ridge with implant supported fixed prosthesis.

Keywords: *Edentulous Mandible, Implants, Over Dentures, Retention, Prosthesis, Hybrid Denture.*

Introduction

Edentulism is a form of physical impairment, as the loss of all teeth causes a disability for those who wear conventional dentures (CD), they may have difficulty in performing two essential tasks;eating and speaking.[1]Thereby, it can be said that a tooth loss is a major life event for patient's confidence and functionality.[2] Most of the complete denture wearers in spite of proper denture fabrication and lab handling are not satisfied with their mandibular dentures. Redford et al showed that over 50% of mandibular complete dentures have problems with stability and retention.[3] So, to get a satisfactory stability and improved retention mandibular complete implant- supported overdentures andfixed hybrid prostheses can be planned.

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While selecting between a fixed or a removable restoration all the following points should be considered prior to reach the final treatment plan: the available bone quantity and quality, the number, location and implant distribution, the available inter-arch distance and maxillary-mandibular relationship, the nature of the opposing occlusion, the expenses as well as the time frame required to assemble and maintain the prosthesis.[4]

The fixed-implant supported prosthesis can either be screw-retained orcemented over the implant abutments. The traditional screw-retained metal-resin prosthesis (hybrid denture prosthesis) is one of the most popular choices for prosthetic therapy in edentulous mandibles. The advantages of this prosthesis are its long track record of success and its retrievability.[4] Apart from the above mentioned advantages, hybrid prostheses can also replace soft tissue defects. However, lack of passive fit in the framework and distortion (which is possible to occur anytime during the fabrication) are major obstacles in the process of prosthesis fabrication.[5]

A Hybrid denture is an implant-supported fixed denture where "Hybrid" refers to the fact that fixed denture is fabricated with both metal and plastic, making

it a hybrid of the two. Therefore, it is a denture in the sense that it is fabricated same as a complete denture or partial denture, but it is supported by a metal frame that is screwed into the implants. Also known as "Fixed Detachable denture"

This article presents rehabilitation of a complete edentulous mandibular arch with an implant retained hybrid denture.

Material and Method:

Case Report : Mandibular Implant-Retained Hybrid Denture

A 46 year-old female patient reported to the Department of Prosthodontics, MM College of Dental Sciences and Research, Mullana with a chief complaint of loose lower complete denture prosthesis. The patient was unable to speak and eat properly as the lower denture was loose. History revealed that the patient was a complete denture wearer from last three years and had underwent multiple tooth extractions following dental caries and endodontic treatment. Clinical examination revealed that the patient had completely edentulous upper and lower arches [Figure 1].The maxillary arch was U-shaped, smooth with no irregularities, no bony spicules, the mandibular ridge was found to be adequate in height but was irregular. Extraoral examination revealed that there was no facial asymmetry or mandibular deviations upon opening and closing. Mouth opening was 42 mm with sufficient inter arch space. Radiographic examination of the patient showed that patient had dense compact bone in the mandibular anterior region without any pathology. As the patient expressed unwillingness to be rehabilitated with any removable treatment option for mandibular ridge and desired for esthetic and functional rehabilitation. Therefore, conventional complete denture was planned for maxillary arch and screw retained implant-tissue supported hybrid prosthesis for the mandibular arch.

Clinical Procedure:

Stage I: Implant Surgery: A full thickness mucoperiosteal flap was raised in the mandibular arch and 5 implants (Tapered self-thread, ADIN Dental Implant System Ltd, Israel) were placed in 2nd premolars and canines in both quadrants and one implant in the midline [Figure 2]. Patient was recalled after 1 week for suture removal.

Stage II : Implant Surgery: After a waiting period of 3 months, Stage II surgery was performed under local anesthesia in which cover screws were exposed and five healing abutments were placed [Figure 3]. Healing abutments were fastened to the implants to allow undisturbed soft tissue healing.

Prosthetic Phase: After 1 week, when the soft tissue has grown around healing abutments, the healing abutments were removed and impression copings were connected to the implants for the indirect impression technique [Figure 4].The tray was then loaded with putty and light body impression material (Zhermack Zetaplus Putty Impression Material)was injected around the impression copings and impression was made.Then, the tray was removed. The impression copings were unscrewed from the implants with the Hex Tool and along with the implant analogue were then incorporated into the impression [Figure 5].

The implant replicas were held in place to prevent rotation of the impression copings. A thick layer of Esthetic Mask (Detax Esthetic Mask Automix) was injected around the implant analogues and impression copings till the junction of both to simulate the soft tissue around them. The healing abutments were attached to the implants and patient was sent.

In the laboratory, impression was poured and the master cast was recovered with the Implant replicas embedded in the cast [Figure 6]. Record bases and occlusion rims were fabricated. [Figure 7]. Patient was recalled for recording of maxillo mandibular relations and after obtaining the record master casts were then mounted on a semi adjustable articulator. A verification jig was fabricated on the master cast along with the castable abutments with the help of Pattern Resin (GC Pattern Resin) which verifies and ensures that the final screw-retained framework has the optimal passive seat. After taking the jig trial in mouth,[Figure 8 a & b] the framework was waxed on the master cast and was casted later. The casted metal framework was checked in mouth and proper seating was confirmed [Figure 9].Then, metal framework was waxed up and trial was done [Figure 10]. The investing, flasking and processing procedures for the hybrid prosthesis were then completed. The prosthesis was finished and polished. The maxillary complete denture was flasked and processed by use of the maxillary master cast as any conventional complete denture. Maxillary conventional denture and mandibular hybrid denture were then delivered to the patient after

adjusments. The hybrid prosthesis was screw retained and composite resin was used to cover the screw access holes[Figure 11 a & b].Patient was advised to follow-up for any adjustments if needed.

Maintenance Phase: Patient's oral hygiene was reviewed after one month and rest were scheduled after every six months for maintenance.

Discussion

Major advantage of a fixed detachable (hybrid) denture is that it is always held securely in place and can only be removed by the dentist. The rehabilitation with hybrid dentures has been observed to achieve greater masticatory function and psychological satisfaction than with conventional complete dentures.[6] The hybrid denture is made to leave a space between the denture and the bone to enable clean easily underneath the denture without removing. So, it is recommended to visit the dentist twice a year, to assess the condition of peri-implant tissue and bone to avoid any unforeseen complications and professional cleaning is done.

Although, occlusal forces tends to increase considerably following the placement of an implant-supported prosthesis.[7]It should be kept in mind that passive fit is the prerequisite for survival of implants in bone[8] and not achieving it leads to mechanical and biological failures.[9] Jacobs et al, stated that complete edentulism can affect speech quality due to the absence of the periodontal ligaments which is responsible for speech sensation.[10] Removable overdentures are similar to the pattern of the complete dentures, whereas the bases of fixed prostheses are generally narrower, which could explain the cause of speech adaptation problems encountered by patients.[11] Various studies showed fixed prosthesis are more successful in the mandible regarding stability, ability to chew, aesthetics and ability to speak. Thereby, making implant retained fixed hybrid denture as the treatment of choice over a removable implant overdenture.

No. of implants used to support a full denture is a debatable issue. The hybrid prosthesis is ideally placed on the largest possible number of implants, but on a minimum of 4 implants.[12] In this particular case five implants were planned ie. in position A, B, C, D and E. As framework fabrication requires many steps, the cause of distortion in implant frameworks may be multifactorial.[13] The factors may include implant alignment, impression technique and materials, framework fabrication process, design configuration and clinician and technician experience.[13,14] Also, dimensional changes occur related to the chemical reactions of impression materials, dental stones and investment materials.

A hybrid restoration is indicated when the intra-arch distance is more than required for implant supported fixed prosthesis.[15] In the present case, the distance present was suitable for placement of hybrid prosthesis.

Zarb and Jansson[16] stated that fixed detachable hybrid prostheses could be designed using one of the following two method: (a) a metal framework comprises the bulk of the prosthesis and artificial teeth and a small denture base are the only non-metallic components, (b) the implant-fixed prosthesis consists mostly of an acrylic resin denture bases (wrap-around design) and artificial teeth, with a small metal framework. In the described case, the second design method was used for the superstructure.

Advantages of hybrid denture:

1. Hybrid denture restores new teeth and gums to give a proper esthetic and facial support.
2. Unlike conventional dentures, hybrid dentures are stable
3. Implant hybrid dentures cannot be removed by patients but can be removed by the dentist for maintenance if required.
4. Are much less expensive than crowns on individual implants.

Disadvantages:

1. Need to clean under the denture flanges and denture teeth may require maintenance overtime.
2. Passive fit of the metal substructure may require sectioning and soldering after initial fabrication.
3. Access holes must be present to allow for screw tightening or retrieval of the prosthesis which may compromise esthetics and occlusion.

Conclusion

Every patient has unique treatment needs. Proper diagnosis and treatment plan are important but cannot be all-inclusive. A comprehensive examination, including a thorough medical & dental history, clinical examination, dental radiographs, diagnostic impressions are some

important steps to a successful oral rehabilitation. It can be concluded that the rehabilitation of an edentulous mandible with the implant supported hybrid denture provides more satisfaction with the prosthesis, improved masticatory ability and nutrition, along with improvements in psycho-social aspects of life. Moreover, this clinical method is more conservative, feasible and reliable that does not require advanced surgery. Retention & stability were found to be good upto 12 months of review.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Not required

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A Prospective Observational Study Regarding Awareness of Prescription Errors among Resident Doctors in SKNMC & GH, Pune

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Abstract

Objective: To study regarding awareness of prescription errors among resident doctors in SKNMC & GH, Pune.

Method: A prospective observational study- Questionnaire based. This study includes residents from all the clinical fields. It was conducted in Department of Pharmacology after due clearance from Institutional Ethics Committee & after taking written informed consent from resident doctors.

Results: Few residents had knowledge about recommended prescription format by Maharashtra Medical Council (MMC), number of doctors' names that can be written on a single prescription pad MCI recognized abbreviations, parts of prescription and believed that drugs could be prescribed by their brand names prior to intervention. Their knowledge improved post- sensitisation. Sensitisation made them aware about the availability of online prescription, its medicolegal use and its importance to maintain patient's and doctor's safety.

Conclusion: The study has highlighted the need to have sensitization programme for residents regarding prescription writing along with knowledge about medicolegal consequences which will further reduce the overall incidence of prescription error and promote patient's and doctor's safety.

Keywords: *Prescription error, Questionnaire, Maharashtra Medical Council (MMC).*

Introduction

Medication errors are commonly encountered in hospitals and general practice.(1)

The National Coordinating Council for Medication Error Reporting & Prevention (NCC MERP) definition of medication error is "Any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of health care professional or consumer".(2,3,4,5,6) Prescription error is an important component of medication error which is the second most common cause of patient safety incidents.(7,8)

Prescription error can be defined as an error that occurs as a result of a prescribing decision or prescription writing process which leads to unintentional significant reduction in the probability of treatment being effective and in time or increase in the risk of harm when compared with generally accepted practice"(9) There are huge variations in the types of events included under prescription error. For example, Betz and Levy include "prescribing a medication without sufficient education

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of the patient on its proper uses and effects" under prescription error.[10]

Errors in prescription writing can be further categorized as Errors of omission (when rate or dose, concentration, dosage form, duration, frequency, route omitted and when prescriber signature missing), abbreviated and non standard drug names, error prone abbreviations, symbols and dose designations, prescribing one tablet of drug when available in more than one strength of tablet, writing milligram when microgram was intended. It could arise as a consequence of insufficient training, lack of awareness of errors, polypharmacy, lack of standardization and particular care environments.[7,12,13]

Using human error theory, above errors can be broadly classified into individual factors and system factors [14] Prescribing errors are reported to affect 1-100% of all patients admitted to hospital [15] Most of the actual prescribing in hospital is done by junior doctors, although they may not be wholly responsible for all prescribing decisions. Despite comprehensive understanding of the subject, a junior doctor might face challenge initially to write prescription correctly. There have been previous studies which stated high incidence of prescription error which were mainly by residents and most of these errors were preventable. Dean et al reported that 57 % were lapses; whereas 43% of errors were mistakes or violations. This suggests that errors due to insufficient knowledge are important and educational interventions at undergraduate and post-graduate levels could address this dreaded issue [12] Sensitization programme regarding prescription errors for newly joined residents could also help, as residents keep on changing regularly. Correction of prescription error can improve the quality of prescription and also help in patient care [16] There is lack of awareness about prescription errors; present study is therefore planned to assess and improve the knowledge, awareness, attitude and perception about prescription errors amongst junior doctors which is based upon validated questionnaire to be administered before and after a planned teaching session on prescription errors. This will ultimately help to reduce prescription errors and improve prescribing.

Method

A prospective, questionnaire based, interventional study was conducted in Department of Pharmacology at Smt. Kashibai Navale Medical College & General Hospital, Pune. This study included residents from all clinical departments.

Inclusion Criteria:

All the resident doctors including junior resident of all cadres and senior residents.

Exclusion criteria:

Resident doctors who did not give consent for the study.

Incomplete questionnaires were excluded.

Study Design: A pre-validated questionnaire was designed to assess the knowledge of resident doctors. The questionnaire was viewed by faculty of pharmacology for precision and required modifications were done. This validated questionnaire includes questions on three main categories- details of prescription, measures to prevent prescription error and legal importance of prescription. Each subhead had 5 questions of which 3 were closed ended and 2 were open-ended.

The following validation criteria were used:

1. Time requirement for completion of questionnaire (10-15 min)
2. Appropriateness of questionnaire for collecting data
3. Repetition or inappropriate questions
4. Logical order of questions
5. Clear concise and ambiguous questions
6. Easy and meaningful instructions

After getting protocol approved by Institutional Ethics Committee (SKNMC No/Ethics/App/2018/415), the list of residents in clinical departments at SKNMC & GH was obtained. After getting the list, a total number of 100 residents were administered pre-validated questionnaire containing 15 questions and they were asked to fill up the questionnaire. The filled questionnaires were collected after 15 min of distribution. It was followed by an educational intervention where they were made aware of prescription related problems and method to fill the prescription as per recognized prescription format. After a week, same pre-validated questionnaire containing 15 questions was administered and they were asked to fill up the questionnaire. Pre and post educational intervention results were compared using descriptive statistics. Statistics was represented

by percentage through bar diagram which deduced percentage differences among variables pre-intervention and post-intervention.

Results

Out of the total 100 residents, 63 were females and 37 were males. Mean age of residents was 25.97 years.

Knowledge about Prescription Writing: 53% of residents had knowledge about recommended prescription format by Maharashtra Medical Council (MMC) prior to intervention and 47% of residents did not have any idea about the MMC recommended prescription format. Post-intervention, 99% of residents had knowledge about recommended prescription format by MMC.

27% of residents believed that drugs could be prescribed by their brand names,59% of residents differed in their opinion while 14% of residents responded that they did not know about it prior to intervention. Post-intervention, 15% of residents opined that drugs could be prescribed by their brand names, while according to 85% of residents, drugs could not be prescribed by their brand names.

When residents were asked about number of doctors' names that can be written on a single prescription pad, 53% of residents answered one, 30% of residents answered two, 17% of residents answered as many as you want prior to intervention. Post-intervention, When residents were asked about number of doctors' names that can be written on a single prescription pad, significant improvement was observed as 90% of residents answered correctly eg. one, only 7% of residents answered two while 3% of residents answered as many as you want.

55% of residents were aware of MCI recognized abbreviations (OD, BID, TID, QID, HS, SOS) and 45% of residents were not aware prior to intervention. Post-intervention, 75% of residents were found to be aware of MCI recognized abbreviations (OD, BID, TID, QID, HS, SOS).

When data on knowledge about parts of prescription (superscription, inscription, subscription and transcription) was analysed, 36% of residents were found to have knowledge about parts of prescription while 64% of residents had no knowledge regarding this prior to intervention. Post-intervention, 82% of residents had knowledge about parts of prescription (superscription, inscription, subscription and transcription). (See Figure 1).

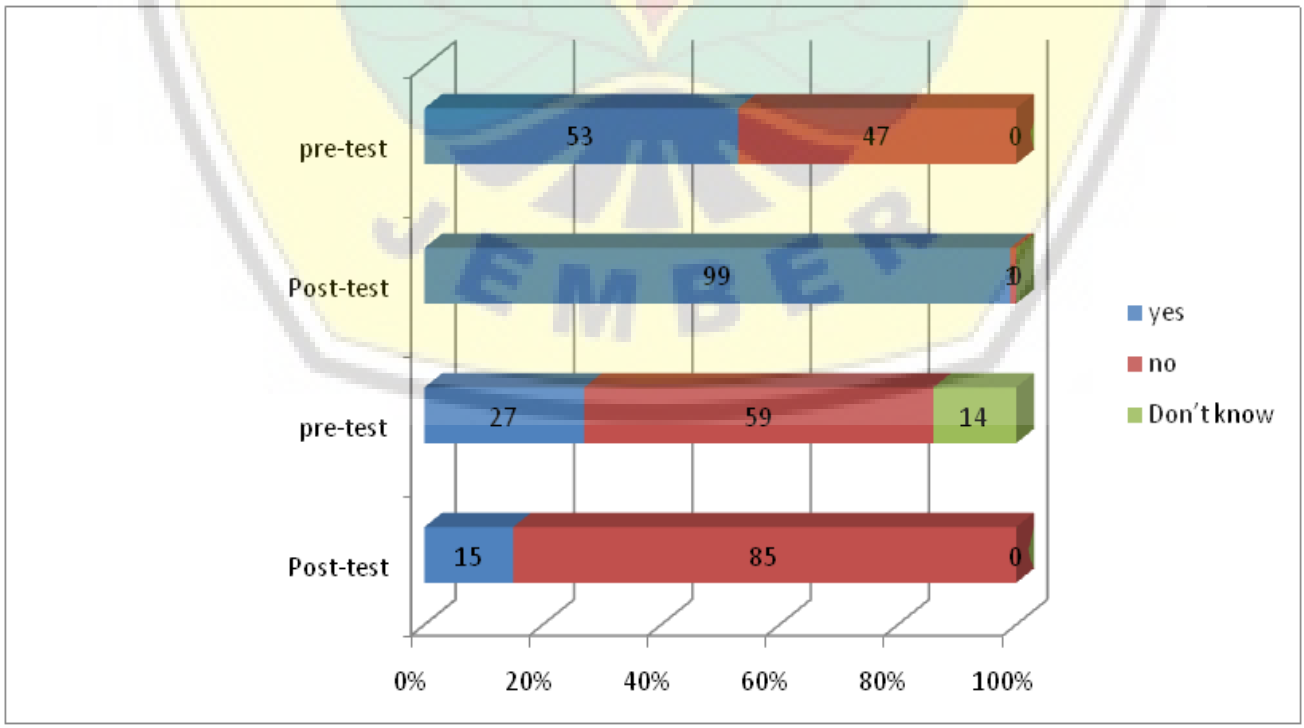

Figure 1: Knowledge about Prescription Writing

Awareness Regarding Prescription Error: Prior to intervention,70% & 50% of residents believed that computerized version of prescription would solve prescription error problem and pharmacists can help in reducing prescription error respectively, 20% & 35% of residents did not agree while 10% & 15% of residents were completely unaware of this. After intervention, 87% & 79% of residents believed that computerized version of prescription would solve prescription error problem and pharmacists can help in reducing prescription error respectively, 12% & 19% of residents did not agree while 1% & 2% of residents remained unresponsive about it.

When asked about reducing prescription error by using generic names instead of sound alike brand names,73% agreed, 14% did not agree and 13% did not know about it prior to intervention.

Post intervention, when they were again asked about reducing prescription error by using generic names instead of sound alike brand names, 97% agreed while only 2% did not agree.

77% of residents answered correctly regarding language of dosing instructions (Patient's own language) prior to intervention. Significant number of residents (82%) answered correctly post-intervention.

When residents were asked about authentication of handwritten prescription, 59% of residents answered correctly (Signature, Doctor's name, Degree, Registration number) prior to intervention.

Post-intervention, When residents were asked about authentication of handwritten prescription, 85% of residents answered correctly (Signature, Doctor's name, Degree, Registration number). (See Figure 2).

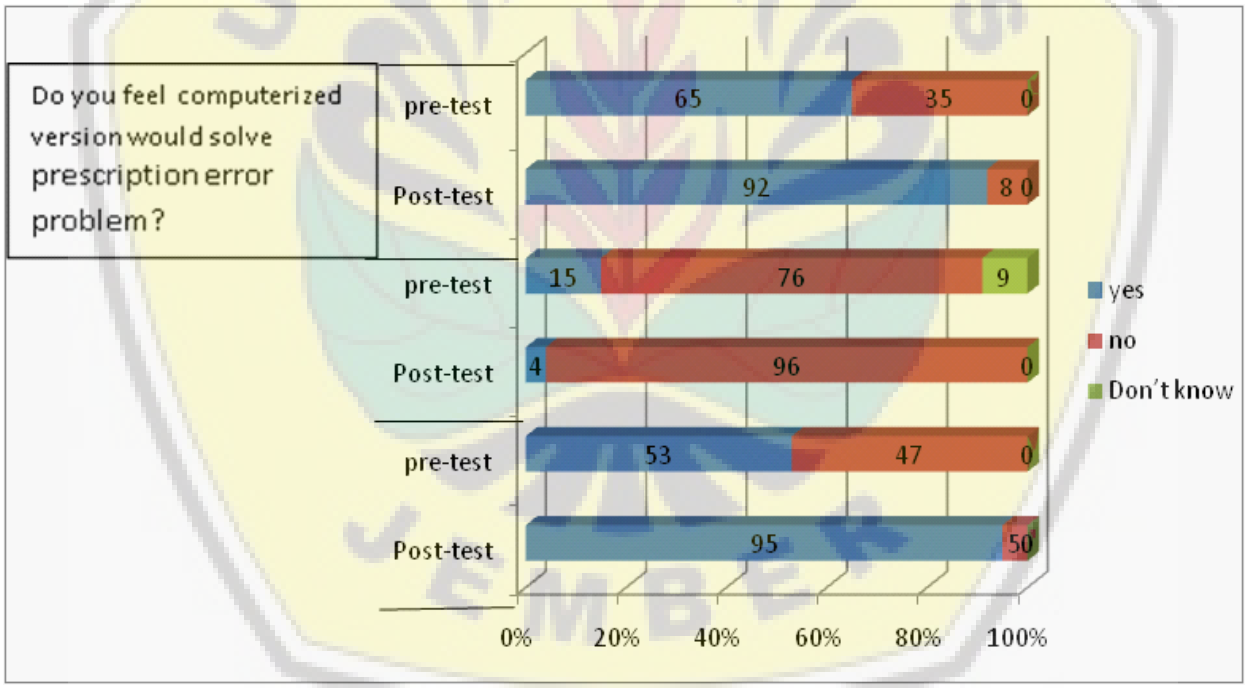

Figure 2: Awareness Regarding Prescription Error

Knowledge, Attitude and Perception Towards Prescription Error: Prior to intervention, only 65% had idea about medico-legal consequences of prescription error while 92% had idea about medico-legal consequences of prescription post-intervention.

Prior to intervention, 15 % of residents believed that advertisement is allowed on prescription, 4 % of residents believed that advertisement is allowed on prescription post intervention.

When asked about the awareness regarding prescription of certain medications by specific speciality only, 53 % of residents were aware and 47 % of residents

did not prior to intervention. Post intervention, When asked about the awareness regarding prescription of certain medications by specific speciality only,95 % of residents were aware and 5 % of residents were not.

17 % of residents were aware of medico-legal consequences while 83 % were unaware prior to intervention. 45 % of residents were aware of medico-legal consequences while 55 % were not post intervention.

When asked about medico-legal importance of maintaining record of prescription 14% of residents knew while 86 % did not prior to intervention.

When asked about medico-legal importance of maintaining record of prescription 52 % of residents knew while 48% did not post intervention. (See Figure 3).

Prescription Error:

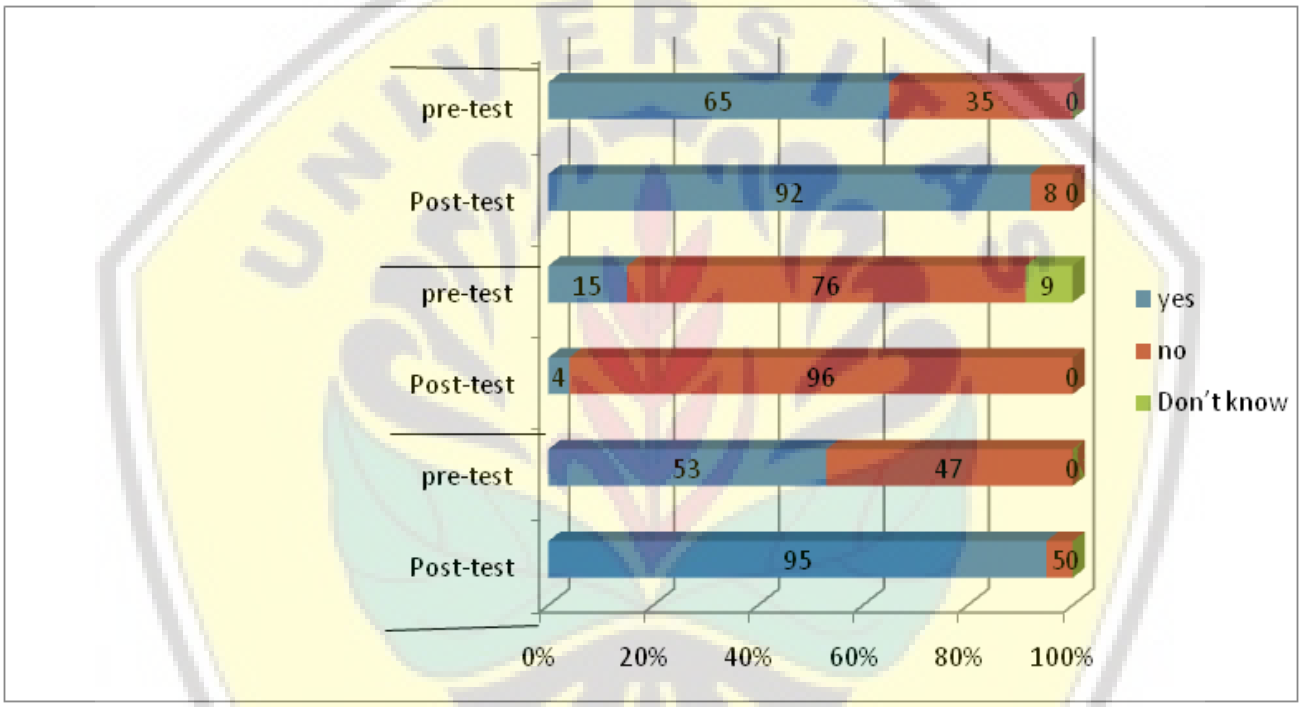

Figure 3: Knowledge, Attitude and Perception Towards

Discussion

Prescription error is the most serious of all types of medication error. It usually results in significant harm or death[17]. There is evidence of poor prescribing which includes errors, under-prescribing, over-prescribing, inappropriate or irrational prescribing by range of doctors across different setting.[7]

In the present study, an educational intervention was done to sensitize residents from clinical fields regarding prescription errors and measures to prevent them. Initially, a questionnaire covering various aspects of prescribing was administered to them to check their prior knowledge. A sensitization programme was then conducted to improve prescribing and reducing error which can help to improve patient's safety as well as doctors' safety because it has medico-legal aspects also. After a week, residents were administered same questionnaire again and both pre and post intervention data were compared.

Tesh et al include "the prescription of medication by brand (instead of generic) name" under prescription error [18] When residents were asked if drugs should be prescribed by their brand name or generic name; prior to sensitisation, many of them misbelieved that it

should be by brand name while post sensitisation, many of them answered generic name. During the teaching session, they were told the advantages of prescribing in generic name and problems associated with brand names especially Look-alike and Sound-alike (LASA) medicines and their negative impact on patient care and prescribing doctor.

On being asked about the details of prescription, most of them were not aware about recommended prescription format by Maharashtra Medical Council, MCI recognized abbreviations and parts of prescription. Their knowledge improved significantly post sensitization which was evident in the questionnaire filled by them.

Hospital pharmacists detect errors in around 1.5% of prescription items written [19]

Post sensitization, many of them started to feel that pharmacists could help in reducing prescription errors.

They also agreed that online prescription could reduce prescription errors. During the teaching session, residents were given detailed information on advantages of online prescription over the handwritten prescription as it is preserved for longer duration, it has better patient follow-up details and chances of doing prescription error becomes less likely. In addition to this, maintainence of record of prescription proves helpful for any medicolegal purpose.

Measures to reduce prescription error: The problem of prescription error has wide aspects hence a range of different corrective measures need to be taken. Junior doctors should be taught about selection and dosages of common drugs as well as drug- drug interactions and drug- disease interactions. They should be made aware of common prescribing errors. A practical test should be conducted in order to check their competence in a timely manner. Pharmacists should be trained regarding prescription errors and should also be asked to record their interventions in patient's notes. Elaborative charts and diagrams on walls of working room could prove beneficial.

Our results showed less improvement in knowledge about medicolegal consequences post- sensitization. It is therefore advisable to add certain aspects like interaction with medicolegal expert, demonstration of consequences through audio-visual aids or presenting any current scenario to the residents in the sensitization programme. This might prove fruitful and develop better understanding regarding importance of safeguarding doctors' own rights as well as promoting their safety.

Thus, sensitization as a whole can increase the knowledge regarding prescription writing and awareness about medicolegal consequences and importance of maintaining record of prescription. It would be advisable to include sensitization as a part of academic curriculum of resident doctors which will be beneficial for them as well as patients in long-term.

Conclusion

The study has highlighted the need to have sensitization programme for residents regarding prescription writing along with knowledge about medicolegal consequences which will further reduce the overall incidence of prescription error and promote patient's and doctor's safety.

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Prevalence of Gross Motor Dysfunction in School Going Children with Flatfoot

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Abstract

Background: Arches of foot play an important role in our daily gross motor activities such as walking, running, jumping and standing and also act as shock absorber. Flat foot creates motor difficulties in activities require balance and stability as flatfoot alters the body's weight distribution and transmission mechanism. The children with flatfoot may have difficulty in lower limb gross motor function, any study has not been conducted on this topic previously, so indeed this made us to study the prevalence of gross motor dysfunction in school going children with flatfoot.

Objectives: To determine flatfoot in school going children (seven-twelve years).To determine prevalence of gross motor dysfunction in school going children with flat foot.

Method: Total 80 students were taken from different schools in this study having flat foot in age group of 7-12 years of age and both male and female students were taken. They were asses by using plantar arch index for flatfoot and were given lower extremity function scale questionnaire to fill. Later evaluation of gross motor dysfunction were done by analysis.

Result: The overall prevalence of moderately difficulty in physical activities was 8.37%, quite difficulty was 1.18%, little bit of difficulty was 16% and no difficulty was 73.5%. No significant difference were found in age wise and sex wise distribution with physical activities.

Conclusion: On the bases of the result it conclude that the difficulty is seen particularly in activities which requires dynamic stability than static stability activities in children with flat foot.

Keywords: *Flatfoot, gross motor, children, LEFS, plantar arch index.*

Introduction

Flat foot (pesplanus) is a term used for less develop longitudinal arches. The longitudinal arches consist of medial longitudinal arch and lateral longitudinal arch.[1] Arches are supported by intrinsic and extrinsic muscles of the sole with the plantar ligaments, plantar aponeurosis and shape of the bones. The ligaments which mainly takes part are spring ligament, interosseous ligament, long plantar ligament and short plantar ligament. [1] In pesplanus, the spring ligament and muscle tendons are stretched out so that the individual losses the function of medial longitudinal arch of foot during weight bearing, due to the displacement of the head of talus bone medially and distally from the navicular bone. The flatfoot can be diagnosed by various method, such as x-rays, clinical diagnosis and foot print analysis. Footprint analysis is a quick, simple, cost effective measure and is also readily

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available method. Here measurements for footprint diagnosis is used by plantar arch index.[2]

Flatfoot in infants are consider normal because infants are born with flatfoot. The arch of the foot starts to develop around age of three to five years of life.[3] Flatfoot deformity may be classify as: 1) pathological 2) physiological. The pathological flatfoot is also called as rigid flatfoot and is characterised by a fixed arch that is not modified with weight bearing or non-weight bearing activities. The physiological flatfoot is also called as flexible flatfoot and is characterised by a normal arch without support and flattening of arch during standing or weight bearing activities.[3,4]

The risk factors for flatfoot are: lower age, overweight and obesity. In obese children the cause for flat foot may be the presence of plantar fatty pad under the medial longitudinal arch and also the excessive and continuous loading of foot by body weight.[4, 10] The arches of the foot play an important role in daily physical activities such as fast walking, running and jumping. and it also helps in weight bearing and body weight transmission to the ground.[5] Gross motor activities involve the large body movements. In typically developed child, by age of six month the child can bear almost all his weight when made to stand. By age of 12 months child can stand without support, by 15 month he walk alone and he runs by the age of 18 months. By age of two year child can walks up and downstairs (two feet per step) and also jumps. By age of four years child can hops on one foot and can go downstairs by alternate feet on steps.[6] In flatfoot the load distribution mechanism of body changes from lateral column to medial column of the foot, which may cause alteration in gross motor activities of lower limb in children with flatfoot.[4]

Material and Methodology

This was a study to find prevalence of gross motor dysfunction in school going children with flat foot. The study was carried out in Krishna College of physiotherapy, karad. An approval for the study was obtained from the protocol committee and ethical committee of KIMSDU. Individual were approach and those fulfilling the inclusive criteria were selected. The purpose was explained and written inform consent was taken prepared in accordance with the Helsinki Declaration from the children and their guardian those who are willingly to participate. The 80 students were taken from different schools in and around areas of karad for study. The inclusive criteria was both male and females in age group from seven-twelve years with flatfoot. The exclusive criteria wasindividual with any recent injury to lower limb, fracture of ankle joint, metatarsal joints or any bones of foot, gait abnormality due to any other causes than flatfoot and paresis or paralysis of lower limb. The participants were assessed for flatfoot by using footprints. The staheli plantar arch index was used to diagnose the flatfoot by footprints. The principle of these index is that the height of the arch is related to footprint. The PI was measured by dividing the width of central region by width of heel region on footprint, it is calculated as: a line drawn tangent to the medial of forefoot edge and heel region, then a perpendicular line drawn medially to laterally from the midpoint of tangent line in central region of footprint (A) and similar another perpendicular line drawn from heel region (B). The PI was then calculated by dividing value A with value B. The PI more than 1.15, was consider as flatfoot.[2, 7]Further subjects with flatfoot were evaluated for gross motor function of lower limb by using lower extremity function scale questionnaire.[8] It has total 20 day to day activities of lower limb with maximum 80 points. The candidates were divided in age wise group as 7-8 years, 9-10 years and 11-12 years and in gender wise group as male and female. The total score was calculated and statistical analysis and interpretation was done for each candidate to find out the prevalence of gross motor dysfunction in school going children with flat foot.

Statistic Analysis: For sample size following formula was used

$n=4pq\div L^2$

(p= 74%, q= 26% and L= 10%)

$= 4\times26\times74\div10\times10 = 76.96$

n= 80

The paired T test and two-way ANOVA were used for analysis of data. Statistical analysis of the recorded data was done by using the software SPSS version 20. The p value is less than 0.001 which is significant but in the age group of 7-8 years, 9-10 years and11-12 years the p value is more than 0.05 which is not significant and also in the gender wise group the p value is more than 0.05 which is not significant.

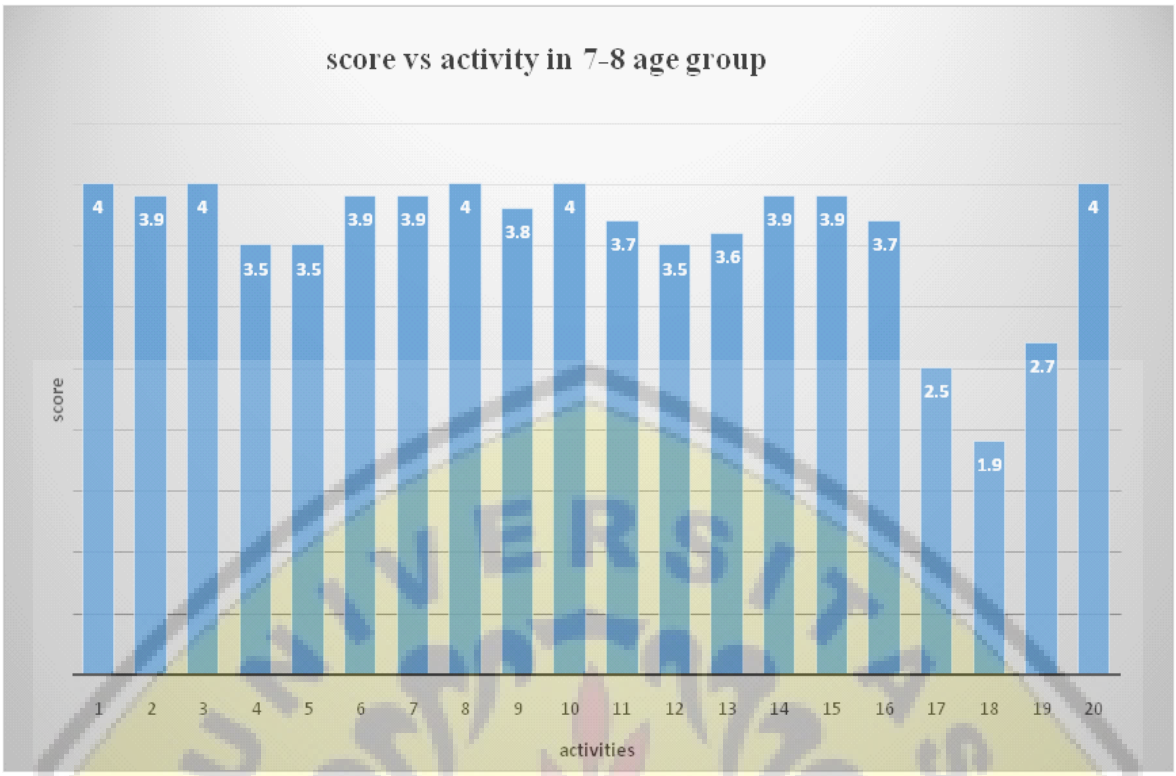
Result

The overall prevalence of moderately difficulty in physical activities was 8.37%, quite difficulty was 1.18%, little bit of difficulty was 16% and no difficulty was 73.5%. No significant difference were found in age wise and sex wise distribution with physical activities.

Table No. 1: 7-12 Year Children with Flat Foot

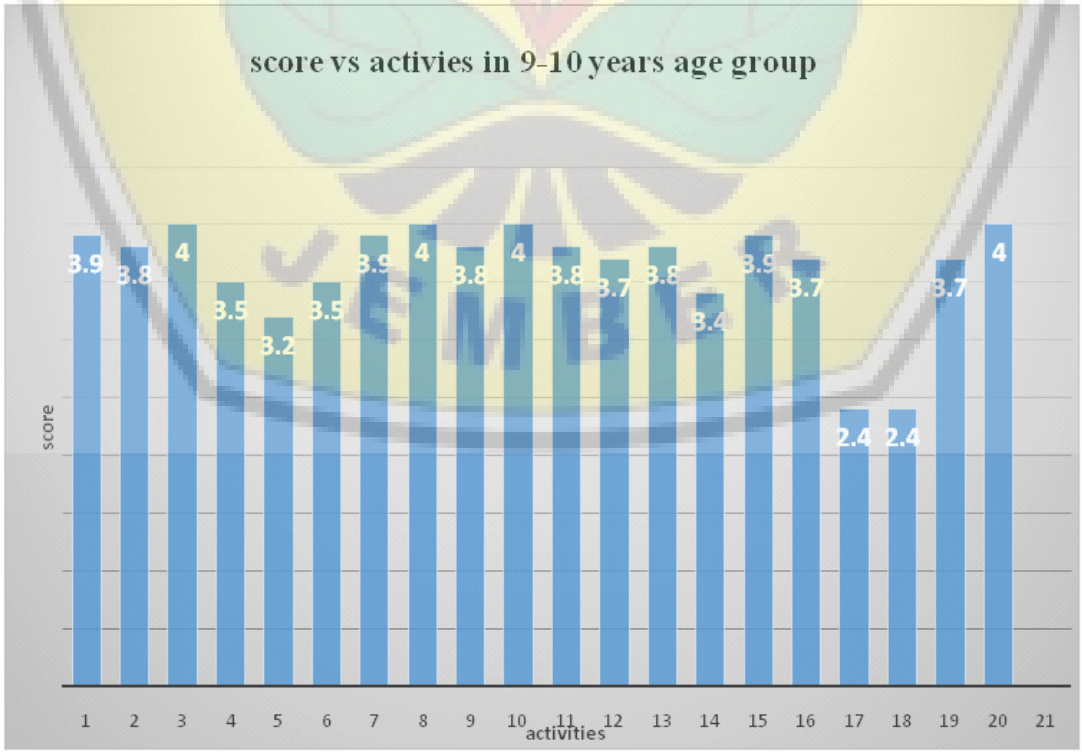
Activities	Mean	Median	SD	P Value
Activity 1	3.9	4	0.24	<0.0001
Activity 2	3.8	4	0.33	<0.0001
Activity 3	4	4	0.00	-
Activity 4	3.6	4	0.60	<0.0001
Activity 5	3.3	4	0.79	<0.0001
Activity 6	3.6	4	0.59	<0.0001
Activity 7	3.9	4	0.30	<0.0001
Activity 8	4	4	0.00	-
Activity 9	3.8	4	0.34	<0.0001
Activity 10	4	4	0.00	-
Activity 11	3.7	4	0.48	<0.0001
Activity 12	3.6	4	0.64	<0.0001
Activity 13	3.7	4	0.49	<0.0001
Activity 14	3.4	4	0.69	<0.0001
Activity 15	3.9	4	0.15	<0.0001
Activity 16	3.7	4	0.53	<0.0001
Activity 17	2.4	3	0.74	<0.0001
Activity 18	2.1	2	0.69	<0.001
Activity 19	3.3	4	0.86	<0.001
Activity 20	4	4	0.00	-

SD-Standard deviation, (n =80)



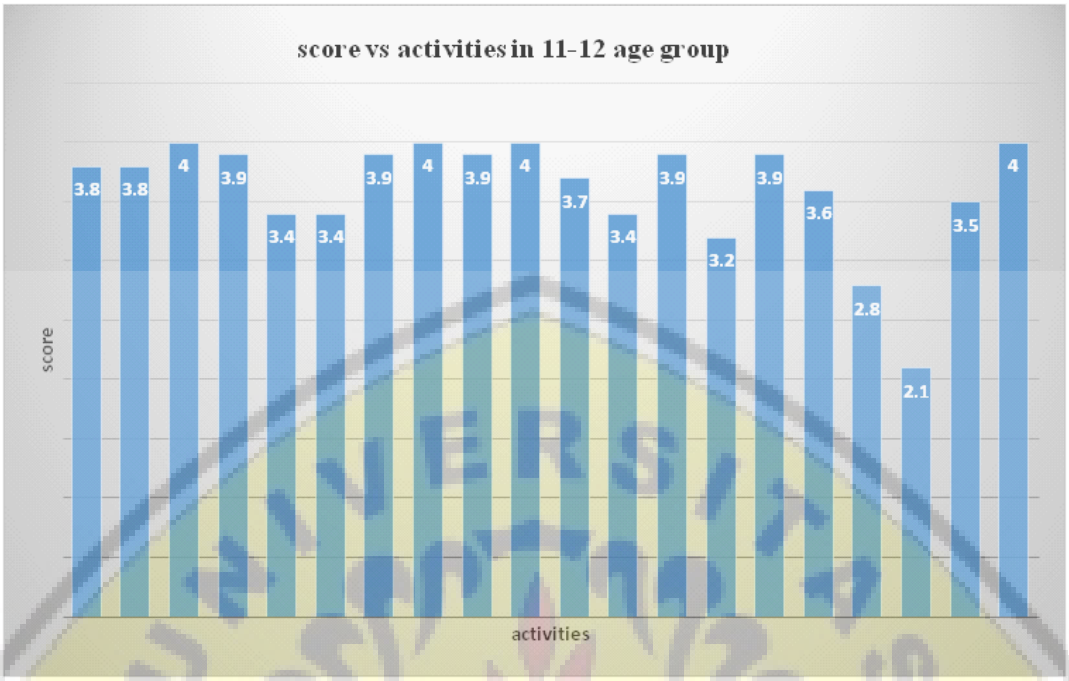
Graph No. 1: Activities in 7-8 Years Age Group

Interpretation: In age group 7-8 years the activity number 18 which is making sharp turns while running is quite a bite of difficult to 30%, moderately difficult to 43% and a little bit of difficult to 26% of candidates. and the activity number 19 which is hopping is quite a bit difficult to 10%, moderately difficult to 36%, little bit of difficult to 26% and no difficult to 26% candidates



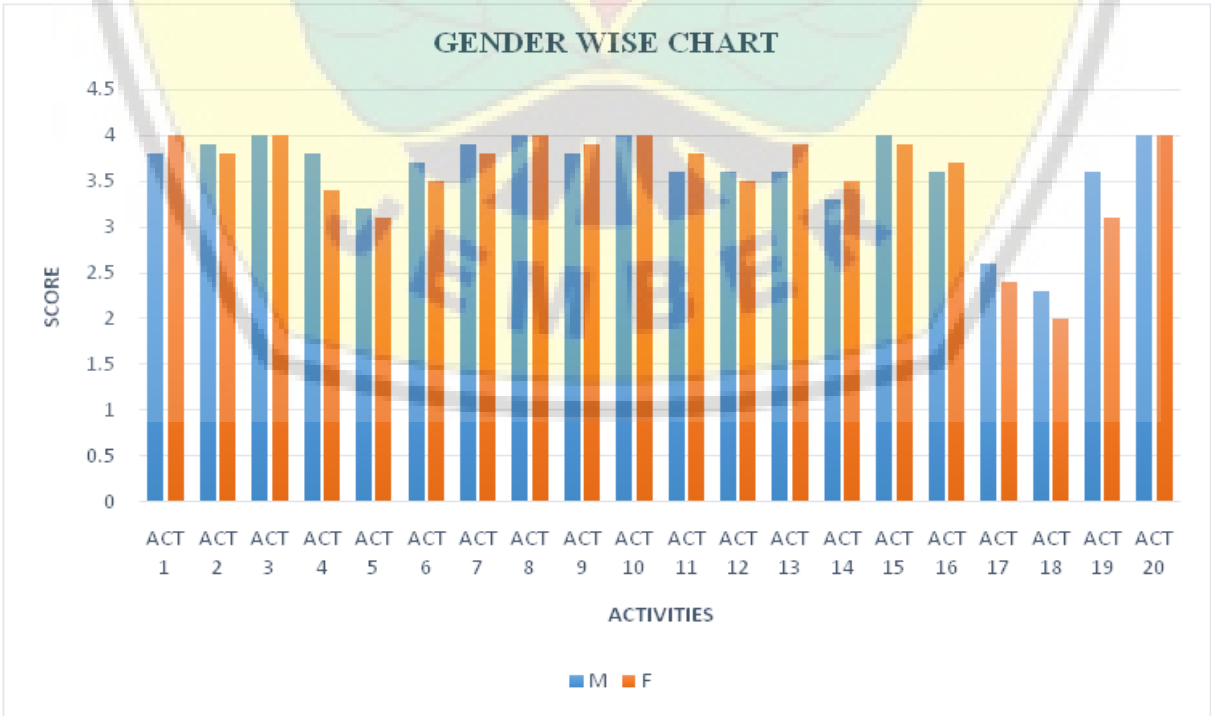
Graph No. 2: Activity in 9-10 Years Age Group.

Interpretation: In age group 9-10 years the activity number 17 which is running on uneven ground is quite a bit difficult to 11.4%, moderately difficult to 40% and little bit difficult to 45.7% candidates.



Graph No. 3: Activities in 11-12 Years Age Group

Interpretation: In age group 11-12 years the activity number 18 which is making sharp turns while running fast is quite a bit difficult to 20% moderately difficult to 46.6% and little bit of difficult to 33.3% candidates. The activity number 17 which is running on uneven ground is quite a bit difficult to 6.6%, moderately difficult to 26%, little bit difficult to 40% and no difficult to 26%. and the activity number 19 which is hopping is quite a bit difficult to 6.6%, moderately difficult to 6.6%, little bit of difficult to 13.3% and no difficult to 66.6% candidates



Graph No. 4: Gender Wise Comparision of Activities.

Interpretation: There is no significant difference seen in LEFS score of male and female candidates with flatfoot.

Discussion

The arches of foot play an important role in dynamic and static balance of individual. The arches of foot may also have a certain impact on muscle strength of lower extremity and physical performance in children. They also supports the body weight and absorbs ground reaction force during physical activities or sports. [9] In flatfoot the foot is mostly pronated which affect the stability and balance of individual. It also causes difference in body weight distribution mechanism.[10, 11] Plantar arch index is a clinical measure to measure arch height in individuals. The aim of the study was to find out the prevalence of gross motor dysfunction in school going students with flatfoot. The study was carried out and result was drawn by using plantar arch index for flatfoot assessment and lower extremity functional scale questionnaire for gross motor activities.

In this study we found that there was difficulty in some physical activities in students from 7-12 years in both males and females participants. The limitation of this study is that, study is limited to particular geographical area and with limited sample size.

According to Chang-Ryeol Lee and Myoung Kwon Kim stated that the activities of most muscle in the subjects with flatfeet were significantly different from the muscle activities in the subjects with normal feet at different gait velocities on an ascending slope. Our study supports this article as we found most of the students have difficulty while making sharp turns while running fast or running on uneven ground. This article also indicated that the abductor halluces muscle do not have proper function as a dynamic stabiliser of medial longitudinal arch.[12] This may be the reason for participants for difficulty in activities require dynamic balance as there is less activation of abductor halluces in flatfeet children which is dynamic stabiliser of medial longitudinal arch. [12, 13] Whereas, in our study we found that there was difficulty in certain physical activities in flatfoot children may be due to less activation of abductor halluces muscle and change in weight bearing mechanism in foot. According to Hyounk he found no significant difference in dynamic balance ability between normal, pronated and supinated foot groups. The study was done with group of normal, supinated and pronated foot individuals. The dynamic balance was checked by using a star excursion balance test (SEBT). [14]

The article of Zhao X, Tsujimoto T, Kim B, Tanaka K stated that there was no significant relationship was found in arch height and physical performance measure, our study do not support this statement as we found significant difference in physical performance in flatfoot children. The author also found the more muscle strength in ankle muscle of lower arch participants.[15]For this further analysis is required.

Conclusion

On the bases of the result it can be concluded that there was difficulty in performing certain physical activities to students with flatfoot. The difficulty is seen particularly in activities which requires dynamic stability than static stability activities. No significant difference was found in age wise and sex wise categories.

Conflict of Interest: The authors declare that there are no conflicts of interest concerning the content of present study.

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Salivary Flow Rate and pH in Patients with Potentially Malignant Disorders and Oral Cancer

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Abstract

Aim: To assess the salivary flow rate [SFR] and pH in patients with potentially malignant disorders and oral cancer.

Materials and Method: Salivary samples were collected from 15 healthy individuals and 15 patients with potentially malignant disorders and oral cancer (5 patients with Leukoplakia, 5 patients with Oral Submucous Fibrosis, 5 patients with Oral Cancer). Unstimulated whole saliva (UWS) was collected using the spitting method. The salivary flow rat [SFR] was evaluated with the micro pipetting technique and a portable pH meter, equipped with a microelectrode, was used to measure pH. The results were tabulated and statistically analyzed.

Results: The data analysis showed that FR and pH showed statistical significant differences ($p < 0.005$) between patients with potentially malignant disorders and oral cancer (FR = 0.34 mL/min, pH = 6.85) and the patients without oral lesions (FR = 0.61 mL/min, pH = 7.09).

Conclusion: In our study, there is a relationship between potentially malignant disorders, oral cancer and alteration of pH and SFR. Due to tobacco habits either smoke or smokeless forms can cause alterations in tobacco users which render oral mucosa vulnerable to various oral and dental diseases. Reduced Salivary flow rate and pH has a correlation with potentially malignant disorders and oral cancer.

Keywords: *Human saliva, Salivary pH, Salivary flow rate, Oral cancer, potentially malignant disorders.*

Introduction:

Saliva is produced by three pairs of major glands and numerous minor salivary glands located in the oral cavity. The parotid, submandibular and sublingual salivary glands contribute to 90% of total saliva secretions, while minor salivary glands contribute to the remaining 10%. The amount of saliva secreted by the major and minor glands is referred to as whole saliva. In the resting (unstimulated) state, approximately two-thirds of the total volume of the whole saliva is produced by submandibular glands. Upon stimulation, the parotid glands are responsible for at least 50% of the total volume of saliva from the mouth. Sublingual glands contribute to a small percentage, both in the unstimulated or stimulated states of the salivary glands.[1,2]

Changes in salivary composition and flow rates maycompromise the integrity of the soft and hard tissues in the oral cavity, because saliva functions include food and bacteria clearance, mastication and digestion, lubrication, antimicrobial defense and buffering effect.[3,4]

The buffer capacity of saliva is an important factor, which plays a role in the maintenance of salivary pH

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and in dental remineralization. Bicarbonate is the main buffer that opposes acids, but is completely effective only at high salivary flow rates, because its concentration increases markedly with SFR rise. The buffer capacity of saliva basically depends on bicarbonate concentration; it correlates with salivary flow rate, as any factor decreasing salivary flow rate tends to decrease its buffer capacity and to increase the risk of caries development.[5-9]

The evaluation of the unstimulated whole salivary flow rate (UWSFR), is carried out by an easy, non-invasive and comfortable procedure, which favors its use in clinical environmental (public or private). UWSFR is the basal rate of saliva flow and it's the greatest contributor to the total salivary output during the diurnal cycle. The collection of unstimulated "whole saliva" reflects basal SFR; this fluid is present in our mouths for about 14 hours a day and its secretion provides protection to oral tissues. Moreover, several pathological and behavioral factors could influence UWSFR: e.g. oral and systemic diseases, drugs intake, nutrition, stress, sports activity.[10,11]

The aim of our study were: to determine the UWSFR and corresponding pH in a sample of 30 patients in which 15 patients were healthy individuals and 15 with oral lesions, (5 with leukoplakia, 5 with oral potentially malignant disorders and 5 with oral cancer) and to evaluate the correlation between salivary flow rate and pH in patients with oral lesions.

Materials and Method

A cross-sectional descriptive study was conducted in Saveetha dental College with patients visiting the outpatient department. The study involved 30 subjects of which 15 were healthy individuals and 15 were patients with oral lesions (5 with Leukoplakia, 5 with oral potentially malignant disorders and 5 with oral cancer). They were informed of the purpose of the studyand enrolled after giving their signed informed consent.

Inclusion and Exclusion Criteria: Individuals who have completed 35 to 55 years of age and present on the day of clinical examination were included in the study. Patients with habit of consuming tobacco both smoke and smokeless were included in the study. Patients with systemic illness, hepatic or cardiac failure, immunocomprised individuals, under hypertensive drugs were excluded from the study.

The enrolled subjects were asked to follow the protocol norms: In the two previous weeks, they had to avoid consumption of chewing gum; the day before saliva collection, they had to be relaxed and not to practice sports activity. In the sampling day participants had to be free from symptom of fever and/or cold; if they were hungry or thirsty, they could eat or drink water, but later immediately they had to clean their teeth with a provided toothpaste; during the last hour before the salivary collection, it was not permitted them to eat, to drink or to smoke.[11]

Method of Collection

The saliva was collected in morning hours to avoid diurnal variation using the spitting method. Unstimulated whole saliva (UWS) was collected for a 5 min time span: the undisturbed subject, sitting in a comfortable position, swallowed residual saliva present in the mouth before the beginning of the collection and then, with the head down and mouth slightly open, saliva was allowed to drip from the lower lip into a pre-weighed, sterile plasticcontainer. In the last few seconds of the 5 min, saliva accumulated in the mouth was spat out into the plastic funnel. No other conscious movements of the oral musculature were made during the collection.[11]

The salivary samples were measured using a micropipette determine the UWSFR, which was calculated asml/min of the collection period.

The UWSFR was reported as to mL/min; pH was immediately detected on samples by a portable pH meter equipped with a special 5 mm diameter electrode.[11]

Results

The results shows that the mean and S.D of salivary flow rate in healthy individuals were (0.61+_0.119) and in patients with oral cancer and potentially malignant disorders were (0.34+_0.106) which was statistically significant with p value<0.05. The mean and S.D of pH in healthy individuals were (7.09+_0.322) and in patients with oral cancer and potentially malignant disorders were (6.85+_0.247) which was statistically significant with p value<0.05. [table 1]

The results shows that the mean and S.D of salivary flow rate in oral carcinoma individuals were (0.26+_0.055), in patients with OSMF and Leukoplakia were (0.34+_0.089) and (0.38+_0.110). The mean and S.D of pH in oral carcinoma individuals were (6.98+_0.239) and in patients with OSMF and

Leukoplakia were (6.82+_0.239) and (6.74+_0.251). The mean and SD of individuals with potentially malignant disorders (OSMF and Leukoplakia) and oral carcinoma showed no statistical significance. This infers that the salivary flow rate and pH in patients with PMD and oral carcinoma individuals were similar. [table2] Figure 1,2,3,4 respectively, Bar graph shows the salivary flow rate and pH in patients without oral lesions, with OSMF, Leukoplakia and Oral carcinoma.

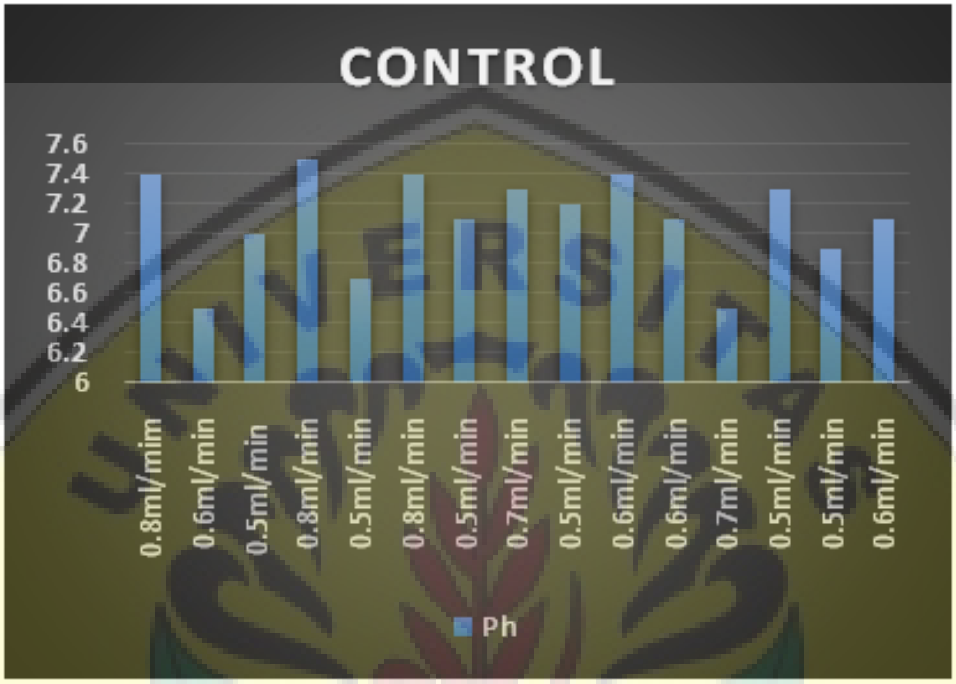

Figure 1: Graph showing the SFR and pH in patients without oral lesions

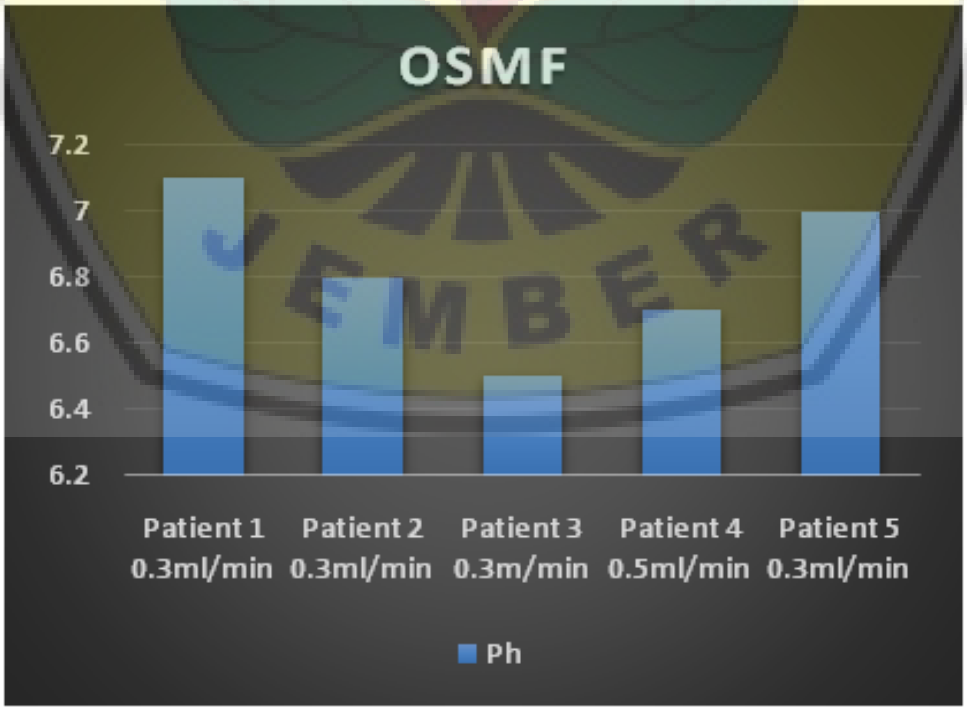

Figure 2: Graph showing SFR and pH in patients with OSMF

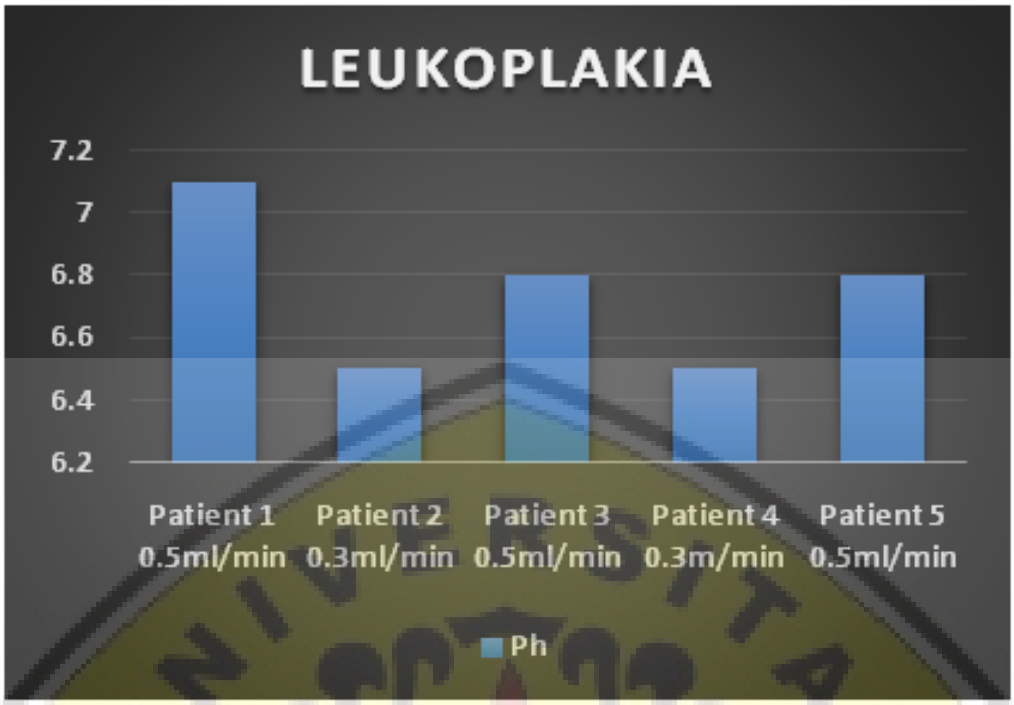

Figure 3: Graph showing SFR and pH in patients with Leukoplakia

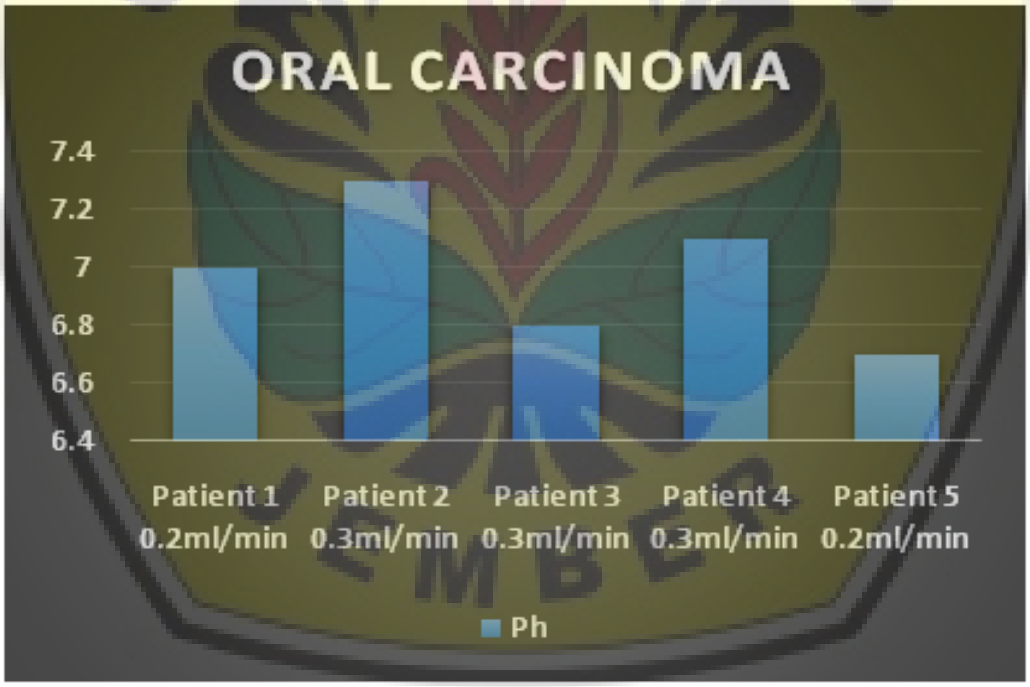

Figure 4: Graph showing SFR and pH in patients with Oral carcinoma

Table 1: Shows the mean and SD of control and study

Group	N	Mean±SD
Salivary flow rate(study)	15	0.34±0.106
Salivary flow rate (control)	15	0.61±0.119
pH (study)	15	6.85±0.247
pH (control)	15	7.09±0.322

Table 2: Shows the mean and SD of PMD and oral carcinoma

Group	N	Mean±SD
Salivary flow rate (OSMF)	5	0.34±0.089
Salivary flow rate (LEUKOPLAKIA)	5	0.38±0.110
Salivary flow rate (ORAL CARCINOMA)	5	0.26±0.055
pH (OSMF)	5	6.82±0.239
pH (LEUKOPLAKIA)	5	6.74±0.251
pH (ORAL CARCINOMA)	5	6.98±0.239

Discussion

Cancer of the oral cavity accounts for approximately 3% of all malignancies diagnosed annually in 2,70,000 patients world-wide. Oral cancer is the 12th most common cancer in women and the 6th in men. Many oral squamous cell carcinomas develop from potentially malignant disorders (PMDs). Lack of awareness about the signs and symptoms of oral PMDs in the general population and even healthcare providers is believed to be responsible for the diagnostic delay of these entities.[12]

During areca nut chewing lot of chemicals & metals like copper, iron are leached out into saliva, which in turn alter the property and composition of saliva. In betel quid chewer's variations in the SFR, pH has been reported. Production of reactive oxygen species is enhanced by the presence of alkaline pH of saliva. It is believed that tobacco usage on a long-term basis can decrease the sensitivity of taste receptors, leading to decreased salivary reflex. It is hypothesized that long-term tobacco usage might lead to altered taste receptors' response, changing the SFR. Unstimulated whole mouth SFR and salivary pH play an important role in the causation of various oral changes and conditions. [13,14]

A study by Nishant, et.al in 2015 observed that areca nut chewing leads to release of chemicals thereby altering the salivary SFR and pH in OSMF subjects.[13] This is correlated with our study which reveals decrease in salivary pH and SFR in patients with OSMF.

Neeraj Grover, et.al also observed significant relation of low salivary pH in subjects consuming smoke and smokeless form of tobacco compared to controls which is correlated with our study. Reaction with bicarbonate buffering system by the loss of bicarbonate, turning saliva more acidic could alter electrolytes and ions and thereby alters the pH as they interact with the buffering systems of saliva.[15]

Singh M, et.al also observed that mean of salivary flow rate and pH in smokers was lesser than the mean of salivary flow rate and pH in non smokers.[16]

In our study there is reduced salivary flow rate and pH in patients with Leukoplakia and OSMF which has an association with smoke and smokeless form of tobacco. Individuals with chronic use of tobacco as smoke or smokeless form can lead to potentially malignant disorders. These potentially malignant disorders have the highest risk of malignant transformation. Individuals with chronic use of tobacco as smoke or smokeless form can be assessed for the salivary flow rate and pH which would enable us to detect early diagnosis of potentially malignant disorders and initiate appropriate medication and cessation of habit at an earlier stage which would prevent the risk of malignant transformation and improve the quality of life in individuals.

Our study showed that there is a decrease in the salivary flow rate and pH in patients with oral cancer and potentially malignant disorders due to tobacco consumption when compared with healthy individuals.

Conclusion

There is a significant decrease in salivary flow rate and pH in patients with oral cancer and potentially malignant disorders due to tobacco consumption. Due to tobacco habits either smoke or smokeless forms can cause alterations in tobacco users which render oral mucosa vulnerable to various oral and dental diseases. Reduced Salivary flow rate and pH has a correlation with potentially malignant disorders and oral cancer.

Conflict of Interest Statement: Authors report no conflict of interest of any kind.

Statement of Informed Consent: Informed consent was obtained from patients

Ethical Clearance: Taken from Instituitional Ethical Committee.

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Knowledge and Practices towards Antibiotics among People Residing in an Urban Slum of Nagpur

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Abstract

Introduction: The excessive, imprudent use of antibiotics has led to them becoming increasingly ineffective. Educating the public is key to changing the status quo, but it must be guided by an accurate understanding of the existing practices and knowledge gaps.

Aims: To study the prevalence of antibiotic use among the study population and evaluate its socio-demographic correlates. Additionally, to assess knowledge towards antibiotic use and resistance among respondents.

Material and Method: A questionnaire-based, cross-sectional survey was carried out in an urban slum of Nagpur in May-June, 2017. Sample size of 281 was computed and population was sampled by systematic random sampling. Recent history of antibiotics was obtained and its relationship with socio-demographic characteristics of the population analysed using Chi-square statistics (significance – $P < 0.05$). Knowledge about antibiotic use and resistance was assessed by the response to12 knowledge statements.

Results: The prevalence of antibiotic use among the study participants was 13.9%, with 28.3% of it being obtained over-the-counter. 71.7% participants said they completed the course. Overall knowledge was average in 78.6% of the participants. No significant association of the prevalence of antibiotic use with socio-demographic variables was established.

Conclusions: The present study reported that the prevalence of antibiotic use and over-the-counter purchase was low, while compliance was encouragingly high. Also, socio-demographic correlates seemed to have no bearing on antibiotic use. Most participants showed an average level of knowledge overall, but the results varied with respect to specific aspects of antibiotic use and resistance.

Keywords: *Antibiotic, antimicrobial, resistance.*

Introduction

Effective antibiotics have been one of the pillars that allow us to live longer, stay healthier and enjoy benefits from modern medicine. Antibiotic resistance leads to ineffective treatment, higher medical costs, prolonged hospital stays, increased mortality and economic burden on families and societies.(1)

WHO's first global report on antibiotic resistance in 2014 reveals that it is no longer a prediction for the future; it is happening right now in every region of the world and has the potential to affect anyone, of any age, in any country.(2)

Sweden instituted STRAMA – a multidisciplinary AMR surveillance programme – in 1994.(3) Today, it has

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one of the lowest rates of antibiotic use and resistance in the world.[3,4] Years later, a number of countries – including India - now have national AMR surveillance programs, yet public awareness on the issue remains low. Continual education of the people will corroborate the gains of surveillance in tackling antibiotic misuse and consequent resistance.

Aims and Objectives:

1. To study the prevalence of antibiotic use among study population.
2. To assess knowledge towards antibiotic use and resistance among respondents.
3. To evaluate socio-demographic correlates of antibiotic use.

Materials and Method

A community-based cross-sectional study was conducted in an Urban Health Training Centre (U.H.T.C.) area, which is an adopted area under the administrative control of a tertiary care teaching hospital of Nagpur.

As per 76% prevalence of antibiotic use estimated by previous literature[5], we calculated a sample size of 281 with 95% confidence level and 5% margin of error, using Open Epi software (version 3.01).

According to the data available at the U.H.T.C., the total number of houses in the field practice area was 3383. A list of all the houses was prepared. Sampling interval was calculated by dividing the total number of houses by the estimated sample size, i.e. 281.

Sampling interval = number of houses/sample size = 3383/281 = 12.03

It was then rounded off to the nearest whole number, i.e., 12. Then, a random number was generated using random table and used as a start for the sampling procedure. Thereafter, every 12th house from the list was sampled till the required sample size was met.

If the house was locked, 2 additional visits were made on two different days. If it was found to be locked during the revisits as well, it was labelled as 'non-contactable' and was excludedf rom the study. The house immediately to the right side of it was then considered for the study.

Eligibility Criteria: Within each sampled house, only one person, ≥ 18 years of age and literate, was randomly selected for the purpose of the study.

Exclusion Criteria: Illiterate participants and those unwilling to give consent.

After thorough explanation regarding the study, written and informed consent was obtained.

Data Collection tool: Data collection was done by face-to-face interviews using a pretested and structured questionnaire. The questionnaire was adapted from previous studies and modified and validated to suit the studypopulation. It comprised of three parts, of which –

Part 1 consisted of the socio-demographic characteristics of the participants, like age,gender, religion, education, occupation, marital status, type of family, socio-economic status etc.

Part 2 was designed to assess antibiotic usage among participants in the previous three months. Once we confirmed whether the participant had taken antibiotics or not, they were requested to provide further information regarding the source and reason for taking antibiotics and asked whether the course was completed.

Part 3 consisted of 12 statements to evaluate knowledge towards antibiotic use and antibiotic resistance. Each question was responded to by the participants on a dichotomous scale of'yes' or 'no'. Correct response for a statement was given a score of '1', while an incorrect response was scored 'zero' (the highest attainable score being 12). The scores were not constructed in reference to an absolute gold standard, but rather used for their relative values as simple tools in the analysis of knowledge of antibiotic use and resistance. Based on their scores, the participants were classified as having poor (score 1-4), average (5-8) and good (9-12) knowledge.

Participants were given the option of having the questions read to them and their answers recorded by the researcher, or they could read and answer the survey on their own.

The questionnaire (along with the informed consent form) was made available in both English and the local language, Marathi. This was done to alleviate any discomfort and to increase the participation rate.

Statistical Method: Descriptive statistics were reported using percentages. Associations were evaluated using a bivariate analysis by chi-square test ($P < 0.05$

was considered statistically significant). All analyses were performed using OpenEpi (version 3.01) software.

Results

The study population consisted of 281 participants. Majority of the participants (179) were females, while 102 participants were male. Of all the participants, 76.1% were under 47 years old; the highest number being those between 18-27 years of age (30.2%).Most participants in the study were graduates or of a higher qualification (34.2%), followed by intermediate/diploma holders (32.3%) and high-school educated individuals (22.8%). Very few (3.6% and 7.1%, respectively) had only primary or middle school education. In terms of their employment status, 164 (58.4%) of the participants were unemployed, while 117 (41.6%) were employed; this is probably because the door-to-door study was carried out during the day and also included retirees and not due to a lack of employability in the population. Their socioeconomic status was calculated using the B. G. Prasad classification, according to which most of the participants belonged to class III (28.1%), II (23.5%) and I (22.4%).

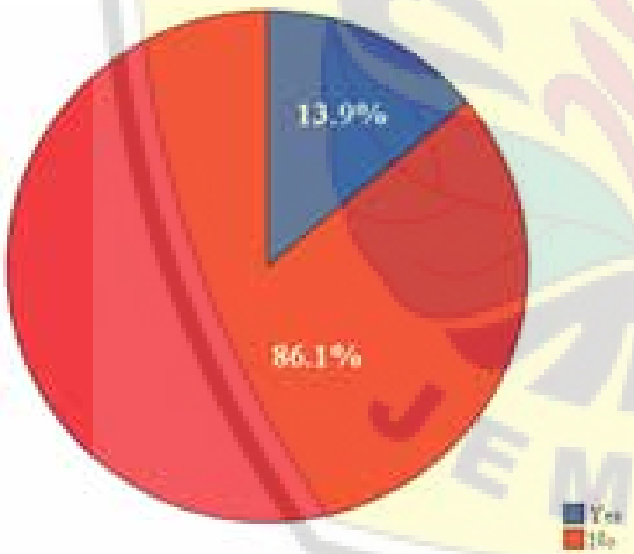

Figure 1: Prevalence of Antibiotic Use in Study Population (N=281)

During the study, out of 281 participants, only 39 (13.9%) reported the use of antibiotics in the previous three months (*Figure 1*). The most common reason for antibiotic use was cough and cold (36.7%). Other reasons (20.4%) were sinus infection, skin infection, post-surgical use, root canal and other dental treatment of the 39 participants with a history of antibiotic use, 11 (28.3%) admitted to having self-medicated (based on a pharmacist's or relative's advice, or past experience). Irrespective of the source of prescription, 28 (71.7%) participants stated that they completed the course. The pattern of antibiotic use is summarized in Table 1.

Table 1: Pattern of Antibiotic Use in Study Population

Factor	Response	n	Percentage
*1. Reasons for antibiotic use (n=49)**	Cough and cold	18	36.7
	Fever	11	22.4
	Headache	6	12.2
	Stomach-ache	4	8.2
	Others	10	20.4
2. Source of prescription (n=39)	Doctor	28	71.7
	Self-medicated	11	28.3
3. Completion of Course (n=39)	Yes	28	71.7
	No	11	28.3

*More than one response was permitted.

The assessment of knowledge regarding antibiotic use and resistance drew varied results. Based on their total scores, majority of the 281 participants (221, i.e. 78.6%) exhibited an average level of knowledge (score - 5 to 8); 13.5% and 7.8% of the participants had a good (score – 9 to 12) and a poor level of knowledge (score – 1 to 4), respectively (Figure 2). However, while 73.3% participants agreed that antibiotics can kill bacteria, only 25.3% knew that they are ineffective against viruses. Almost 60% participants knew that antibiotic overuse could lead to resistance. However, while nearly 70% thought that resistance is a property of bacteria, only 32% understood that it has no association with the human body. A significant number of participants also appeared to be misinformed regarding the indications of antibiotic use. *Table 2* summarizes the knowledge statements and indicates the number of participants who responded correctly to each statement.

Table 2: Number of Correct Responses to Each Knowledge Statement

Statement Number	Knowledge Statement	Number of participants who responded correctly	Percentage
1	Antibiotics can kill bacteria.	206	73.3
2	Antibiotics can kill viruses.	71	25.3
3	Antibiotics work on most coughs and colds.	156	55.5
4	Antibiotics are indicated to relieve pain/inflammation.	165	58.7
5	Paracetamol is an antibiotic.	162	57.7
6	The effectiveness of the treatment is reduced if the full course of antibiotics is not completed.	153	54.4
7	Antibiotics have no side effects.	131	46.6
8	Overuse of antibiotics can cause antibiotic resistance.	160	56.9
9	A doctor's prescription is not necessary for buying antibiotics.	187	66.5
10	The prescribed dose of antibiotics can be terminated if the symptoms improve.	166	59
11	Antibiotic resistance is a property of bacteria.	189	67.3
12	Antibiotic resistance is a property of the human body.	90	32

The data was also analysed for possible associations between the level of knowledge and the socio-demographic characteristics of the study population. No significant association knowledge could be established with age (P 0.2), literacy status (P 0.2), employment status (P 0.5) or socioeconomic status (P 0.9) of participants.

Discussion

The study found that out of the 281 participants, only 13.9% reported having taken antibiotics in the last 3 months, as opposed to 86.1% who did not. Two different Malaysian studies in the recent past quoted figures of 16.5% and 28.9%, respectively.[6,7] These differences, despite comparable sample sizes, are probably attributable to differences in the period of recall as well as seasonal variations in the susceptibility to some common bacterial infections; and possibly, the cultural characteristics of the study population. Out of the 39 participants (13.9%) who reported antibiotic usage, 28.3% participants admitted to having self-medicated with antibiotics. A study on self-medication in Pune indicated a much lower percentage of 10.32% of all antibiotics being self-medicated.[8]

Patient compliance was significant, with 71.7% of the participants with recent history of antibiotic use stating that they completed the course, irrespective of the source of prescription. A study in Kuwait reported a similar compliance (64.9%).[9] The most common reason for antibiotic usage was cough and cold (36.7%), followed by fever (22.4%). Most other studies also stated reasons similar to ours for antibiotic use.[6,7,10,11]

The assessment of knowledge about antibiotic use and resistance in our study population showed that 221 (78.6%) participants had an average level of knowledge on the subject. In comparison, a similar study in Penang, Malaysia recorded 54.7% of the participants as having moderate knowledge about antibiotic use and resistance.[7] Another study in Andhra Pradesh reported a poor level of knowledge on antibiotic use in 65% of its participants.[12] However, delving deeper into these questions threw up some interesting observations.

The participants' response to statements 1 to 5, which required them to be cognizant of the definition of antibiotics, was alarmingly poor. While most participants (73.3%) correctly identified that antibiotics are used against bacteria, only 25.3% knew that they are ineffective against viruses. A number of similar studies carried out in Kuwait, Malaysia, Andhra Pradesh and Northern India also indicated a significant lack of knowledge about the difference in indication of antibiotics in bacterial and viral infections.[7,9,11,12] Two inferences we made during the interviews may account for this disorientation. Firstly, many of the participants, while being aware of the term 'antibiotics', were unable to accurately identify them as drugs used to treat infectious diseases, particularly bacterial infections.

Moreover, they often seemed unaware of the difference between bacteria and viruses, probably owing to the fact that in practice, we commonly refer to them both as "germs". This could also explain why 55.5% participants believed that antibiotics can cure most coughs and colds, which are more commonly viral. In contrast, a Swedish survey found almost two-thirds of its study population to be aware of their effectiveness against bacteria as well as their lack of it, against viruses.[13] This is a noteworthy indication of the success of their surveillance program.

In response to statements regarding practices, 66.5% of the 281 participants were aware that antibiotics can't be bought without a doctor's prescription; while 60.4% disagreed that an antibiotic course could be terminated as soon as symptoms improved. While this number was better than the one reported in the Andhra Pradesh study (25.6%)[12], it pales in comparison to the Swedish survey, where 95.5% of the participants knew that a prescribed antibiotic course must be completed, even if the symptoms subside.[13]

With respect to the statements specific to antibiotic resistance, we found that 58.2% of the participants responded correctly to statement 8 ('Overuse of antibiotics can cause antibiotic resistance.'), a finding corroborated by a similar percentage obtained from a study in Malaysia.[7] Here, it must be noted that while responding to statement 8, many participants were not familiar with the term 'antibiotic resistance', but knew by experience that antibiotics could become ineffective on overuse. In order to maintain the neutrality of the interview, they were allowed to respond to the statement with this interpretation. Further, while half the participants (50.5%) believed that antibiotic resistance was a property of bacteria (statement 11), nearly 70% believed that it was a property of the human body (statement 12). Interestingly, some participants agreed with both the statements, indicating the belief that it was a property of both, the bacteria as well as the human body. This may, in part, be attributable to their perception of antibiotic resistance. The Swedish study also reported a similar observation. Over 80% participants were aware that bacteria can become resistant to antibiotics, but 84% of the participants also agreed with the statement that it's the human body which develops resistance.[13]

In our study, we were unable to determine any significant association between antibiotic use and socio-demographic factors. This result may have been obtained due to the relatively small sample size and the short duration of our study. A study covering a larger number of participants over a longer period of time may yield different results.

Conclusion

- The prevalence of antibiotic use was considerably low in this study, while their administration with prescription and patient compliance was substantial.
- Participants' awareness about over-the-counter sales of antibiotics and course completion was encouraging; but simultaneously, their ignorance regarding the indications of antibiotic use could possibly be a factor in their OTC purchase.
- The most surprising result obtained from the study was that almost 60% of the participants seemed to be instinctively aware of the phenomenon of antibiotic resistance, if not the term itself.
- There's an urgent need to educate the general public. The efforts are already visible in the form of posters and video messages played in some hospitals and pharmacies, but it needs to reach a much wider audience, as through mass media campaigns.
- The scarcity of literature analysing possible correlations between socio-demographic factors and antibiotic use suggests a new avenue for research to further understand patient behaviour.

Ethical Clearance: Taken from Institutional Ethics Committee, NKP Salve Institute of Medical Sciences and Lata Mangeshkar Hospital.

Source of Funding: Self

Conflict of Interest: Nil

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Poly Pharmacy Usage among Geriatric Population at Rural Health Centre, Kamineni Institute of Medical Sciences, Narketpally

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[1]Assistant Professor at Kamineni Institute of Medical sciences, Narketpally, Telangana, Conducted the Study, [2]Professor & Faculty at Hay Al Akhdar Post Graduation Training Centre for Saudi Board of Family Medicine, Buraidah, Qassim Province, Saudi Arabia, Systematic Preparation and Editing the Paper, [3]Assistant Professor of Community Medicine, SVIMS-Sri Padmavathi Medical College for Women (SPMCW), Tirupati, Andhra Pradesh, Research Idea and Data Analysis, [4]Professor & HOD Community Medicine at Kamineni Institute of Medical Sciences, Narketpally, Telangana, Timely Guidance and Research Encouragement

Abstract

Background: Poly pharmacy can be defined as more than two drugs, where as in case of elderly population the intake number of drugs varies. Hence polypharmacy definition in elderly people is different. On the whole throughout the world among the geriatric population, there is increase number of drugs in take was observed.

Objectives: To find the prevalence of polypharmacy, demographic and other factors association with polypharmacy among the geriatric population. Methodology: A cross sectional institutional based study was conducted from April 2019 to June 2019 among the elderly population at the field practice area of Rural health Centre of Kamineni Institute of Medical Sciences, Narketpally. A total of 97 persons were interviewed and information collected and confidentiality of individual information maintained. Necessary statistical tests like simple proportions and chi square tests were applied. Results: In the present study, about 45.3% were males and only 54.7% were females. Among the study population 72.1% were literates. Approximately,70.1% were using polypharmacy medication in their routine life. Near to 57.7% individuals were having osteoarthritis problem. There was statistically significant association was found between female sex and polypharmacy more than 5 drugs use. Conclusions: Based on the study results, polypharmacy using people were more as the study group is above 60 years of age group and naturally in that age more health problems are there. Osteoarthritis problem is common problem identified as per the self report and history. Need life style modifications before development of any disease, primordial and primary prevention strategies will help for the reduction of such problems in the coming future.

Keywords: *Age, Sex, literacy, Occupation, Health Problem, Polypharmacy.*

Introduction

Throughout the world elderly population is increasing due to our quality life increasing, diagnostic facilities and modern treatment facilities availability to the general population was increased. Rising standards of living also a another entity to increase our life expectancy in India. At the time of our Independence, average life expectancy of the person is 34 years and now almost doubled by the span of 70 years duration. Polypharmacy is the use of multiple medications by a patient, generally older adults (those aged over 60 years). More specifically, it is often defined as the use of five or more regular medications. It sometimes alternatively refers to purportedly excessive

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or unnecessary prescriptions. The term Polypharmacy lacks a universally consistent definition. Polypharmacy is most common in the elderly, affecting about 40% of older adults living in their own homes.

As a result of having multiple diseases, the elderly people may be on multiple drugs, leading to potential drug interactions, adverse drug reactions and poor compliance.[13]Previous studies in different countries have also found inappropriate prescriptions among in the elderly.[5,6]Elderly people are now the most rapidly growing part of the patient population worldwide, needs to more focus on primary prevention of diseases and improvements in healthcare for the younger ill patient .[7]Elderly persons are exposed to Polypharmacy because of multiple chronic conditions. Many risk factors for Polypharmacy have been identified including age, race/ ethnicity, sex, educational achievement level, health status and number of chronic diseases. However, drugs prescribed for individual diseases have not been analyzed. [8]

As the number of medicines taken and the incidence of adverse drug reactions are more in this age group, it becomes increasingly important to study patterns of drug use and also should maintain some interval of time between one tablet to another tablet to avoid drug -drug interactions.[9] Very few studies on drug utilization in geriatric patients are available, especially in India.[10,11] Keeping this in mind, the study was done with the broad aim of polypharmacy usage among the geriatric population and the socio-demographic characteristics, morbidity pattern, associated co-morbidities and commonly prescribed medications.

Objectives:

1. To find the prevalence of polypharmacy among the geriatric population.
2. To determine demographic and other factors association with polypharmacy among the geriatric population.

Methodology: Target population: Geriatric population of Rural health centre of Kamineni Institute of Medical Sciences, Narketpally.

Study design: cross sectional study

Study duration: April to June 2019

Sample size: 97 individuals. (Based on prevalence assumption is 50%, 95% confidence interval and precision is 10%). WHO Statistical package for sample size calculation was used for the estimation of the sample size.

Sampling Procedure: At Rural health centre, above 60 years old individuals visiting to the Rural health Centre, every alternative patient was selected by systematic random method. Each patient explained about importance of the study and usefulness of the study in our rural settings and health care centre. Oral informed consent was obtained from each and every patient.

Statistical Analysis: Simple proportions and chi square test were applied for categorical analysis of variables.

Inclusion Criteria: Patients aged 60 years and above Willing to participate in the study.

Exclusion Criteria: Non co-operative patients Age below 60 years of age group. Mentally retarded patients and comatose patients.

Results

In the present study about 97 geriatric population was participated, among them approximately 83.5% were in the age group of 60-70 years and only 16.5% were more than 70 years age group. In the study group, 45.3% were males and 54.7% were females. Near to 70% of the study population were literates. In the present study, about 67% were unemployed people.

Table 1: Polypharmacy use, frequency and duration of use in study population

Polypharmacy Use	Number of Patients	Percentage
Yes	68	70.1%
No	29	29.9%
Total	**97**	**100%**
Frequency		
< 5 drugs	21	30.9%
> 5 drugs	47	69.1%
Total	**68**	**100%**
Duration of intake of drug		
< 5 years	15	22%
5 - 10 years	25	36.7%
> 10 years	28	41.3%
Total	**68**	**100%**

Table 1 stated that 70.1% were using polypharmacy medication in their routine life. of which 69.1% were using more than 5 drugs.

Table 2: Self reported health problems in the study population (n-97)

Health Problem/disease	Number	Percentage
Osteoarthritis	56	57.7%
Hypertension	38	39.2%
Cataract	30	30.9
Diabetes	22	22.7%
Acid peptic diseases	12	12.3%
Hearing loss	10	10.3
Neurological problems	5	5.2

Table 2 highlighted that out of 97 study population,56/97 (57.7%) individuals were having osteoarthritis problem. About 30.9% (30/97) people were having cataract and hypertension was about 39.2%.

Table 3: Sex according to Analgesic use in the study population.

Sex	Polypharmacy Use Yes	Polypharmacy Use No	Total
Male	20 (45.5%)	24 (54.5%)	44 (100%)
Female	48 (90.5%)	05 (9.5%)	53 (100%)
Total	68 (70.1%)	29 (29.9%)	97 (100%)

X^2 - 23.3, 1df, P - 0.001.

Table 3 revealed that about 90.5% of the females were using polypharmacy more than 5 drugs and males were about 45.5%.There was statistically significant association was found between female sex and polypharmacy more than 5 drugs use.

Discussion

Present study was conducted at Rural Health Centre, Kamineni Institute of Medical Sciences, during the period from the April to June 2019 among the geriatric population visiting to the centre to address the needs of geriatric population, drugs usage and demo-graphic characteristics of the study population. In the current study, about 45.3% were males and only 54.7% were females. Among the study population 72.1% were literates and less than 5000 rupees per month family income people was only 46.4%. Similar study conducted at Mandhya Institute of Medical Sciences, Karnataka revealed that male subjects were predominant (57.3%) compared to female subjects (42.7%). Majority of the patients belonged to the age group of 60–69 years[11]. Other studies conducted at different places where males patients were enrolled more and the gender distribution of our study subjects is in accordance with studies conducted by Shah *et al.*,[10] Nayaka *et al.*,[9]Binod *et al.*,[12]Kolhe*et al.*,[13] and Singh,[14] where the male patients were predominant.

In the present study stated that 70.1% were using polypharmacy medication in their routine life. of which 69.1% were using more than 5 drugs and also highlighted that out of 97 study population, majority of the individuals were having osteoarthritis problem. Other studies conducted at different regions of India and abroad stated that the total number of drugs prescribed for various disease conditions in the study population cumulatively was 1720. The mean number of drugs per prescription was 6.7. This is similar to the study that was conducted by Shah *et al.*[10] where the average number of drugs per prescription was 7.3 and contrary to the studies done by Weiss *et al.*[15] and Shenoy *et al.*[16] where the number was 5.

Polypharmacy is a major public health issue as well as an economic burden to all the nations across the world. In the current study out of 97 study population, 56/97 (57.7%) individuals were having osteoarthritis problem. It also leads to increased chances of adverse drug reactions. Hence, appropriate measures about awareness among the general public about drugs and its interactions and need to be taken to minimize the extent of polypharmacy in the society. There was statistically significant association was found between female sex and polypharmacy more than 5 drugs use ($P<0.05$). One of the limitation of the study was small sample size and cross sectional study. Generalisation of the present

study findings to the whole community is not advisable. Need long term similar cohort studies are required to substantiate the present study findings or results.

Conclusions: Polypharmacy was a common practice and observed among the female geriatric population. Most common geriatric health problem observed among the elderly population was Osteoarthritis health problem. About 2/3rd of the people were using more than 5 drugs for different health problems among geriatric study population.

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Conflict of Interest: None.

Ethical Committee: Institutional Ethical Committee clearance taken.

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To Evaluate the Revised National Tuberculosis Control Programme (RNTCP) through Assessment of Input Indicators and Age wise distribution of registered Pulmonary Tuberculosis Patients

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Abstract

Background: Tuberculosis is not only a public health problem but also a social and an economic problem for mankind.

Objective: To assess the functioning of Revised National Tuberculosis Control Programme (RNTCP) at the level of Tuberculosis Units by considering infrastructural assessment of Tuberculosis Units and Designated Microscopy Centres (DMC) for staff position and their training.

Study Design: Cross-sectional study.

Setting: Under District Tuberculosis Centre, Satara involving all the ten Tuberculosis Units.

Participants: Fifty slides of sputum smear positive and fifty slides of sputum smear negative for tuberculosis were selected randomly.

Sampling: Simple random.

Study Period: From 2012 to 2014.

Results: DMC were adequate in number to cater the services to the areas of jurisdiction on an average 50,000 to 60,000 population under each DMC's in all Tuberculosis Units except Phaltan TU where each DMC's population exceeds above one lakh. Similarly post of Laboratory Technicians (LT) were vacant in DMC's of Patan, Vaduj and Bel-Air Tuberculosis Units. However majority of staff were trained under RNTCP except 7% of LT were not trained. Regarding DOT providers it was observed that 40% were untrained though they have been involved in giving DOTS therapy.

Conclusion: DMC were adequate in number. Majority of staff were trained under RNTCP except 7% of LT were not trained. Among all the detected cases of pulmonary tuberculosis, the productive age group of 25-45years which involves the active and the earning are the victims.

Keywords: *RNTCP, Input indicators, pulmonary tuberculosis, staffing pattern, Designated Microscopy Centres (DMC).*

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Introduction

National Tuberculosis Control Program[1] in India was started in 1962 with the aim to detect cases at the earliest and treatment. The program was implemented in the district through District Tuberculosis Centre (DTC) and the Primary Health Care Institutions with support

from state level organizations for coordination and supervision of the program.

Data on case finding and treatment at village and primary health centre level generated were passed through district to the state and then to the central level, which was reviewed at centre by Secretary and Director General Health Services, at state level by State Director of TB Training and Demonstration Centre and at District level was reviewed by District Tuberculosis Officer (DTO).[1] Despite the existence of National Tuberculosis Control Programme since 1962, tuberculosis remains the leading infectious cause of death in India. Around 2.2 million people are detected to have tuberculosis every year (25% of the global cases) and over 0.5 million die of this disease every year (17% of global tuberculosis deaths).[2] Total population suffering from active disease in India is 14 million of which 3 to 3.5 million are positive for sputum (20% to 25% of total). About one million sputum positive cases are added every year.[3]

India has the largest number of tuberculosis cases in the world, accounting for nearly one fifth of the global burden.[4] Tuberculosis is responsible for 5% of all death worldwide and 9.6% of adult deaths in the 15-59 years old economic productive age groups. [5] The case fatality rate of tuberculosis is high, approximately 50% of untreated cases die of the disease. Case finding is passive detection by means of a patient friendly and clinically efficient services based primarily on smear microscopy. Thus the current study is to assess the functioning of RNTCP at the level of Tuberculosis Units by considering infrastructural assessment of Tuberculosis Units and Designated Microscopy Centres (DMC) for staff position and their training and age wise distribution of pulmonary tuberculosis patients registered for treatment under RNTCP in Tuberculosis Units of Satara district, Maharashtra

Materials & Method: The study was carried out under District Tuberculosis Centre to assess the functioning of RNTCP at the level of Tuberculosis Units by considering infrastructural assessment of Tuberculosis Units and DMC for staff position and their training from 2012 to 2014. Ethical clearance was obtained from IEC prior to the commencement of the study.

Data Collection: The data collection regarding performance of each Tuberculosis Units was carried out retrospectively by obtaining information regarding case detection activities under RNTCP like staffing pattern, their position and training. Information was obtained pertaining to diagnostic activities. Investigator visited each TU and collected information through the laboratory registers, referral registers and treatment registers. To access the functioning of DMC in the form of microscopic activities like sample collection, slide preparation, procedure, examination of slides, disinfection of collected samples and slides. One DMC was selected randomly from each TU. Thus total 10 DMC were visited to access microscopic activities at DMC level.

From each DMC five sputum smear positive slides for tubercle bacilli and five sputum smear negative slides for tubercle bacilli were selected randomly. Thus fifty slides of sputum smear positive and fifty slides of sputum smear negative for tuberculosis were selected randomly and were cross checked for quality microscopy. All the selected slides were re-examined by the laboratory technician of respective DMC in the presence of Medical Officer and Investigator. The verification of obtained results were carried out in comparison with the original results by the Medical Officer in the presence of Investigator.

All the patients of randomly cross checked sputum smear positive slides for tuberculosis, that is 50 patients were telephonically interviewed for evaluation of quality services provided under Directly Observed Treatment Short Course Strategy (DOTS) at DOT providers level.

Statistical Analysis: Data was entered in Excel and Tuberculosis Units wise proportions and performance indicators pertaining to case detection were calculated for years 2012, 2013 and 2014.

For the evaluation of RNTCP following performance[6] indicators pertaining to input indicators were calculated and studied**: Input Indicators:** 1. Physical Infrastructure. 2. Staffing Pattern, Positioning and their Training

Results

Total 10 Tuberculosis Units are functioning under District tuberculosis centre Satara. The infrastructure of all the 10 Tuberculosis Units have been shown in Table No.1.

The highest population was covered by Tuberculosis Units Karad, Phaltan and Satara. The Karad TU consists of private Medical College, Krishna Institute

of Medical Sciences, which has its own Tertiary care centre along with DMC and DOT centre, where as Satara Tuberculosis Unit itself is located in District Tuberculosis Centre, Satara. It was observed that the average population covered by 1DMC was higher at sub-district level Phaltan (102625.8 per DMC) followed by Karad (70775.5 per DMC) and Satara (67237.3/DMC). Whereas Bel-Air and Vaduj sub district level has very low average population per DMC (36338.5 and 39627.8 respectively), however at District Tuberculosis Centre each DMC covered average population of 503800. This population under each DMC was found less than the population given as per the structure of RNTCP might be due to number of tribal, hilly and difficult areas located at sub-district level Vaduj, Bel-Air, Patan, Koregoan, Dahiwadi, Wai etc.

Total 400 DOT centres had been identified under satara district. Maximum were located at sub-district Umbraj (50), Patan (48) and Bel-Air (46), minimum DOT centres were functioning at sub-district level Vaduj (30), Koregaon (32) and Wai (33).

Table No. 1: Population distribution, Numbers of DMC's and DOT centres in various Tuberculosis Units under District Tuberculosis Centre, Satara

Tuberculosis Units	Population	DMC (n)	DMC/Population	DOT Centres (n)
Umbraj	326068	5	65213.6	50
Satara	403424	6	67237.3	42
Karad	424653	6	70775.5	42
Patan	313308	7	44758.2	48
Vaduj	237767	6	39627.8	30
Koregaon	260414	5	52082.8	32
Wai	283275	6	47212.5	33
Dahiwadi	245254	5	49050.8	36
Phaltan	410503	4	102625.8	41
Bel Air	218031	6	36338.5	46
Total	**3122697**	**56**	**53839.6**	**400**

Staff Position and Training: From the quarterly reports assessment of staff position and their training was done at both TU and DMC level.

At sub-district level all Medical officers and STLS of Tuberculosis Units were at place and trained under RNTCP. Whereas the post of STS was found vacant at Umbraj Tuberculosis Unit, rest of the places all STS are at place and trained. Out of all 56 DMC under District Tuberculosis Centre, Satara a post of Medical Officer was found vacant where the DMC is located in the Medical College at Karad Tuberculosis Unit. Similarly a post of LT was found vacant in one of the DMC of Tuberculosis Unit of Vaduj. All the existing Medical Officers were trained. It was found that 65 LT's were working at various DMC, of which only 26% LT's were posted through the RNTCP programme. Whereas rest of the LT;s were appointed under Malaria Programme and NRHM, however all existing LT's were trained under RNTCP except one LT from Koregaon Tuberculosis Unit, also it was found that 3 posts of LT's at DMC's of Patan, Vaduj and Bel-Air Tuberculosis Units. Total 2867 DOT providers were identified to provide directly observed treatment to all the tuberculosis patients under respective TU's. It was observed that 86.9% were trained under RNTCP who were acting as private practitioners, paramedical workers and anganwadi workers. Whereas 13.1% DOT providers were untrained and those were either neighbours, school-teachers, shop-owners/ previously cured patients.

It was seen that in 2012, a total of 2499 pulmonary tuberculosis were registered at district tuberculosis centre. Out of which highest number belonged to age group of 35-44 years and 25-34 years (23.8% and 23.5 % respectively)followed by 45-54 years (17.6 %) and 15-24 years (14%). The paediatric age group with pulmonary tuberculosis at DTC was 1.8%. and of age

group of >65years was 7.9%. The maximum number of pulmonary cases registered under RNTCP at sub district level were at Karad (13.3%), Satara (12.3%), Belair (12.1%) and Patan (11.9%) Tuberculosis Units and minimum registration was observed at Dahiwadi (6.6%) TU. The others tuberculosis units ranged from 9.5% to 8.4 %. Table 2

Table No. 2: Showing Age wise distribution of pulmonary tuberculosis cases at sub-district level in 2012.

TB Units	0-14yrs	15-24yrs	25-34yrs	35-44yrs	45-54yrs	55-64yrs	>65yrs	DTC
Umbraj	3 (6.5)	33(9.4)	58(9.9)	50(8.4)	44(9.8)	20(7.1)	5(2.5)	213(8.5)
Satara	11(24)	56(16)	59(10)	79(13.3)	42(9.5)	35(12.4)	25(12.6)	307(12.3)
Karad	2(4.3)	54(15.5)	70(12)	77(13)	51(11.6)	49(17.4)	30(15.1)	333(13.3)
Patan	6(13)	50(14.3)	63(10.7)	64(10.7)	40(9.1)	38(13.5)	37(18.7)	298(11.9)
Vaduj	2(4.3)	30(8.6)	40(6.8)	40(6.7)	35(8)	25(8.9)	39(19.7)	211(8.4)
Koregaon	4(8.7)	30(8.6)	68(11.6)	60(10.1)	30(6.8)	15(5.3)	14(7.1)	221(8.8)
Wai	5(10.9)	18(5.2)	23(4)	49(8.2)	63(14.3)	46(16.3)	7(3.5)	211(8.4)
Dahiwadi	1(2.2)	26(7.4)	44(7.5)	42(7.1)	33(7.5)	5(1.8)	13(6.6)	164(6.6)
Phaltan	7(15.2)	36(10.3)	68(11.6)	50(8.4)	30(6.8)	28(9.9)	19(9.6)	2389.5)
Bel-Air	5(10.9)	16(4.6)	95(16.1)	84(14.1)	73(16.5)	21(7.4)	9(4.5)	303(12.1)
DTC	46(1.8)	349(14)	588(23.5)	595(23.8)	441(17.6)	282(11.3)	198(7.9)	2499(100)

*figures in parenthesis are percentages

It was seen that in 2013, a total of 2651 pulmonary tuberculosis were registered at district tuberculosis centre. Out of which highest number belonged to age group of 35-44 years and 25-34 years (26.5% and 22.6% respectively)followed by 45-54 years (17%) and 15-24 years (15.1%).The paediatric age group with pulmonary tuberculosis at DTC was 1.5%. and of age group of >65 years was 7.1%. The maximum number of pulmonary cases registered under RNTCP at sub district level was at Belair (15.1%), Satara (13.6%), Karad (12.6%) and Patan (12.5%) Tuberculosis Units and minimum registration was observed at Dahiwadi (6.3%) TU. The others ranged from 9.7% to 7.01%. Table 3.

Table No. 3: Showing Age wise distribution of pulmonary tuberculosis cases at sub-district level in 2013

TB Units	0-14yrs	15-24yrs	25-34yrs	35-44yrs	45-54yrs	55-64yrs	>65yrs	DTC
Umbraj	2(5)	41(10.3)	53(8.8)	44(6.2)	35(7.8)	5(1.8)	6(3.8)	186(7.01)
Satara	8(20)	62(15.5)	77(12.8)	96(13.6)	57(12.7)	36(13.4)	24(12.7)	360(13.6)
Karad	3(7.5)	68(17)	77(12.8)	87(12.3)	60(13.3)	20(7.43)	20(10.6)	335(12.6)
Patan	10(25)	50(12.5)	74(12.3)	61(8.7)	59(13.1)	27(10)	44(23.3)	325(12.5)
Vaduj	0(0)	33(8.3)	38(6.3)	56(7.9)	29(6.4)	29(10.8)	32(16.9)	217(8.2)
Koregaon	2(5)	16(4)	43(7.2)	81(11.5)	39(8.7)	15(5.6)	5(2.6)	201(7.6)
Wai	4(10)	26(6.5)	44(7.3)	37(5.2)	56(12.4)	31(11.5)	2(1.1)	200(7.5)
Dahiwadi	2(5)	30(7.5)	38(6.3)	28(4)	32(7.1)	22(8.2)	16(8.5)	168(6.3)
Phaltan	1(2.5)	40(10)	59(9.8)	65(9.2)	34(7.5)	34(12.6)	25(13.2)	258(9.7)
Bel-Air	8(20)	33(8.3)	97(16.2)	149(21.2)	49(10.9)	50(18.6)	15(7.9)	401(15.1)
DTC	40(1.5)	399(15.1)	600(22.6)	704(26.5)	450(17)	269(10.1)	189(7.1)	2651(100)

*figures in parenthesis are percentages

It was seen that in 2014, a total of 2243 pulmonary tuberculosis were registered at district tuberculosis centre. Out of which highest number belonged to age group of 35-44 years and 25-34 years (26.7% and 23% respectively)followed by 45-54 years (15.7%) and 15-24 years (15.5%).The paediatric age group with pulmonary tuberculosis at DTC was 2.8%. and of age group of >65 years was 6.5%. The maximum number of pulmonary cases registered under RNTCP at sub-district level was at Belair (18.4%), Satara (13.8%), Patan (11.8%) and Karad (11%) Tuberculosis Units and minimum registration was observed at Dahiwadi and Vaduj (6.3% each) followed by Wai (6.9%) TU. The othes ranged from 9.4% to 7.3%. Table 4.

Table No. 4: Showing Age wise distribution of pulmonary tuberculosis cases at sub district level in 2014.

TB Units	0-14yrs	15-24yrs	25-34yrs	35-44yrs	45-54yrs	55-64yrs	>65yrs	DTC
Umbraj	6(9.8)	39(11.2)	52(10.1)	43(7.2)	35(9.9)	12(5.4)	8(5.4)	195(8.7)
Satara	11(18)	71(20.5)	66(12.8)	68(11.3)	45(12.8)	34(15.4)	14(9.5)	309(13.8)
Karad	1(1.6)	43(12.4)	54(10.5)	49(8.2)	48(13.6)	31(14.1)	21(14.3)	247(11)
Patan	10(16.4)	43(12.4)	55(10.6)	40(6.7)	36(10.2)	32(14.5)	48(32.6)	264(11.8)
Vaduj	2(3.3)	17(4.9)	32(6.2)	41(6.8)	30(8.5)	5(2.3)	15(10.2)	142(6.3)
Koregaon	3(4.9)	16(4.6)	31(6)	64(10.7)	23(6.5)	20(9.1)	7(4.8)	164(7.3)
Wai	5(8.2)	29(8.3)	37(7.2)	38(6.3)	30(8.5)	14(6.4)	2(1.4)	155(6.9)
Dahiwadi	0(0)	19(5.5)	43(8.3)	43(7.2)	26(7.4)	8(3.6)	3(2)	142(6.3)
Phaltan	5(8.2)	26(7.5)	58(11.2)	56(9.3)	28(7.9)	24(11)	15(10.2)	212(9.4)
Bel-Air	18(29.5)	44(12.7)	88(17)	158(26.3)	51(14.5)	40(18.2)	14(9.5)	413(18.4)
DTC	61(2.8)	347(15.5)	516(23)	600(26.7)	352(15.7)	220(9.8)	147(6.5)	2243(100)

Discussion

Total 10 Tuberculosis Units were functioning under District Tuberculosis Centre, Satara catering to the population 31, 22697. Total 56 Designated Microscopy Centres were functioning under District Tuberculosis Centre, Satara. On an average each DMC was catering for 5, 5760 population.

At Tuberculosis Units, 100% Senior Tuberculosis Laboratory Supervisor (STLS) were functioning, whereas one post of Senior Treatment Supervisor (STS) (10%) was vacant. All STLS and STS appointed at sub-district level were trained under RNTCP.

At DMC under each Tuberculosis Unit, total 56 post of Medical Officer were sanctioned of which 98% were in position and 2% vacant. However all the medical officers working at DMCs level were trained under RNTCP. Regarding Laboratory Technicians 67 posts of Laboratory Technicians (LT) were sanctioned of which 97% were in position and 3% were vacant. Among all the LT in position only 26% were appointed under RNTCP whereas majority (74%) were appointed under some other programs. Out of 65 in position LT only 97% were trained for RNTCP guidelines. Total 2867 DOT providers were found involved in providing DOTS therapy (Directly Observed Treatment), among them 87% were obtained training under RNTCP and they were either Health worker females or Anganwadi workers or Pharmacist. Whereas remaining were (13%) non-medical/paramedical persons who had not received any type of training. As per RNTCP all the posts at Tuberculosis Units (TU) as well as at DMCs must be 100% in position and all of them (100%) must be trained under RNTCP.[7]

N.Gupta et al[8] reported 12 to 40% of gap in trained Medical Officers (MO) and 20% in (LT. This was much higher than the current study. T.K Sen et al[9] also reported high proportion of vacant position of health workers and supervisors in comparison with the present study. Whereas V.M Bhagat et al[10] reported very less proportion (16.67%) of trained DOT providers which is very less in comparison with the present study.

In the present study most common affected age group was 35-44 years of age (23.5%, 26.5% and 26.7% respectively for the year 2012, 2013 and 2014)

followed by 25-34 years of age (23.5%, 22.6% and 23.5% respectively for the year 2012, 2013 and 2014). This is suggestive of physical and economically active group was affected predominately, which may lead to increase in dependency, loss of income, poverty has the main earning people have got affected by the pulmonary tuberculosis. Similarly extra-pulmonary tuberculosis was also found higher among same age groups. Similar findings was reported by Bawri S. et al.[11]

Conclusion

DMC were adequate in number. Majority of staff were trained under RNTCP except 7% of LT were not trained. Among all the detected cases of pulmonary tuberculosis, the productive age group of 25-45years which involves the active and the earning are the victims.

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Conflict of Interest: None

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The Relations of TNF-α, CRP and Lipid Profile with Carotid Intima-Media Thickness (CIMT) in OBESE Adolescents

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Abstract

Background: Obesity is a health problem, causes serious complications. The mechanism of fat accumulation in the initial process of atherosclerosis is still unclear. The process occurs due to chronic inflammation where the indicator of atherosclerosis that related to inflammatory processes, such as levels of C-reactive protein (CRP) and tumor necrosis factor alpha (TNF-α)in the blood are higher in children with obesity.

Purpose: To examine the relationship of TNF-α, hsCRP and lipid profile with CIMT in obese adolescents.

Method: A cross sectional study was conducted on obese adolescents in Dr. Soetomo Hospital Child Health Unit from January until September 2018. Measurements of TNF-α, hsCRP and lipid profile were examine using ELISA method. CIMT was obtained through carotid ultrasound. TNF-α correlation, hsCRP and lipid profile with CIMT were analyzed using Pearson and Spearman Rho with significant value of P<0.05. Logistic regression analysis was carried out to determine the effect of cardiovascular disease risk factors on CIMT.

Result: 59 adolescents with central obesity were obtained, consisting of 32 (54.2%) boys and 27 (45.8%) girls. Total of 38 (64.4%) adolescents with dyslipidemia. There was no correlation between TNF-α, hsCRP, lipid profile and CIMT. The diameter of common carotid artery had a positive correlation with hsCRP (r=0.284;P=0.029). In girls, hsCRP had a positive correlation with the diameter of the left common carotid artery (r = 0.533; P=0.004). This correlation was not found in boys.

Conclusions: There was no correlation between TNF-α, hsCRP, lipid profile and CIMT.

Keywords: *Carotid intima-media thickness, hsCRP, Obesity, Llipid profile, TNF-α.*

Introduction

Obesity is a health problem throughout the world, causes serious short-term and long-term complications. In 2020, it is predicted that there will be an increase in the prevalence of cardiovascular disease by up to 16% and deaths from cardiovascular disease by 19% in adults aged 35-50 years and atherosclerosis.[1] Until now, the mechanism of fat accumulation in the initial process of atherosclerosis is still unclear, suspected the process occurs due to chronic inflammation. Obese children have a higher indicator of atherosclerosis than children without obesity. These indicators are related to inflammatory processes, such as levels of C-reactive protein (CRP) and tumor necrosis factor alpha (TNF-α) in the blood.[2,3)] Now, the combination of measurement of the media layer and intima in the communic carotid artery is used for early identification of systemic atherosclerosis.[4)] Obese children have higher carotid

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intima-media thickness (CIMT) values than controls and are associated with higher BMI, waist circumference, triglyceride levels, cholesterol, LDL cholesterol and lower HDL cholesterol.[5]This study were conducted to examine the relationship of TNF-α, hsCRP and lipid profile with CIMT in obese adolescents.

Materials and Method

A cross-sectional study conducted at the Pediatric Departement, Dr. Soetomo General Hospital from January until September 2018. Inclusion criteria are adolescents aged 12-18 years with Body mass index (BMI)> $P9_5$of CDC charts. Exclusion criteria included: corticosteroid consumption within 6 months prior to study, dyslipidemia medication in 3 months prior to study, antibiotics, hormonal therapy, smoking, alcohol consumption, infection and suffering immune disorders or endocrine disorders. Data on physical activity and food intake were obtained by food recall on weekdays and holidays.

Anthropometric examinations were carried out by trained health personnels. Body weight was measured without shoes, using clothes weighing a maximum of 0.1 kg and without other accessories using digital scale (Seca, Germany). Body height was measured in an upright position, without shoes or head coverings using stadiometer (Seca, Germany).BMI was calculated by dividing body weight in kg with height in meters squared.

TNF-α, hsCRP and lipid were measure using ELISA method (in ng/L). Triglyceride is measured using TG-N Kit Autosera S (Sekisui Medical Co., Ltd., Japan), while LDL cholesterol, HDL and total cholesterol were measured using Cholestest®LDL, Cholestest®N HDL and Pureauto®S CHO-N (Sekisui Medical Co., Ltd., Japan). Dyslipidemia was established ifone of the cholesterol, HDL, LDL and triglyceride levels were increased as recommended by NCPE and the American Academy of Pediatrics.

CIMT was obtained by carotid ultrasound using a neck ultrasound (Toshiba, Japan), measured on the back wall of the left carotid artery to obtain atherosclerotic plaques, characterized by protrusion of blood vessel walls into the blood vessel lumen by >50% of the intima-media layer in the blood vessels.[6]

Statistical analysis were conducted using SPSS Statistics 21, including average value, drink value and maximum were analyzed using quantitative parameters. Correlation of TNF-α, hsCRP, lipid profile with CIMT and left internal carotid artery diameter were analyzed using bivariate analysis (significance at P value <0.05). Normal distribution were obtained. Pearson correlation carried out if the distribution were normal, otherwise Spearman's rho would be carried out.Quantitative parameters (CIMT, lipid profile levels, TNF-α and hsCRP) were analyzed in each group for distribution using Shapiro-Wilk test (significant at p value <0.05).

Results

A total of 59 adolescents with central obesity were obtained, consisting of 32 (54.2%)boys and 27 (45.8%) girls, meanwhile 38 (64.4%) adolescents were dyslipidemia. Table 1 lists characteristics of the subjects.

There were no significant differences between obese adolescents with dyslipidemia according to sex (p=0.057) and there were no significant differences in obese adolescents with hypertriglycerides by sex (Table 2).

The average TNF-α level in the obese group with dyslipidemia was 149.16 ng/l, while the non-dyslipidemia group was 143.58 ng/l. The average hsCRP level in the obese group with dyslipidemia was 2390.50 ng/ml, while the non-dyslipidemia group was 2161.06 ng/ml. The mean diameter of the left common carotid artery in the obese group with dyslipidemia was 6.51 mm, while the non-dyslipidemia group was 6.46 mm. Meanwhile, the average CIMT in the obese group with dyslipidemia was 0.54 mm, while the non-dyslipidemia group was 0.47 mm.

There was no correlation between hsCRP and CIMT (r = 0.072; P=0.589) but hsCRP had a positive correlation with the left common carotid artery diameter (r = 0.284; P=0.029). There was no correlation between TNF-α and the diameter of the common carotid artery or CIMT (r = -0.057; P=0.669; r = -0,089; P=0.501). There was no correlation between cholesterol, HDL, LDL and triglycerides with the diameter of the sininstra communic carotid artery (r=-0.209;P=0.113; r=-0.221;P=0.093; r=-0.014;P=0.289; r=-0.0125;P=0.346). There was no correlation between Cholesterol, HDL, LDL and triglycerides with CIMT (r=0.154;P=0.243; r=0.079;P=0.550; r=0.168;P=0.204; r=0.058;P=0.665).

There was no correlation between hsCRP and CIMT (r=0.072;P=0.589). However, hsCRP had a positive

correlation with the diameter of the left common carotid artery (r=0.284;P=0.029). There was no correlation between TNF-α and the diameter of the common carotid artery or CIMT (r=-0.057;P=0.669; r=-0.089;P=0.501). There was no correlation between cholesterol, HDL, LDL and triglycerides with the diameter of the sininstra communic carotid artery (r=-0.209;P=0.113; r=-0.221;P=0.093; r=-0.014;P=0.289; r=-0.0125;P=0.346). There was no correlation between Cholesterol, HDL, LDL and triglycerides with CIMT(r=0.154;P=0.243; r=0.079;P=0.550; r=0.168;P=0.204; r=0.058;P=0.665) (Table 4).

There was a positive correlation of hsCRP with the sininstra communist carotid artery diameter in female subjects (r=0.533;P=0.004 dan r=0.452;P=0.018), but no correlation between hsCRP and CIMT (r=0.048;P=0.811) (Table 5).

Table 6 shows no significant correlation between hsCRP and the diameter of left communist carotid artery and CIMT in boys.The effect of hsCRP on the diameter of left communist carotid artery has a model of regression with the common carotid artery diameter equation = 5,045 + 0.001 x hsCRP in girls, but not found in boys.

Table 1. Characteristics of research subjects

Variable	Amount (Percentage)
Sex	
Boy	32 (54.2)
Girl	27 (45.8)
Dyslipidemia	
Yes	38 (64.4)
No	21 (35.6)
Hypertriglyceride	
Yes	13 (22)
No	46 (78)
Mother's occupation	
Employed	36 (61)
Unemployed	23 (39)
	Mean
Weight (kg)	80.77 (53.5-112)
Height (cm)	158.76 (140.8-175.5)
Body mass index (kg/m^2)	31.99 (26.6-41.13)
TNF-α (ng/l)	147.17 (20.63-337.11)
hsCRP (ng/ml)	2308.83 (285.79-2941.37)
Total cholesterol (mg/dl)	176.13 (119-278)
LDL (mg/dl)	117.81 (62-196)
HDL (mg/dl)	44.42 (31-67)
Triglyceride (mg/dl)	118.11 (30-343)
CIMT (mm)	0.516 (0.32-0.82)
Diameter of left common carotid artery (mm)	6.49 (4.5-10)
Plaque in left common carotid artery	
Negative	59 (100)
Positive	0 (0)

TNF-α, tumor necrosis factor alpha; hsCRP, high-sensitivity C-reactive protein; LDL, low density lipoprotein; HDL, high density lipoprotein; CIMT, carotid intima-media thickness.

Table 2. The incidence of dyslipidemia and hypertension by sex

Variable	Boys (n/%)	Girls (n/%)	P
Dyslipidemia	24 (63.15)	14 (36.85)	0.057
Hypertriglyceride	9 (69.23)	4 (30.77)	0.181

* significant

Table 3. Average hsCRP levels, TNF-α, left common carotid artery diameter, CIMT in dyslipidemia.

Variable	Dyslipidemia (n/%) Mean	Non dyslipidemia Mean
hsCRP (ng/ml)	2390.50	2161.06
TNF-α (ng/l)	149.16	143.58
Diameter of left common carotid artery (mm)	6.51	6.46
CIMT (mm)	0.54	0.47

hsCRP, high-sensitivity C-reactive protein;TNF-α, tumor necrosis factor alpha; CIMT, carotid intima-media thickness.

Table 4. Correlation between TNF-α, hsCRP, lipid profile with diameter of left communic carotid artery and CIMT

Variable	TNF-α	hs-CRP	LDL	HDL	Cholesterol	Triglycerides
CIMT						
r	-0.089	0.072	0.168	0.079	0.154	0.058
P	0.501	0.589	0.204	0.550	0.243	0.665
Diameter of left communist carotid artery						
r	-0.057	0.284	-0.014	-0.221	-0.209	-0.0125
P	0.669	0.029*	0.289	0.093	0.113	0.346

*P< 0.05 indicates statistical significance

TNF-α, tumor necrosis factor alpha; hsCRP, high-sensitivity C-reactive protein; LDL, low density lipoprotein; HDL, high density lipoprotein; CIMT, carotid intima-media thickness.

Table 5. Correlation in female subjects

Variable	hsCRP
Diameter of left communist carotid artery	
r	0.452
P	0.018*
CIMT	
r	0.048
P	0.811

* P< 0.05 indicates statistical significance

hsCRP, high-sensitivity C-reactive protein; CIMT, carotid intima-media thickness.

Table 6. Correlation in male subjects

Variable	hsCRP
Diameter of left communist carotid artery	
r	0.156
P	0.393
CIMT	
r	0.118
P	0.522

*P< 0.05 indicates statistical significance

hsCRP, high-sensitivity C-reactive protein; CIMT, carotid intima-media thickness.

Discussion

TNF-α is one of the main cytokines produced by fat tissue, especially monocytes, lymphocytes, adipose tissue and muscles. TNF-α activity increases the release of free fatty acids in adipocytes, blocks the synthesis of adipokine and interferes the phosphorylation of tyrosine residues in the first substrate of insulin receptors. TNF-α activates NF-κB, lead to enhancement expression of adhesion molecules on the surface of endothelial cells and vascular smooth muscle cells, causing inflammation in adipose tissue, endothelial dysfunction and eventually atherogenesis. TNF-α involved in insulin resistance and atherosclerosis by increasing the production of Th2 cytokines (IL-4 and IL-5) and increase the expression of leptin and IL-6 in fat cells. IL-6 stimulates acute phase protein production in the liver and increases CRP levels which lead to mild inflammation in endothelial cells, causing endothelialcell dysfunction, atherosclerosis and other cardiovascular complications.

CIMT is a structural marker of atherosclerosis. The combination of measurement of the media layer and intima in the communic carotid artery is used for early identification of systemic atherosclerosis now.[4] The average CIMT size of Asian children is 0.469-0,476 mm.[7] CIMT is associated with cardiovascular risk factors and the severity of atherosclerosis. Subjects with carotid plaque >1.9 mm had a 2.8-fold higher risk of cardiovascular events than subjects without carotid plaque (hazard ratio, 2.80; 95% CI, 2.04-3.84).[8]Plaque was not found in obese adolescents in this study.

In obesityoccurs a chronic inflammatory process, so obese children have a higher indicator of atherosclerosis than normal children that are related to the inflammatory process, such as levels of CRP in the blood.[2] Increasing of CRP levels and decrease of adiponectin indicate inflammatory process. The changes in CRP and adiponectin levels are associated with the increase of CIMT.[9] There is a positive correlation between CIMT and waist circumference with levels of TNF-α[10] and hsCRP[11]. Studies in Indonesia stated that TNF-α levels did not differ significantly in obese and non-obese groups[12]which is in line with this research. But another study showed there was a positive correlation between obesity and an increase in CRP levels.[13]

31% of obese children with metabolic syndromes.[14] Dyslipidemia (impaired lipid profile) is a component of the metabolic syndrome and a risk factor for atherosclerosis. Dyslipidemia associated with obesity is characterized increase of triglyceride levels, decrease of HDL cholesterol levels and an increase in LDL cholesterol levels.[15] Silva et alstated HDL cholesterol levels had a negative correlation with CIMT.[13]CIMT is associated with LDL cholesterol levels and the ratio of LDL/HDL cholesterol.[16] LDL cholesterol (OR; 1,325, 95% CI; 1,046-1,821, P=0.033) and HDL cholesterol (OR; 0.093, 95% CI; 0.038-0,227, P<0.001) are predictors of carotid plaques.[16]Other studies show that there is no correlation between blood fat levels and CIMT[2]which is in line with this study.

Obese adolescents had thicker CIMT (0.69 mm) than normal adolescents (0.38 mm).[17] The higher of BMI, the greater the thickness of CIMT.[18] There is a positive correlation between CIMT and body fat most commonly found in children with visceral obesity.[13]There was no association between visceral obesity as indicated by waist circumference with CIMT in this study which is in line with the study conducted by Song et al.[19]

The relationship between blood fat levels and CIMT is still controversial. High level of triglyceride associated with the development of atherosclerosis, but the mechanism is unclear. CIMT is inversely proportional to triglyceride levels.[7)]

Studies show the relationship of the risk of cardiovascular disease is higher in girls than boys,[20, 21)] which is consistent with this study where hsCRP had a positive correlation with the left common carotid artery diameter (r=0.533;P=0.004 dan r=0.452;P=0.018). The common carotid artery diameter equation = 5.045 + 0.001 x hsCRP in girls. This correlation were not found in boys.

The diameter of the common carotid artery had a positive correlation with hsCRP (r = 0.284; p = 0.029). In girls, hsCRP had a positive correlation with the diameter of the left common carotid artery (r = 0.533; P=0.004 and r = 0.452; P=0.018) with the syninial common carotid artery diameter equation = 5.045 + 0.001 x hsCRP, but not found in boys.

Conclusion

There was no correlation between TNF-α, hCRP and lipid profile with CIMT.

Conflict of Interest: None

Ethical Clearance: This study were registered with ethical clearance number 0411/KEPK/VII/2018 issued by Ethical committee in health research of Dr. Soetomo General Hospital Surabaya.

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Survey on Health Indicators of Selected Rural Area of Chhattisgarh

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Abstract

According to WHO more than half of world's population lives in villages and rural areas. It is a challenging for the health care workers to protect and improve the health in rural areas[1]. Health of an individual or a community depends on many determinants and survey of any area will help to identify the socio demographic characteristics of particular region and to find the disparities in health services[1]. A survey done among 58 families which included 466 samples was conducted in Jheet village of Durg district of Chhattisgarh to identify the socio demographic characteristics and health condition with an aim to understand the health issues and factors affecting the health. This will help the health workers to plan health promotion strategies in future. The data was collected using a structured Questionnaire. The results of the demographic characteristics showed that majority (53%) of the samples are males and majority (95%) are Hindu families. 72% of the families are of joint type and 25% are of nuclear type. 75% of the population is married and 74% are engaged in private occupation. Results of housing standards showed that 49% of the families are residing in pucca house, 32% are in semipucca houses and 19% in kachha houses. Majority (97%) of families are using dumping as method of waste disposal. Description of special groups showed that samples consisted of 43% eligible couple, 30% target couples, 14% postnatal women, 11% antenatal women and 2% infertile couple. The vital events occurred in the community in one year were 17 births and 2 deaths. Survey on prevalence of disease conditions among 94 samples, Majority were having hypertension (30%) and diabetes (18%), anemia (12%) and psychiatric illness (6%). The major substance abuse present among the samples was alcoholism and pan chewing (24%).

Keywords: *Rural survey, Jheet village, Socio Demographic characteristics, Health Indicators.*

Introduction

Health of an individual or a community depends on many determinants which include environmental conditions, life style, income, safe water supply, sanitation and available health services. The health problems of each community should be identified to provide need based care to the community. Survey of any area will help to identify the socio demographic characteristics of particular region and to find the disparities in health services[1].

According to WHO more than half of world's population lives in villages and rural areas. They are facing many issues which directly or indirectly affect their healthy living and meeting basic living standards. It is a challenging for the health care workers to protect and improve the health in rural areas[1].

India is the 2nd populous country in the world and has changing patterns of health problems, needs, policies and system which is drawing global attention. Many governmental programmes and initiatives are present

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which is applied mainly in the rural and backward community but still there is a matter of health concern which is to be addressed among those populations. Socio economic condition, beliefs, customs and environmental conditions create challenges for health sector in improving the health condition of the vulnerable population. The health issues to be addressed according to the felt needs. A survey on health indicators helps to understand the present scenario and plan future activities for improving health and reframing the socio economic structure and living condition of the rural community[2].

Health indicators are the measurement which reflects the current situation. The health indicators not only merely help to observe and document but to drive decision making in health and reduce disparities[3]. This survey was conducted to analyze the socio economic factors and health status of the rural population of Jheet village, Durg district of Chhattisgarh. The aim of the study was to address the disparities in socio economic condition and health status which will help the health workers to plan health promotion strategies in future according to the need of the people of the particular area and improve their living condition. The objectives of the study were to study the demographic conditions of sample population in the study area, to analyze the socio economic condition among sample population in the study area and to investigate the prevalence of health problems among sample population in the study unit.

Material and Method

This quantitative study adopted a descriptive approach to identify the health indicators of the samples of selected rural population and the design used was descriptive survey design. The survey was done among 58 families which constituted 466 samples. The data was collected using structured survey questionnaire which included questions regarding socio demographic characteristics, environmental condition, vital statistics and health status. Interview method was used to collect the data by doing house to house visit. The questions were read by the researchers and responses were marked. The data regarding family condition like housing standard, waste disposal, religion, vital events was collected from the head of the family and data regarding age, occupation, marital status and health status was collected from samples.

Findings: The results of the survey are organized under following headings:

1. **Demographic characteristics among samples of rural area:** The demographic characteristics like age, gender, marital status and religion were analyzed using percentage distribution and shown in figure 1.

n=466

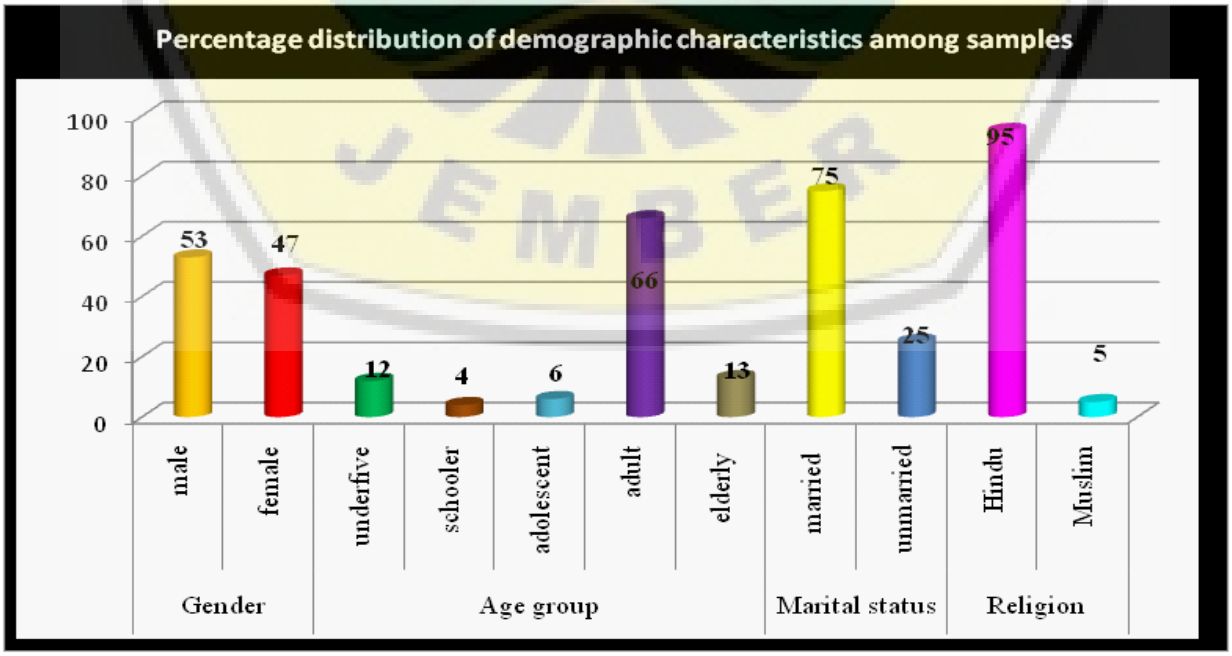

Figure 1: Percentage distribution of demographic characteristics among samples of rural area

Figure 1 shows that majority of the samples are males and married. Most of them belong to Hindu family. The sample consisted 66% of adult population, 13% of geriatric population, 12% of under five children and 6% of adolescents. The results conclude that health services should focus on reproductive age group and on family welfare services. More emphasis should be given on care of under five children and health measures for elderly population. The focus on these areas will improve the health status and living standards of rural population.

2. **Socio economic characteristics among samples of rural area:** The socio economic characteristics was analyzed among 58 families like housing, type of family, waste disposal method,occupation and reproductive health was analyzed among 466 samples using percentage distribution and shown in figure 2 and figure 3.

n=58

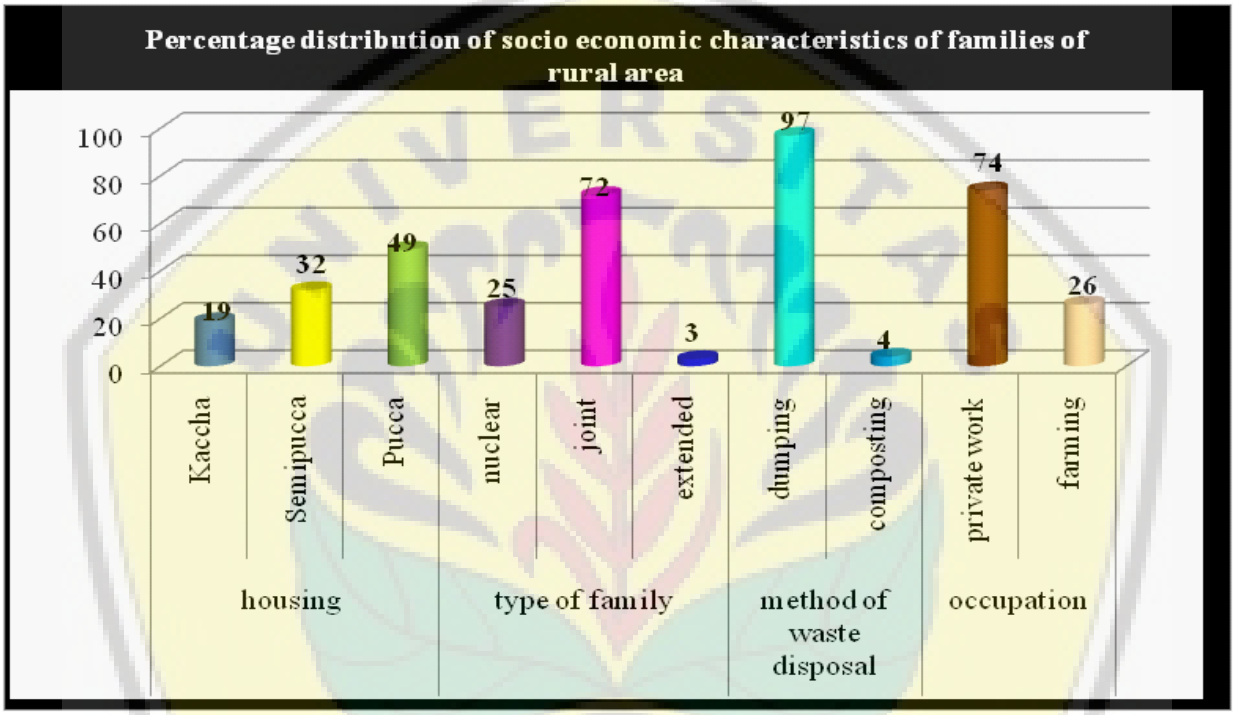

Figure 2: Percentage distribution of socio economic characteristics among samples of rural area

n=63

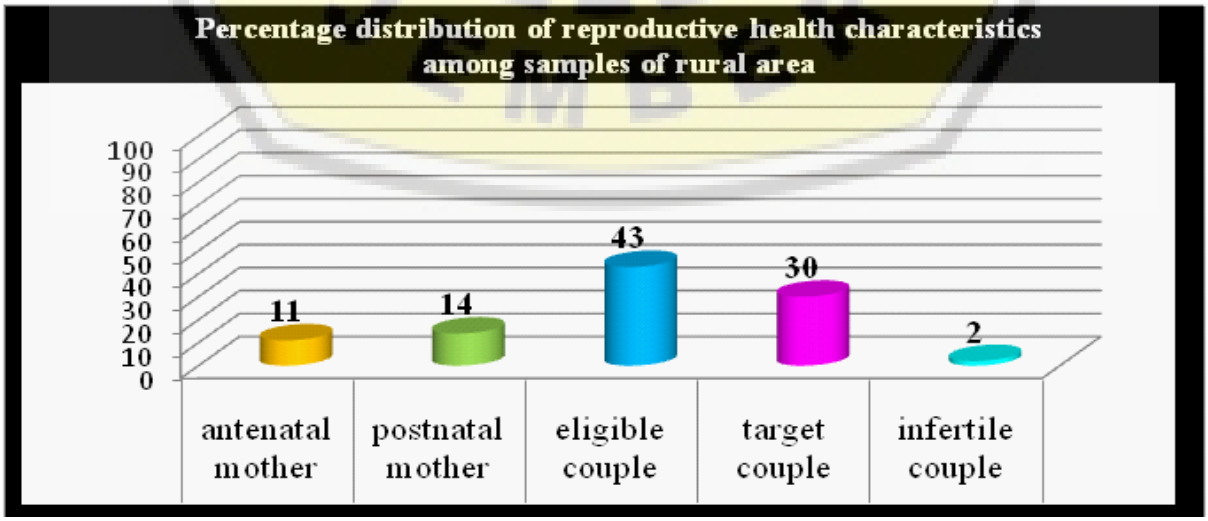

Figure 3: Percentage distribution of reproductive health among samples of rural area

Figure 2 shows that 19% of families are residing in Kaccha houses and 32% of families are residing in Semi Pucca houses. Most of them (72%) belong to joint family. 97% of the families are using dumping as a method of waste disposal. Majority of the sample (74%) are doing private work and 26% are farmers. The results concluded that housing standards and waste disposal method should be addressed which will contribute to the health status of the population. The government initiatives for improving housing standards and developing compositing method for waste disposalshould be implemented more effectively in the rural areas. Figure 3 shows that 43% eligible couples and 30% target couples are present in the selected rural area. Infertile couple consists of 2% of the samples. It is concluded that family planning measures and welfare services should be addressed among the population to improve the standard of living.

3. **Prevalence of health problems among sample population in the study unit:** The prevalence of health problemswas analyzed among the samples and computed using percentage distribution as shown in figure 4.

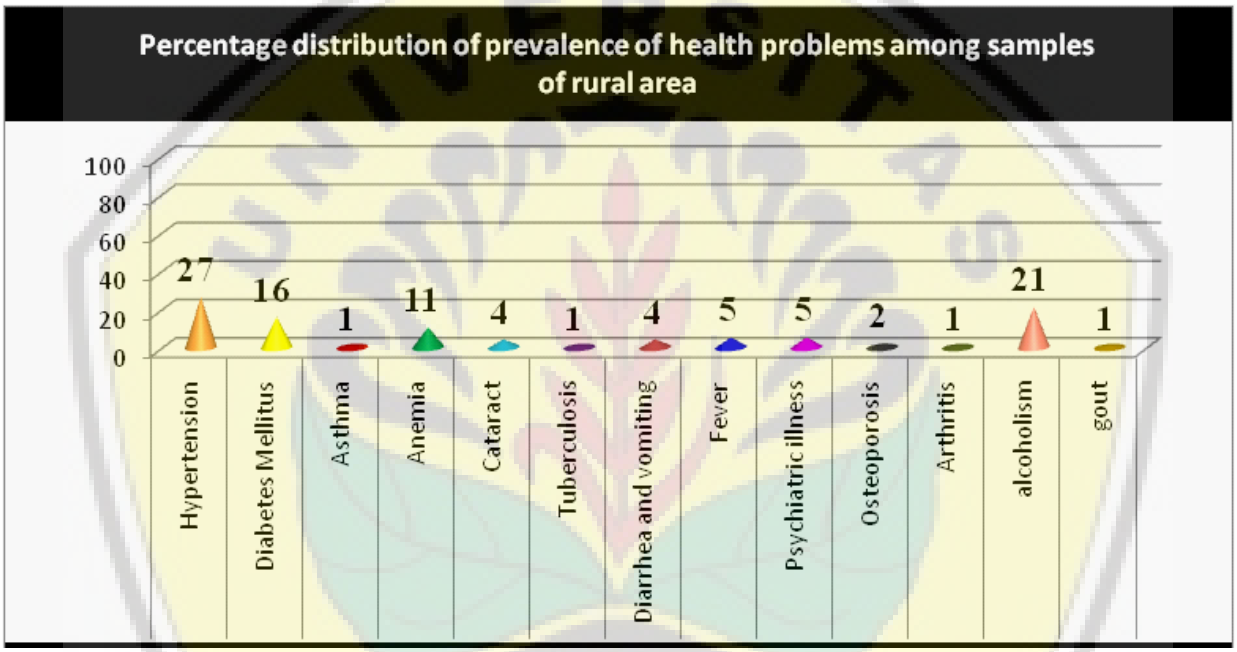

Figure 3: Percentage distribution of prevalence of health problems among samples of rural area

Figure 3 shows that major health problems present in the community were hypertension (27%) and alcoholism (21%). Diabetes mellitus (16%) and anemia (11%) are also present in the community which is to be addressed. The other health problems found among samples are asthma, cataract, psychiatric illness, orthopedic health problems, fever, diarrhea, vomiting and tuberculosis. The results concluded that health education and awareness programmes to be conducted on prevention of non communicable disease programmes and motivate public health workers to strengthen non communicable disease prevention programmes. Rehabilitation programmes should also be initiated to reduce the impact of health problems on community.

Conclusion

The slogan "Health for all" to be attained to provide minimum standard of living to all people in the country. Primary care is the most basic and, along with emergency and public health services, the most vital service needed in rural communities[4]. Primary health care are given importance to deliver the need based health care services to the rural population. There are many factors which hinder delivery of quality care to the rural population. Demographic characteristics, Socio economic factors and reproductive health factors as mentioned in the article will pave light to the current scenario and make the providers aware about the areas where the programmes

to be concentrated. Many other factors like literacy rate, income, mortality rate etc also can be explored further to add clarity to the survey. Local rural healthcare systems are fragile; when one facility closes or a provider leaves, it can impact care and access across the community. Each care provider should ensure that better health care services are reaching the hands of the rural people which will have an impact on the development of the country[4].

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance:

- Informed consent of the samples was taken
- Confidentiality of the information was maintained

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Prevalence of Temporomandibular Joint Dysfunction in Hearing and Speech Impaired Adolescents

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Abstract

Objectives: Objective of this study was to find out the degree of mouth opening, right and left lateral excursion. On the basis of numerical pain rating scale pain assessment was done. The severity was graded on the basis of fonseca's questionnaire.

Methodology: There were total 94 subjects, out of which 70 subjects were participates of this study. This was a study of temporomandibular joint dysfunction in hearing and speech imapired adolescents. Here we evaluated degree of mouth opening, right and left lateral excursion, pain present or absent and graded them on the basis of Fonseca's questionnaire.

Result: There is relation between Temporomandibular joint dysfunction and hearing and speech imapired adolescents. Temporomandibular joint dysfunction is found more within the age group of 16-18 years as compared to 12-15 years.

Conclusion: There is prevalence of temporomandibular joint dysfunction in hearing and speech imapired adolescents.

Keywords: *Hearing and speech imapired adolescents, temporomandibular joint dysfunction.*

Introduction

The temperomandibular joint is a synovial joint, in which articular disc helps to perform hinge and sliding movements. Chewing, swallowing and talking, are normal mouth functions performed by temporomandibular joint.[1] Osteokinematic and arthokinematic movements are required for normal function of temporomandibular joint. Mandibular depression, elevation, protrusion, retrusion and left and right excursions are the movements which are included in osteokinematic, while rolling; anterior glide, distraction and lateral glide are included in arthrokinematic.[2] Movement at this joint are produced by the muscles of mastication and the hyoid muscles. The two division of the temporomandibular joint have different functions.

Protusion: Lateral pterygoid muscle assisted by medial pterygoid and

Retraction: Posterior fibers of temporalis.

Elevation: temporalis, masseter and medial pterygoid muscles.

Depression: Digastric, geniohyoid and mylohyoid muscles.

Pain in the masticatory muscles and at the joint is referred as joint disorder or dysfunction which is the most common pathology related to temporomandibular joint.[9]

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Signs and symptoms of joint dysfunction:

- pain in the area of jaw
- oedema around the mandibular condyle
- increased or decreased active or passive range of motion
- popping or clicking sound
- catching or locking of jaw
- forward head posture[2]

Normal ranges:

Degree of Mouth opening: 50.6 +/- 6.4mm

Right lateral excursion: 10.2 +/- 2.2mm

Left lateral excursion: 10.6+/- 2.3mm

According to the reports, it is most common in women.[14] According to epidemiological studies, approximately 50-75% of population presented with some signs of joint dysfunction.[13] It has multifactorial etiology.[3] Combination of muscle tension, anatomical problems and injury is the most often cause of temporomandibular joint dysfunction [8] Also, there are other risk factors which causes injuries to temporomandibular joint resulting in joint derangement, joint degeneration, masticatory muscle dysfunction, pain and progressive clinical disability.[4]

Around 466 million people worldwide have disabling hearing loss and 34 million of these are children. [5] 63 million people are suffering from significant hearing loss in India.[12]

Deafness refers to the complete loss of hearing ability in one or two ears. Hearing impairment refers to the complete or partial loss of the ability to hear from one or both ears. Hearing loss can be conductive, sensorineural or mixed type and can be congenital or acquired. Majority of deaf individual do not use spoken language, thus they are mute. Deaf mute individuals are those people who are deaf and use sign language or both deaf and could not speak. True communication is in which one understands the message by others and respond in same manner[16].

Two conditions may result muteness:

1. Physical muteness is in which individual has problem in throat or vocal cords and cannot speak.
2. In deaf individual they can make sound but cannot speak because they cannot hear.[16]

Appropriate communication and learning, are the basic necessity for the normal development and maturation of the child which is limited in hearing and speech impaired individuals..[10] Hearing loss before the age of 2-3 years is the one of the causative factor which affects the child's ability to learn how to speak. An individual who is congenitally deaf is also the possible causative factor.[11] For the development of speech in an individual, listening is the essential component. Our spoken tone, pitch and rhythm are modulated with the help of our ears. Speech impairments are often developed in people who experience hearing loss and may stop to speak entirely.[6] The main impact of hearing loss is the individual's ability to verbally communicate with others and the way left to communicate is sign language and writing for communication and interaction.[17] There is very limited verbal interaction, if any. This in return limits the activity of jaw. This may lead to change in range of motion of temporomandibular joint. But there is very limited literature available which shows the co-relation of hearing loss and its impact on communication. So this study is aimed to find out the possibility of signs and symptoms of temporomandibular joint dysfunction and its relation with the hearing loss.

Methodology

Total 94 subjects were approached through DS Erram hearing and speech imapired school and out of them only 70 subjects were selected for the study who fulfilled inclusion criteria. There were 42 male and 28 female participants. The procedure was explained and consent was taken from those willing to participate and written assent was taken from caregivers. Here we evaluated their degree of mouth opening, right and left lateral excursion, pain present or absent and graded them on the basis of fonseca's questionnaire. Range of right and left lateral excursion and also degree of mouth opening was recorded by using vernier caliper. Pain was assessd on rest and activity by using Numerical Pain Rating scale. They were graded according to their signs and symptoms based on Fonseca's Questionnaire. Data was collected. Later statistical analysis was done in accordance to distribution of the age, both genders, score of Fonseca's Questionnaire, right and left lateral excursion, degree of mouth opening, pain at rest and pain on activity.

Result

1. Age and gender wise distribution:

Table No. 1: Age and gender wise distribution.

Serial No.	Age Group	Subjects	Gender	
			Male	Female
1	12-15	42	27	15
2	16-18	28	15	13
Total		**70**	**42**	**28**

Interpretation: Above table represents, in age group 12-15 years there are total 42 subjects out of which 27 are males and 15 are females and in age group 16-18 years, there are total 28 subjects out of which 15 are males and 13 are females.

2. Results of Numerical Pain Rating Scale (NPRS):

Sr No	Pain		P value		T value		Interference	
	Rest	Activity	Rest	Activity	Rest	Activity	Rest	Activity
1	0.142±0.3914	0.623±1.436	<0.0001	<0.0001	3.054	3.605	Very significant	Extremely significant

Table No. 2: Pain at rest and Pain on activity

Interpretation: Above table represents Pain at rest mean and and SD value is 0.142±0.3914, p value is <0.0001 and t value is 3.054. pain on activity mean and SD value is 0.623±1.436, p value is <0.0001 and t value is 3.605.

3. Degrees of mouth opening:

Table No. 3: Degree of mouth opening, Right lateral excursion and Left lateral excursion.

Sr. No.	Range of motion	Normal	Decreased	Mean ± SD
1.	Mouth opening	47	23	44.042 ± 5.752
2.	Right lateral excursion	60	10	9.258 ±1.451
3.	Left lateral excursion	61	9	9.374 ± 1.472

Interpretation: Above table represents 67% (47 subjects) of subjects have normal range of mouth opening and 33%(23 subjects) of subjects have decreased degree of mouth opening. Mean and standard deviation is 44.042 ± 5.752. In right lateral excursion, 86%(60 subjects) of subjects have normal range and remaining 14%(10 subjects) of subjects have decreased range and mean and SD is 9.258 ±1.451. in left lateral excursion 87%(61 subjects) of subjects have normal range and 13%(9 subjects) of subjects have decreased range and mean and SD is 9.374 ± 1.472.

4. Scoring of Fonseca's Questionnaire

Table No. 4: Scoring of Fonseca's Questionnaire

Serial No.	Score of Fonseca's Questionnaire			Mean±SD
1	No TMD	Mild TMD	Moderate TMD	16.57±14.977
2	47	18	5	

Interpretation: Above table represents, Score of Fonseca's Questionnaire, 47 subjects have no temporomandibular joint dysfunction, 18 subjects have mild temporomandibular joint dysfunction and remaining 5 subjects have moderate temporomandibular joint dysfunction.

5. Prevalence of temporomandibular joint dysfunction:

Table No. 5: Prevalence of temporomandibular dysfunction.

Serial No.	Prevalence	
1	Absence of TMD dysfunction	Presence of TMD dysfunction
2	47	23

Interpretation: Out of 100%, 33% (23 subjects) of subjects have temporomandibular dysfunction and remaining 67% (47 subjects) of subjects have no temporomandibular dysfunction.

Discussion

Temporomandibular joint carries out various functions like chewing, swallowing, talking, etc. Appropraite communication and learning is the basic necessity for normal development and maturation of child, which is limited in hearing and speech imapired individuals.

For the development of speech, listening is an important component which is impaired in deaf individuals. Ear helps to modulate our spoken tone, rhythm and pitch. Hearing and speech impaired individuals use sign language for communication. There is very limited verbal interaction, if any. This in return may limit the acitivity of jaw. This may lead to change in range of motion temporomandibular joint.

The purpose of this study it was to find out the prevalence of temporomandibular joint dysfuncytion in hearing and speech impaired adolescents.

The study was carried out and the result was drawn by fonseca's questionnaire, vernier caliper and NPRS.

Total 94 subjects were approached out of which 70 subjects were included in study who fulfilled the inclusion criteria (female- 28 and male- 42) and age group 12-18 years .The subjects were taken from DS Erram hearing and speech impaired school. This age group included individuals diagnosed as hearing and speech impaired individuals and both male and female participants were included. They all didn't have any ear infection, any recent temporomandibular joint surgery and also recent trauma. Consent form was taken from the subjects and assent form from their caretakers.

It was found that among 70 subjects, 60% subjects belonged to 16-18 years of age group and remaining 40% belonged to 12-15 years of age group. In age group 12-15 years, there were total 42 subjects out of which 27 were males and 15 were females. In age group 16-18 years, total 28 subjects were there out of which 15 were males and 13 were females.

Pain was assessed using numerical pain rating scale. Among 70 subjects, 87% of subjects had no pain at rest and 13% of subjects had mild pain at rest but no one had moderate and severe pain in the basis of numerical pain rating scale.

80% of subject had no pain on activity, 13% of subjects had mild pain on activity and remaining 7% had moderate pain on activity, but no one had severe pain on activity.

Range of motion was assesd with the help of vernier caliper and according to the result it was found that 14% of subjects had decreased range of right lateral excursion and 86% of subjects had normal range of right lateral excursion.

Out of 100%, 13% of subjects had decreased range of left lateral excursion and 87% of subjects had normal range.

Among 100%, 67% had normal degree of mouth opening and 33% had decreased degree of mouth opening.

According to Fonseca's Questionnaire scoring, 71% of subjects showed no signs and symptoms of temporomandibular joint dysfunction, 21% of subjects showed mild symptoms of temporomandibular joint dysfunction and 2% of subjects showed moderate symptoms. In age group 12-15 years, 39 subjects had no symptoms of TMD, 3 had mild symptoms of TMD and no one had moderate and severe symptoms. Out of 3 subjects, 2 were females and one was male. In age group 16-18 years, 8 subjects had no symptoms of TMD, 15 had mild symptoms of TMD and 5 had moderate symptoms of TMD. Out of 15 subjects with mild symptoms, 10 were famales and 5 males. Out of 5

subjects with moderate symptoms 3 were females and 2 males..

Out of 70 subjects, 47 subjects had no signs and symptoms of temporomandibular joint dysfunction, 18 subjects had mild signs and symptoms of temporomandibular joint dysfunction and remaining 5 subjects had moderate signs and symptoms of temporomandibular joint dysfunction. Prevalence of 33% of temporomandibular joint dysfunction in hearing and speech impaired adolescents was present.

Conclusion

On the basis of the results of the study, it can be concluded that there is prevalence of 33% Temporomandibular joint dysfunction in hearing and speech imapired adolescents. Temporomandibular joint dysfunction is found more within the age group 16-18 years as compared to 12-15 years. In age group 12-15 years of age, 13% subjects had symptoms of temporomandibular joint dysfunction and in age group 16-18 years of age 87% had symptoms of temporomandibular joint dysfunction.

Conflicts of Interest: There were no conflicts of interests in this study.

Ethical Clearance: Ethical clearance was taken from institutional committee of Krishna institute of medical sciences, deemed to be University, Karad.

Funding: No funding.

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The Smoking Behavior of Adolescents and Impact to the Psychological Health

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Abstract

Smoking behavior mostly occur in adolescence which is characterized by increased frequency and intensity of smoking. Smoking can cause various diseases and deaths. There are internal factors and external factors that influence smoking behavior. The study aims to determine the influence of adults, peers, advertisements and curiosity motive and the psychological impact on adolescents in Tinggede Village, Sigi Regency. This study uses a mix method research type. The sample size and informants involved were 46 respondents and 6 informants. Quantitative research data were analyzed univariat using the chi-square test. The results showed there was a relationship between the influence of parents (ρ = 0.039), peers (ρ = 0.039) and curiosity motive (ρ = 0.018) with adolescent smoking behavior and there was no relationship between advertisement and adolescent smoking behavior (ρ = 0.238). As well as the perceived psychological impact of informants feeling more confident, feeling calm and feeling fine. The conclusion of this study is that there is a relationship between the influence of adults andpeers and motive of curiosity with adolescent smoking behavior and there is no relationship between advertisement and the smoking behavior and psychological impact on adolescents in Tinggede Village, Marawola District, Sigi Regency. It is recommended for adolescents to be able to be selective in facing the influence of adults, peers and positive or negative advertisements in everyday life.

Keywords: *Smoking, adolescent, impact, psychological.*

Introduction

The increasing prevalence of smoking causes the problem of smoking to become increasingly serious. According to the WHO(1), the number of world smokers reached 1.35 billion people. About 1 billion men in the world are smokers, 35% of them are from developed countries and 50% from developing countries. On the average of 435,000 residents in the United States have died from diseases related to smoking habits each year (1 of 5 deaths).

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Based on 2008 Global Youth Tobacco Survey (GYTS) data, 30.1% of the population of Southeast Asia are smokers. In Indonesia, 57,563,866 adult residents are smokers, making it the fifth highest cigarette consumer country in the world[1].

According to WHO[1], it can be concluded that Indonesia ranks third after China and India in the ten largest smokers in the world. The number of smokers in Indonesia reaches 65 million. Meanwhile, China has 390 million smokers and India 144 million smokers. Tobacco kills more than 5 million people every year and in 2020, it is projected to reach 10 million people.

The data from the Health Promotion Technical Implementation Unit of the Central Sulawesi Provincial Health Office, it is known that there are 172 (57.14%) households that smoke in Palu City from the 301 monitored households. In 2012, 63.34% of them smoked.

Then, it increased in 2013 as many as 57.14% of them smoked[2].

Smoking is a health problem because it can cause various diseases and even death. Smoking is a major factor in cardiovascular disease and hypertension. Cigarettes contain hundreds of chemical components that are toxic and oxidative. Smoking habits allow toxic substances in cigarettes to accumulate in the blood, one of which is nicotine[3].

Based on the results of Basic Health Research in 2010, most smokers started smoking when they were children or adolescents. Adolescence is a period of transition from childhood to adulthood and at this age, teenagers or adolescents do a lot of smoking behavior. Smoking behavior in adolescents continues in accordance with the stages of development that will increase which is marked by increasing frequency and intensity of smoking[4]. Smoking habits in adolescents are influenced by several factors such as adults, peers, personality and information media that display cigarette advertisements[5].

Method

The type of research used was quantitative research with a cross sectional study approach, conducted in September 2015. The research was conducted in Tingggede Village, Marawola District, Sigi Regency. The population of the study was 83 adolescents and there were 46 respondents taken as samples with Simple Random Sampling technique.

Data Collection: The research data used are primary data and secondary data. The primary data were obtained from the results of observations and interviews with adolescent smokers. The process of data collection is done by using a questionnaire to describe the variables studied. While the secondary data was obtained from the Office of the Village Head of Tingggede, Marawola District, Sigi Regency, in the form of data on the number of teenagers. The variables in this study consist of dependent variables and independent variables. The dependent variable is smoking behavior in adolescents. While the independent variables include the influence of adults, peers, the influence of advertisements and the motives of curiosity. After data collection was done, the data was processed and analyzed. Then, the results of the analysis were presented in the form of a frequency distribution table that explains everything related to this research.

Results

The Factor of Smoking Behavior: Table 1 showed that smoking teenagers who imitate adult smokers are as many as 16 people or 34.8% while those who do not imitate adult smokers are as many as 30 people or 65.2%. Chi Square test results obtained a value of ρ (α (0,000 <0,05) or X2 calculate value (4,261) > X2 table (3,841) so that Ho in this study was rejected, meaning that there is a relationship between the effect of imitating adults and adolescent smoking behavior. This table 1 showed that adolescents who smoke because they imitate their peers are as many as 16 people or 34.8%, while adolescents who do not imitate their peers are 30 people or 65.2%. Chi Square test results obtained a value of ρ ≤ α (0,000 <0,05) or X2 calculate value 4,261) > X2 table (3,841) so that Ho in this study was rejected, meaning that there is a relationship between the effect of imitating peers and adolescent smoking behavior.

Table 1. The Analysis of the Influence of Adults, Peers, Advertisements and Curiosity Motive on Smoking Behavior in Adolescents

Smoking Behavior in Adolescents					
		n	%	X^2	ρvalue
Adults	Yes	16	34,8	4,261	0,039
	No	30	65,2		
Peers	Yes	16	34,8	4,261	0,039
	No	30	65,2		
Advertisements	Yes	19	41,3	1,391	0,238
	No	27	58,7		
Curiosity Motive	Yes	15	32,6	5,565	0,018
	No	31	67,4		

Table 1 shows that there are 19 adolescents or 41.3% who smoke because of the effect of advertisements, while adolescents who smoke not because advertisements are 27 people or 58.7%. Chi Square test results obtained a value of ρ α α (0,000 <0,05) or X2 calculate value (1,391)> X2 table (3,841) so that Ho in this study was accepted, meaning that there is no relationship between the effect of imitating advertising and adolescent smoking behavior. Table 1 shows that adolescents who smoke because of the motive of curiosity are as many as 15 people or 32.6%, while adolescents who smoke not because of the motive of curiosity are as many as 31 people or 67.4%. Chi Square test results obtained a value of ρ α α (0,000 <0,05) or value X2 calculate (0,018)> X2 table (3,841) so that Ho in this study was rejected, meaning that there is a relationship between the effect of curiosity and adolescent smoking behavior.

Discussion

The Relationship of the Effect of Imitating Adults and Adolescent Smoking Behavior: Adults are examples and models for teenagers, but for adults who do not concern the importance of health, they have indirectly taught unhealthy behavior or lifestyle. One reason that makes many adolescents smoke is their parents' poor parenting style, for example, the behavior of parents who smoke and the behavior emulated by their children from generation to generation[6,7]. The results of the analysis show that the value of ρ = 0.039 which means that there is a relationship between imitating adults and adolescent smoking behavior. This can happen because the permissive parenting of parents usually provides very loose supervision. It provides opportunities for children to do things without sufficient supervision. Parents tend not to reprimand or warn their children when they are in danger and very little guidance is given by them. If parents provide good parenting, it is possible for children to follow good behavior from their parents. However, if parents have bad habits or behaviors such as father or mother who also have smoking habits, children will follow the example of their parents' behavior[7]. This study is in accordance with research[8,9], based on the results of the chi-square test, it was obtained ρ = 0.003. This means that there is a relationship between family influence and smoking behavior in adolescents in Slongohimo Wonogiri Public Middle School 1, because the value of ρ <of α or 0.003 <0.05.

The results of this study are in accordance with what was stated by[10]. It is stated that the strongest reason when adolescents become smokers is that if their parents become exemplary figures as smokers. Their children will naturally have a greater chance to imitate and become smokers like them. Parents who smoke will influence their teenagers to smoke more than parents who don't smoke. Adolescents whose both parents and older siblings smoke will be four times more likely to be smokers compared to them whose parents do not smoke.

The Relationship between the Effect of Imitating Peers and Adolescent Smoking Behavior: There are many factors that influence a teenager to smoke, one of which is peer influence. The more a teenager has a smoker friend the more likely he is to smoke.The results of the analysis show that the value of ρ = 0.039 means that there is a relationship between imitating peers and the smoking behavior of adolescents. This can happen because usually peers' conversation, attitudes, interests, appearance and behavior are more influential than parents. This is what is called as conformity. Conformity occurs when adolescents adopt the behavior or attitude of other teenagers or peers because of pressure, either directly or indirectly. Conformity usually causes compliance and obedience. This happens because a teenager wants to maintain his position in the group and he does not want to be considered strange by his friends in his group. Conformity in this case is as a motive for being equal, appropriate, diverse in the group.

This research is similar to research[10,11], based on the results of the chi-Square test, the value of ρ = 0.013 was obtained. It means that there is a relationship between the influence of peers and the smoking behavior of adolescents in Slongohimo Wonogiri 1 Public Middle School, because ρ <of α or 0.013 <0.05. Peers can be interpreted as groups of people who have the same background, age, education and social status and they can usually influence the behavior and beliefs of each member. In addition to the same age level, peers also have the same level of maturity[12].

The Relationships between the Influence of Imitating Advertisements and the Adolescent Smoking Behavior: Advertising is a medium to convey information to public about a product and it has a function to persuade public about cigarette products.The results of the analysis show that the value of ρ = 0.238 which means that there is a relationship between the action of imitating advertisements and smoking behavior of adolescents. This is because cigarette advertising does not stop influencing teenagers to consume cigarettes.

Teenagers cannot avoid the invasion of thousands of advertisements in electronic media and printed media. Mass or electronic media that often display a picture that smokers are the symbol of manliness, triggered teenagers to imitate or follow the behaviors which are performed by the models in the advertisement[13]. This research is similar to Ariani's research (14). Based on the results of the research' data analysis using chi-square, the value of ρ = 0.311 was obtained. This means that there is no relationship between advertising and smoking behavior of Semarang State Senior School 4 students, because ρ <of α or 0.311 <0.05. It also explains that risk factors for the emergence of smoking behavior in adolescents are influenced by several factors, one of which is environmental factors.

The Relationship between the Effect of Curiosity Motive and Adolescent Smoking Behavior: The curiosity motive is a strong desire that emerges from the adolescents to try a new thing that they have not known its positive and negative effects. The results of the analysis show that the value of ρ = 0.018 which means that there is a relationship between the motive of curiosity and the smoking behavior of teenagers. There are several psychological reasons that cause a person to smoke. It is for the sake of relaxation and to reduce anxiety or tension. In most smokers, the psychological bond with cigarettes is due to the need to deal with oneself easily and effectively. Cigarettes are needed as a balance tool. This is the reason that makes teens dare to try smoking. The desire to know and being predictive of the influence of drugs including smoking tend to be the reason for a smoker. Being curious is teenagers' nature. They always want to know everything that they still do not know and its negative effects[15]. This research is similar to Ariani's researh1[3,16]. Based on the results of data analysis using chi-square, the value of ρ = 0,000 was obtained. This means that there is a relationship between the motive to try smoking and smoking behavior in students of Tangerang City Junior High School 3, because ρ <of α or 0,000 <0.05. With the motive of curiosity about smoking behavior, teenagers will start trying and looking for opportunities to smoke. Some teenagers want to try something new. This desire must be controlled by adolescents before knowing what the impact is for themselves and their environment. Teenagers have the nature of always being curious about something they still do not know its negative effect. For example, they want to know how it feels to smoke[16,17,18].

Conclusion The conclusion of this study is that there is no significant relationship between the factors imitating the models in an advertisement and smoking behavior in adolescents. However, there are three factors that have a significant relationship to smoking behavior in adolescents in Tinggede Village, namely the factor of imitating adults, imitating peers and motive of curiosity. Adolescents are expected to be able to increase their knowledge and be able to filter the negative and positive influence of adults, peers and advertisements so that they can be selective and careful in choosing a social environment. There should be parents' attention and control towards the behavior of their children who have started smoking from an early age.

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Knowledge, Attitude and Practices towards Food Labeling Among the Adults in an Urban Area

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Abstract

Most of the pre-packaged food products; imported and locally manufactured; are now provided with nutrition information on their food labels. With the rising concerns about the interrelationship between nutrition; health and life style among rural population; this study has aimed to assess the consumer's awareness about the important information on the labels and to whether those labels will assist them to take right decisions when buying pre-packaged foods. Sample size is 155. Self structured study questionnaire is used. Significant correlations were found between single items on the food label and some of the demographic variables; the overall knowledge of the consumers did not show significant correlation with the overall level of education of the consumers in this study. The findings will bring to the attention of pre packaged food manufacturers and regulators on the need to improve food labeling regulations and food label formats and also provide baseline information for further research.

Keywords: *Pre packaged food, food labels, awareness, food labelling regulations.*

Introduction

Liberalization of trade, globalization and development in food science and technology has resulted in an increase in trade and consumption of pre-packaged foods. Reading food labelling information is important in assisting consumers to better understand the nutritional value of food and enables them to compare the nutritional values of similar food products and to make healthy informed food choices based on the relevant nutrition[1].

Consumer's knowledge and attitudes were positively correlated with their educational level[2-3]. It was evident that even though consumers were aware of the importance of reading food labels; they regarded information on manufacturing date; expiry date and content of the package as the most important information on labels[4]. This indicates that other information such as nutrition facts; serving size; special characteristics; health claims; special usage and health warnings are lacking[5].

Low awareness of food labeling, low level of education, low health consciousness, products attributes, food labeling format, influence of media, perceived role of regulatory authorities and non availability of consumer guidelines on the use of food labeling have been reported by studied from various countries as factors related to consumers not reading and using food labeling information in purchasing food[6-8].

Although little is known about the magnitude of the problem in Tamilnadu, studies conducted in other countries show that small proportion of people are reading and using food labeling information in purchasing pre packaged food products[7-9]. This might

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unknowingly predispose them into buying expired food items, foods with undesired ingredients and or untoward health consequences.

This study has aimed to assess the consumer's awareness about the important information on the labels and to whether those labels will assist them to take right decisions when buying pre-packaged foods. The information will bring to the attention of policy makers on the need to have programs to improve consumers awareness of food labeling information as well as the use of such information in the purchase of food.

Aim: The aim is to determine the knowledge, attitude and practices towards food labeling among the adults in an urban area.

Objective:

- To evaluate the knowledge, attitude and practices towards food labeling among the consumers of food labeling.
- To determine the importance of food labelling information among consumers

Materials and Method

Type of study: Descriptive epidemiological - community based cross sectional study.

Study population: Adult inhabitants in an urban area.

Study area: Anna nagar, metropolitan city in Chennai.

Study period: April 2017 to June 2017

Sample size: 155 calculated with non response rate of 10%.[10]

Study subject: Head of household

Sampling technique: Systematic random sampling technique used.

Selection Criteria:

1. **Inclusion Criteria:**
   - The participant should be resident of the study area
   - Those who give informed consent
2. **Exclusion Criteria:**
   - Those not willing to participate in the study
   - Those who could not communicate
   - Any person who could not be contacted even after 3 visits
   - Those with any acute or chronic illness will be excluded from the study

Data collection procedure and Instruments used: The study after obtaining clearance from the IRB of SIMATS. Information sheet with pertinent information was given to all the participants invited to participate in the study. Written informed consent was obtained from all participants of the study.

A pilot study conducted in the study area for a sample of 30 people. Suitable modifications were made. After selecting the study population, the purpose of the study were explained to the individuals. Following the data collection, analysis was done.Every fourth house was selected and interviewed.

Tools: A self structured questionnaire used

Statistical analysis: Data will be entered in Microsoft excel and data analysis was done using SPSS 16. Association with various factors were analyzed using chi square test. Statistical significance is considered to be 5 % level.

Findings: A total of 158 respondents participated in the study. Males constituted 88 (55.99%) of all respondents. Large proportion of respondents (43.6%) was in the age group 40-49 while the smallest proportion (3.7%) was in the age group 60 and above. Most of the respondents 111 (70.25%) had socioeconomic status has upper middle class.

As shown in figure 1, more than 50% respondents said that the source of food is from provisional stores and supermarket. About 79% of population reported that they buy the packaged foods.

All the study respondents 158 (100%) were aware of food labelling. But only 48 (30.38%) of study subjects claimed to be very much informed about food labelling information.

There is no statistical significance between level of information about food labelling and demographic characteristics (M/F) .(Analysis table 1)

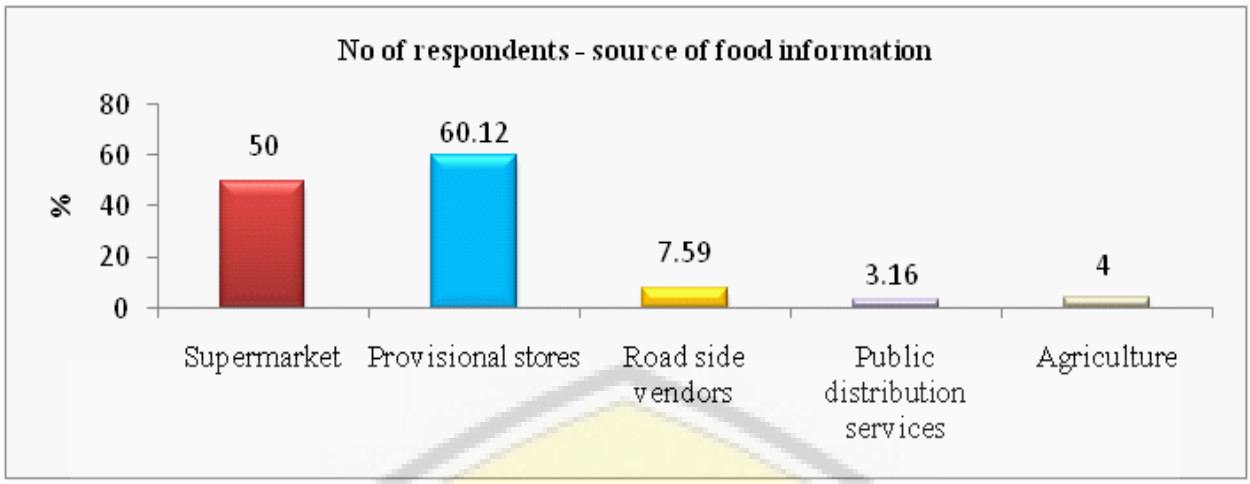

Figure 1

58.22% of respondents said that they know about food labelling through media and least is from retailers (5.69).

More than 70% respondents were well familiar with expiry date (97.46), manufacture date(86.70%), nutritional value (72%), instruction for use (80.37%), Price (94.30), Trade mark (88.60) and Name of manufacture (74%).87.97% respondents were satisfied with the information provided but knowledge of existing matters need to be developed, while 2% respondents needs much more information than existing.

In this survey, only 34.81% heard of food labelling information scheme. More than 70% have knowledge about trademarks which is the agmark standard (84.17%), ISI mark (97.46%), vegetarian mark (70.25%). Only 9.49% of population know about codex alimentarius, which is the principle organ of joint FAO/WHO food standards programme. 89% of respondents aware of the fact that the prices labelled on the packages are inclusive of all taxes.

Table 1: Knowledge towards food labelling

Sr.No.	Question	Response
1.	Do you know about food labeling?	Yes 100%
2.	How well are you informed about food labeling information?	Very much informed 30.38%
		Moderately informed 55.69%
		Minimally informed 55.69%
		Not informed 3.79%
3.	What made you know about food labeling?	Media – TV, newspaper, advertisements etc 58.22%
		Friends 19.62%
		Family members 27.84%
		Doctors, nutritionist etc 8.86%
		Awareness programme 8.22%
		Books and magazine 21.51%
		Internet 8.86%
		Retailers 5.69%

Sr.No.	Question	Response
4.	Which of the following terms are you most familiar with in relation to the basic information found on pre-packaged food labels?	Expiry date 97.46%
		Manufacture date 86.70%
		List of ingredients 79.11%
		Method of storage 71.51%
		Nutritional value 72.15%
		Net content 27.84%
		Instructions for use 80.37%
		Price 94.30%
		Trade mark 88.60%
		Name of manufacturer 74.05%
		Country of origin 53.16%
		Batch or lot of identification 29.11%
5.	Is the information provided is satisfying?	Yes 87.97%
6.	Food labeling should be	i. Enforcedly provided under legislation 85.44%
		ii. Voluntarily provided by manufacturers/producers 85.44%
		iii. Standardized and applied to all food products 94.30%
7.	Have you heard of the food labeling information scheme?	Yes 34.81%
8.	Do you know about agmark standards?	Yes 84.17%
9.	Do you know about ISI mark?	Yes 97.46%
10.	Do you know about vegetarian mark?	Yes 70.25%
11.	Do you know about CODEX ALIMENTARIUS, which is the principle organ of the joint FAO/WHO food standards programme?	Yes 9.49%
12.	Are you aware of the fact that the prices labeled on the packages are inclusive of al, taxes?	Yes 89.87%

97.47% of respondents said that they read food labelling information before purchasing pre packaged foods and when they were enquired about the frequency, 101 respondents (63.92%) read food labels always and only 6.32% read food labels rarely. There is statistically significant association that presence of children is positively affecting consumers when making decisions on food purchase as they read more the food labels. Families with children are keener to read food labels. (Analysis table 2).

76% of population first seek expiry date before deciding to purchase or eat a particular food and they don't care much about batch or lot of identification, net content, method of storage and instructions for use. There is significant association between gender and looking for special characteristics. This indicates awareness of people giving importance to special characteristics. (Analysis Table 3). There is no significant association between socioeconomic status and seeing expiry date and special characteristics (Analysis table 5). Though the knowledge about trade mark is more than 70%, the practice of seeing agmark, ISI, vegetarian mark is only around 50%.

Table 2: Practices towards food labelling

Question	Response
1. Do you read food labeling information before purchasing pre packaged foods?	Yes 100%
2. If yes, how frequently do you read food labels when you first purchase a prepackaged food product?	Never 3.79%
	Rarely 6.32%
	Sometimes 12.02%
	Often 10.75%
	Always 63.92%
	When not in hurry 3.16%
3. What information do you first seek on food label before deciding to purchase or eat a particular food?	Expiry date 76.58%
	Manufacture date 10.12%
	List of ingredients 1.89%
	Method of storage 0 .63%
	Nutritional value 1.89%
	Net content 0.63%
	Instructions for use 0.63%
	Price 22.78%
	Trade mark 2.53%
	Name of manufacturer 3.16%
	Country of origin 1.89%
	Batch or lot of identification 0.63%
4. Do you see the agmark standard before you buy food?	Yes 57.59%
5. Do you see ISI mark before you purchase food?	Yes 70.25%
6. Do you see the vegetarian mark before you purchase the food?	Yes 56.32%

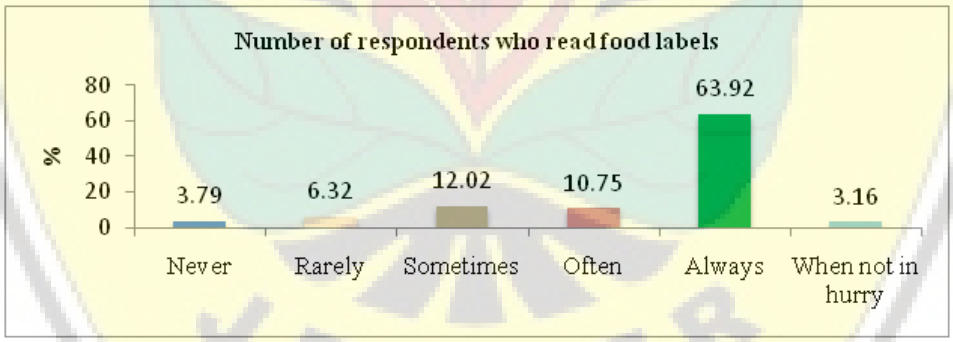

Figure 2

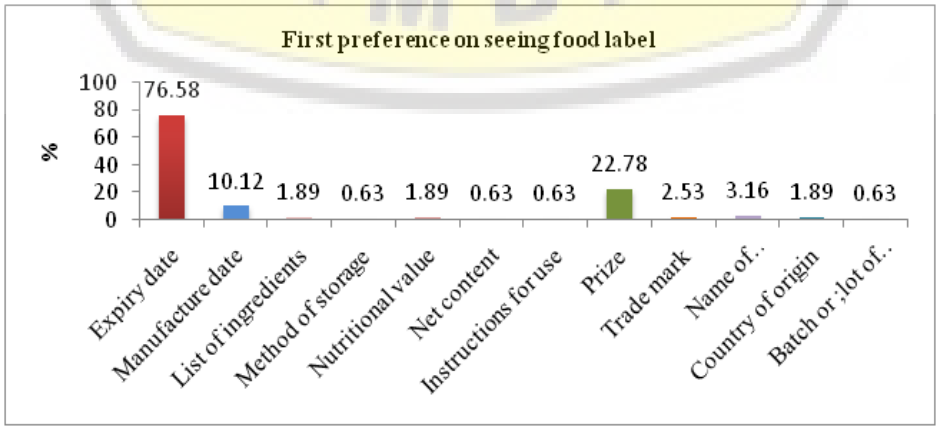

Figure 3

Among the 158 respondents, 144 people agreed that reading the food nutrition labels can help them make informed food choices.

75% of study subjects willing to pay a higher price for any product or service provided they get value for their money and they think that information needed to become a well informed consumer are readily available and 24.68% were not willing to pay higher price for a good quality product.

Of the study subjects, 24.48% were not aware of their consumer rights. 78% think that manufacturers make efforts to design and develop products to suit to the need of the consumer and 21.15% said that they are not making genuine efforts to suit.

There is no significant association between age group and media mislead (Analysis table 4)

If some important information are not available in the label, 22.15% of population would still buy the same.

Table 3: Attitude questions

Question	Response Yes	Percentage
1. Do you think the information provided is satisfying for you?	137	86.70%
2. Do you agree that reading the food nutrition labels can help you make informed food choices?	144	91.13%
3. Are you willing to pay a higher price for any product or service provided you get value for your money?	119	75.31%
4. Do you think the information needed to become a well informed consumer are readily available?	119	75.31%
5. Do you think that you are aware of your rights?	113	71.51%
6. Do you think that manufacturers make efforts to design and develop products to suit to the need of the consumer?	124	78.48%
7. Do you think that advertisements mislead your informed food choices?	127	80.37%
8. Do you think manufactures are responsible for any complaints of consumers?	135	85.44%
9. If some important information are no available in the label, would you still buy the same?	35	22.15%
10. Would you look for details of label for all types of packed foods?	130	82.27%

Table 4: Consumers perception and factors associated with reading food labels

Question	Response
1. How important do you consider food labeling information to be?	Very important 82.27%
	Somewhat important 14.55%
	Minimally important 1.89%
	Not important 1.26%
2. What motivates you to read labeling information?	Price of the food 48.73%
	Appearance/design of the package 17.08%
	Preference to some ingredients 36.70%
	Advertisements 14.55%
	Friends 6.32%
	Family 10.12%
3. In which circumstances do you buy pre packaged foods without reading labeling information?	When food is sold at a low price 6.32%
	When in a hurry 46.20%
	On street/journey 8.86%
	Trust on the seller 32.91%
	No circumstances like that 20.25%

Question	Response
4. What difficulties do you come across in reading and understanding pre packaged food labels?	Unfamiliar language 10.12%
	Use of technical/scientific terms 34.81%
	Incomplete labelling 15.82%
	Smaller font size 50%
	No difficulties 9.49%
5. How useful is it?	Very useful 98.73%
	Not useful 1.26%

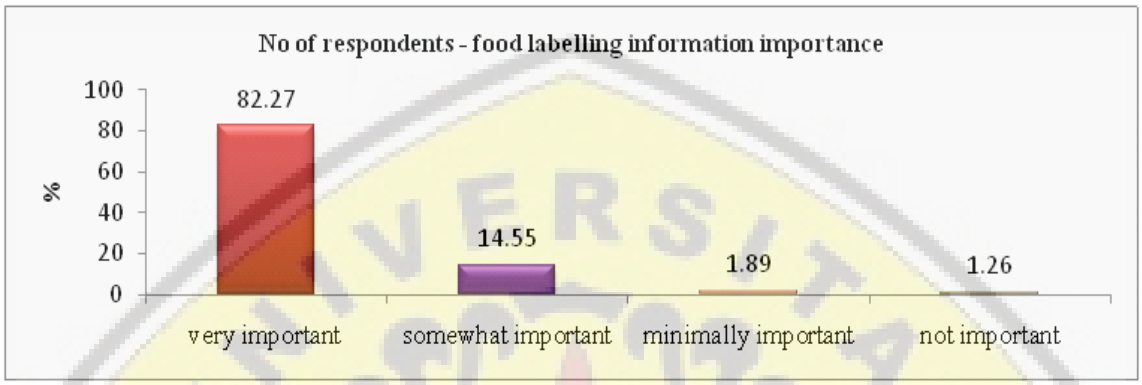

Figure 4

CHI Square Test:

Table 1: Analysis

Sex	Verymuch Informed about Food Labeling	Not Informed about Food Labelling	Total	χ^2 test
Male	74	14	88	0.8525 (NS)
Female	62	8	70	
Total	136	22	158	

NS–Not significant

There is no significant association between information about food labelling and gender at p> 0.05 level.

Table 2: Analysis

Children	Always Read Food Labels	Rarely Read Food Labels	Total	χ^2 test
Yes	81	35	116	6.9101**
No	20	22	42	
Total	101	57	158	

** P <0.01

There is significant association and we conclude that presence of children is positively affecting consumers when making decisions on food purchase as they read more the food lables. Families with children are keen to read food labels.

Table 3: Analysis

Sex	Expiry Date	Special Characteristics	Total	χ^2 test
Male	70	18	88	8.0637**
Female	67	3	70	
Total	137	21	158	

**p<0.01

There is significant association between gender and looking for special characteristics. This indicates awareness of people giving importance to special characteristics p< 0.01 level

Table 4: Analysis

Age Group	Media Misleading	Media Not Misleading	Total	χ^2 test 0.1651(NS)
Less Than 40 Years	52	12	64	
More Than 40 Years	75	19	94	
Total	127	31	158	

NS – Not significant

There is no significant association between age group and media influence on selecting food information at p> 0.05 level.

Table 5: Analysis

Socio Economic Status	Expiry Date	Special Characteristics	Total	χ^2 test 0.5525 (NS)
Upper Class	35	6	41	
Middle Class	102	15	117	
Total	137	21	158	

NS – Not significant

There is no significant association between socio economic status and food labelling seeking characteristics p> 0.05 level.

Conclusion

The study determined to assess the consumers' knowledge; attitude and practices towards food labeling in an urban area and the information they would like to see on the food label for the first time in Tamilnadu. Although significant correlations were found between single items on the food label and some of the demographic variables; the overall knowledge of the consumers did not show significant correlation with the overall level of education of the consumers in this study. The most frequently referred labelling information that consumer try to seek are expiry date, list of ingredients and nutrient information. The findings also revealed that lots of food label information were known to people by mass media which shows the lack of dissemination of correct information by health care workers. There were circumstances in which consumers did not read food labels because they purchased routine familiar foods or foods was sold at a lower price.

Hence; the study recommends further studies on the consumer's ability to make use of the labelled information. As well, an evaluation for the existing nutrition awareness programs and specifying needs for extension programs in nutrition and food label are also needed.

Conflict of Interest: Nil

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Ethical Clearance: SMC/IEC/2017/110 & 25.04.2017.

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Nasal Versus Oral Feeding Tube Placement: Selected Outcomes among Preterm Infants

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Abstract

Background: Enteral feeding tubes for preterm infants may be placed via either the nose or mouth. Nasal tube placement may compromise respiration, however, orally placed tubes may be more prone to displacement. The aim of the current study was to determine the effect of nasal versus oral placement of enteral feeding tubes on weight and the incidence of adverse events among preterm infants. Method: A descriptive comparative study design was utilized.

Sample: A convenient sample of sixty physiologically stable preterm were assigned to two equal groups within six months (between July 2018 – Jan. 2019). They were recruited from neonatal intensive care units of both Kasr Alainy and El-Monira Pediatric Hospitals-Cairo University.

Tools: Three tools were developed by the researchers: preterm infant's characteristics, observational checklist for incidence of adverse events and recording sheet for daily weight and time to sustain full oral feeding. Procedure: The researches recorded preterm infant's characteristics, any adverse events, weight and time to sustain full oral feeding in the morning shift twice a week for two weeks.

Results: Orogastric tube feeding was statistically significant different compared to nasogastric tube feeding regarding displacement. There was no difference among two groups in weight gain, time to reach full feeds and frequency of adverse events. Orogastric tube feeding group had lesser duration of hospital stay than nasogastric and orogastric tube feeding group reached to full oral feeds quickly compared to nasogastric with no statistical significant differences. Recommendation: Further researches with a larger population would probably be required to know the significance of this outcome.

Conclusion: This study concluded that no differences were found between both orogastric and nasogastric tube feeding on preterm infants' weight, incidence of adverse events and time to sustain full oral feeding.

Keywords: *Nasogastric tube, orogastric tube, Preterm Infants,outcomes.*

Introduction

When preterm infants are too immature or unwell to suck feeds they can receive their milk through a feeding tube passed via either the nose or the mouth. The establishment of safe oral feeding in preterm infants may be delayed because of poor co-ordination of sucking and swallowing, neurological immaturity and respiratory compromise. Enteral feeds may be delivered through a catheter (feeding tube) passed via the nose or via the mouth into the stomach or upper small intestine(1).

Neonates are obligate nose breathers. Feeding tubes placed via the nose can cause partial nasal obstruction, increased airway resistance and increased work of breathing(2,3). This increase in energy expenditure may potentially affect growth and development. Nasogastric intubation through the larger nare may increase airway resistance as the preterm infant is forced to breathe through an airway of smaller calibre. In addition, individual differences in nasal size may be acquired secondary to the effects of nasogastric tubes(4).

Incorrect placement, or subsequent displacement, of feeding tubes into the lower oesophagus or into the lung can lead to aspiration, respiratory compromise and increased energy expenditure[5]. Orally placed tubes may be easier to displace as they can loop inside the mouth. Repetitive movement of the orally placed tube may result in mucosal trauma and may increase the incidence of apnea and bradycardia due to vagal stimulation [6]. There is not enough data to make any recommendation regarding the superiority of either routes of feeding [7].

Aim of the study: To determine the effect of nasal versus oral placement of enteral feeding tubes on weight and the incidence of adverse events among preterm infants.

Research question: What are the differences between nasal and oral placement of feeding tube on weight and the incidence of adverse events among preterm infants?

Material and Method

Research Design: A descriptive comparative study design was utilized.

Participants: A convenient sample of 60 preterm infants were assigned to two equal groups within six months (between July 2018 – Jan. 2019).

Tools of Data Collection: Three tools were developed by the researchers after extensive review of related literature: preterm infant's characteristics, observational checklist and recording sheet for weight and time to sustain full oral feeding.

Tool Validity and Reliability: Data collection tools were submitted to three panel of experts in the field of high risk neonates to test the content validity. Reliability was done by cronbqch's alpha test and the result was 0.82.

Procedure: After the preterm infants had initial physiological stable state, they assigned to receive either nasogastric or orogastric feeding, the researchers' recorded preterm infant's characteristics once from admission sheet using tool I. They assessedany adverse events such as apnea, displacement and injury (trauma) in the morning shift twice a week for two weeks using tool II. All infants were weighed each morning, naked, before feeding and bathing, on one same time and time to sustain full oral feeding was recorded for all preterm infants using tool III.

Results

Table (1) Characteristics of Preterm Infant's Characteristics For Both Groups In Percentage Distribution (N=60).

It was evident from table (1) that there were no statistically significant differences between orogastric and nasogastric groups regarding their gender, diagnosis and gestational age ($p > 0.05$).

Preterm Infant's Characteristics	Groups				P
	Orogastric (n=30)		Nasogastric (n=30)		
	N	%	N	%	
Gender:					
- Male	17	56.7	13	43.3	0.219
- Female	13	43.3	17	56.7	
Diagnosis:					
- RDS	27	90	25	83.3	0.729
- M.A	3	10	3	10	
- Sepsis	-	-	2	6.7	
G.A.					
- <32 Weeks	9	30	13	43.3	0.284
- 32-37 Weeks	21	70	17	56.7	

Note: RDS = Respiratory distress syndrome, M.A = Meconium Aspiration, C.S = Cesarean Section NVD = Normal Vaginal Delivery, G.A: Gestational Age

It was revealed from table (2) that there were no statistically significant differences between orogastric and nasogastric groups regarding their hospital stay ($p > 0.05$).

Table (2): Hospital Stay For Both Groups In Percentage Distribution (N=60)

Hospital Stay:	Groups				P
	Orogastric (n=30)		Nasogastric (n=30)		
	N	%	N	%	
- One-<two weeks	1	3.3	-	-	0.346
- Two-<three weeks	6	20	3	10	
- Three-<four weeks	2	6.7	5	16.7	
- Four weeks and more	21	70	22	73.3	
Mean±SD	41.27±18.984		41.47±17.190		

It was illustrated from table (3) that there were no statistically significant differences between both groups regarding their daily weight at the four measures.

Table (3): Daily Weight at 1st, 2nd, 3rd and 4th Measures in Percentage Distribution (N=60).

Daily Weight	Groups		P
	Orogastric	Nasogastric	
	Mean±SD	Mean±SD	
1st Measure	1699.17±340.018	1606.50±354.951	0.190
2nd Measure	1693.83±332.586	1621.33±357.247	0.598
3rd Measure	1724.00±329.897	1693.00±351.027	0.211
4th Measure	1740.00±327.246	1712.00±337.062	0.270

It was represented from table (4) that there was no statistically significant difference about time to sustain full oral feeding for both groups ($p > 0.05$).

Table (4): Time To Sustain Full Oral Feeding For Both Groups At 1st, 2nd, 3rd and 4th Measures In Percentage Distribution (N=60)

Time to sustain full oral feeding	Groups				P
	Orogastric		Nasogastric		
	N	%	N	%	
-< a week	2	6.7	4	13.3	0.287
-Week-<two weeks	11	36.7	9	30	
-Two weeks-<three weeks	4	13.3	2	6.7	
-Three weeks-<four weeks	3	10	7	23.3	
-Four weeks and more	10	33.3	8	26.7	

Discussion

There was limited data available on the effect of the nasal versus the oral route for placing feeding tubes in preterm or low birth weight infants.

In relation to preterm infant's characteristics. The current study revealed that more than half of the preterm infants were males in the orogastric group, while more than half were females in nasogastric group. This findings goes in the same line with[8], who reported that more than half of preterm infants in both orogastric and nasogastric groups were males. While[9] contradicted these findings and reported that more than half of nasogastric group were males, while in orogastric group, a relatively high percentage of preterm infants were females.

The result of the current study revealed that more than three quarters of preterm infants were diagnosed with RDS in both groups. This study goes in the same line with [10], who found that more than two thirds of neonates had RDS.

Regarding gestational age[8] who studied Mode of gavage feeding: does it really matters, reported that the

highest percentage of preterm infants in both orogastric and nasogastric groups their gestational age were ≥30 - <32 weeks and this contradicted with the result of the current study which revealed that more than two thirds of orogastric group and more than half of nasogastric group preterm infants were born between 32-37 weeks of gestation with no statistically significant differences of both groups.

Hospital stay was slightly longer in nasogastric group than orogastric group but with no statistically significant differences among both groups, as mean duration of hospital stay was 41.47 days in orogastric group and 41.47 days among nasogastric group. This result contradicted with the study of (9). Who revealed that there was no much difference among two groups. Mean Duration of hospital stay was 35.38 days with standard deviation of 7.60 among Nasogastric tube feeding group and 37.54 days with standard deviation of 9.45 among Orogastric tube feeding group.

Preterm infants in orogastric group gained weight more than those in nasogastric group at 1st, 2nd measures, 3rd and 4th measures. As mean of weight were (1699.17, 1693.83, 1724.00 and 1740 respectively) in orogastric group and (1606.50, 1621.33, 1693.00 and 1712.00 respectively) in nasogastric group but there was no statistically significant differences. This findings supported by(9), who demonstrated that mean time to regain birth weight was 19.38 days among Nasogastric tube feeding group and 19.23 days among Orogastric tube feeding group. Also (11), who studied continuous feeding promotes gastrointestinal tolerance and growth in very low birth weight infants, reported no statistically significant difference in the time taken to regain birth weight.

Regarding adverse events of both orogastric and nasogastric tube placement, the results of the current study delineated that, there was no statistically significant differences between both orogastric and nasogastric groups about injury at the 1st, 2nd, 3rd and 4th measure. This findings supported by(9), who concluded that there were no significant differences among two groups to frequency of adverse effects.

Concerning displacement, the current study illustrated that there was statistically significant difference between both orogastric and nasogastric groups at the 2nd measure (p= 0.050), while there were no statistically significant differences between both groups about displacement of the feeding tube at the 1st, 3rd and 4th measures. This findings supported by(8) who reported that the episodes of non-intentional removal and displacement are more in OGT group and it statistically significant (p = 0.012 and p<0.0001 respectively). Also(9), reported that frequency of tube displacement was more common among Orogastric tube feeding compared to Nasogastric tube feeding. Which was statistically significant with a p-value of 0.001, mean difference of -0.4462 times/day.

In the matter of apnea, the results of the current study showed that there were no statistically significant differences between both orogastric and nasogastric groups about episodes of apnea at the 1st, 2nd, 3rd and 4th measures. This findings goes in the same line with(8), who reported that episodes of apnea, bradycardia, desaturation and oxygen requirement are more in NGT group as compared to OGT group but statistically Insignificant OGT versus NGT (p = 0.86).

For time to sustain full oral feeding, the highest percentage of both orogastric and nasogastric groups reach to full oral feeding by one week to less than two weeks from starting oral feeding. There were no statistically significant differences about time to sustain full oral feeding for both orogastric and nasogastric groups. This finding was in agreement with (8) who found that orogastric tube group neonates required (6.18±0.61) days as compared to Nasogastric tube group neonates as they required (6.47±0.59) days to achieve full feeding but it is statistically insignificant (P =0 .368).

Based on clinical observation. The differences between both groups in terms of outcome measures like duration of hospital stay, time to reach oral feeds were not statistically significant which may be due to small sample size and there is need of larger samples and also further continuation of this study to know the significance of these outcomes.

Conclusion

This study concluded that no differences were found between both orogastric and nasogastric tube feeding on preterm infants' weight, incidence of adverse events and time to sustain full oral feeding.

Ethical Clearance: Acceptance of ethical committee at faculty of nursing, in Cairo University was gained. All studied neonates' parents were informed about the aim, procedure, benefits and nature of the

study and the written consent was obtained from them. The confidentiality of information was assured.

Conflict of Interest: the authors declare that there is no conflict of interest.

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Effect of Abdominal Massage on Uterine Involution

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Abstract

Pregnancy & becoming a mother is a great experience for women but at the same time it may be a terrible experience if complicated. The common complication that occur after delivery are mostly due to causes like a tonic uterus, retained lobe of placenta, sepsis, subinvolution, etc. This study was done to evaluate effect of abdominal massage on uterine involution among postnatal mothers. A quasi experimental design was selected where 70 samples were recruited using convenient sampling technique & then randomly allocated to experimental and control group (35 in each). After the pre-intervention assessment, abdominal massage was given to the participants of experimental group only. After 3 days of intervention, post-intervention assessment was done for both the groups. Wilcoxon signed rank test was used to evaluate effect of abdominal massage. The study concluded that abdominal massage was significantly effective in accelerating the rate of uterine involution among postnatal mothers.

Keywords: *Abdominal massage, Uterine involution & Postnatal mothers.*

Introduction

In every woman's life, pregnancy is a unique, great, unforgettable experience & an exciting time. This experience of woman helps cultivate the essence of future.[1] Puerperium is a duration starting from third stage of labour to the six weeks after delivery. The physical and physiological changes that had occurred during the pregnancy, will revert back to non pregnant state within this duration.[2]

Involution is a normal process after end of third stage of labour, in which uterus begin to shrink and within some day's duration become like a nonpregnant state. Subinvolution of uterus is common cause that arises further complications among postnatal mothers, in which, impairment occurs in the rate of involution. If the uterus fails to revert back to its pre-pregnant state after delivery then it may result in long-lasting & disturbing complications like extreme continuous vaginal bleeding, uterine cramping & pungent uterine discharge.[3]

WHO states that majority of maternal death in developing countries are preventable with aid of good, advance medical facility and awareness.

Fundal massage is a conservative technique which can help to reduce bleeding & cramping immediately after delivery.[4] Studies show that postnatally problems like uterine pain, subinvolution, atony can be managed by application of abdominal massage.

India still being a developing nation may not be able to provide access to all the areas a well maintained medical facility with modern equipments.[5] Hence in such case we may use basic conservative measures to bring about positive change in the health of the women. Fundal massage is one such measure which has found to be effective in various postnatal ailments but still not much study have been done on its efficacy on uterine involution in Gujarat & India. Hence the researcher felt the need to take up this study.

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Material and Method

A Quasi-experimental research design was adopted for present study. Ethical clearance and formal permissions were obtained to conduct the study. 70 samples were conveniently recruited from selected hospitals of Central Gujarat & then were randomly allocated to experimental and control group (35 in each). Participants who had undergone a cesarean section or had an instrumental delivery were excluded from the study. A researcher developed Performa was used to collect baseline information of the participants where as a measure tape was used to assess the uterine involution in terms of fundal height. Pre-intervention assessment was done on day 1 for both the groups. Along with routine care, abdominal massage was provided to the participants of experimental group for 10 minutes, 2 times a day (morning & evening) for 3 consecutive days. Whereas the control group received only the routine care post-intervention assessment was followed after these 3 days.

Result

Finding related to socio-demographic and maternal variables of postnatal mothers of both the groups showed that majority of the participants in experimental group 57.1% & control group 31.4% belonged to 23-27 year age group where as 54.3% & 57.1% of them had completed primary education respectively. 40% and 25.7% participants in experimental & control group respectively were second para. 60% in experimental and 71.4% in control group participants were non vegetarian. In experimental group 62.9% as well as in control group 45.7%, participants were having height between 151 to 160 cm. 57.1% of experimental group and 37.1% of control group participant weight range was between 51kg-60kg.14.3% and 11.4% participants of experimental and control group respectively had a past history of abortion.

Finding related to effectiveness of abdominal massage on uterine height among postnatal mothers of experimental and control group: Comparison of effect of abdominal massage on uterine involution of both the groups was done using Wilcoxon Signed Rank test. The calculated Z value for day 1 morning, day 1 evening, day 2 morning, day 2 evening, day 3 morning and day 3 evening was 10.4 ($p<0.000$), 9.7 ($p<0.000$), 8.8 ($p<0.000$), 7.2 ($p<0.000$), 0.4 ($p=0.684$) and 0.5 ($p=0.560$) respectively. This data indicated that on initial 2 days there is highly significant effect of abdominal massage on uterine involution with p value less than 0.000. Hence the research hypothesis that there is statistically significant effect of abdominal massage on uterine involution at 0.05 level of significance stands accepted.

Findings related to association between pre-intervention uterine heights of postnatal mother with their selected socio-demographical & maternal variables.

Table No. 1: Spearman's Rho correlation coefficient was used to determine the associations

Spearman's rho		
Socio demographic & Maternal variables	**Correlation Coefficient (r)**	**P Value**
Age in years	.315	.008
Level of Education	.031	.796
Type of physical activity at job/Occupation	-.281	.019
Type of Family	-.047	.701
Number of Pregnancy	.221	.066
Diet	-.057	.641
Height	.265	.027
Weight in Kilogram	.430	817.100
History of Abortion	-.150	.215
Area of living	-.136	.262
Day1 Before intervention (Morning-Evening)	1.000	

The data in table show that variables which include age, type of physical activity at job/Occupation and height had a significant correlation coefficient with p value less than 0.05. Level of education, type of family, number of pregnancy, diet, history of abortion and area of living had no significant correlation ($p>0.05$). Hence the hypothesis, that there is statistically significant association between pre-intervention uterine height with the selected socio-demographical and maternal variables at 0.05 level of significance, stands accepted.

Conclusion and Recommendations

The study concluded that abdominal massage was effective in accelerating the rate of uterine involution among postnatal mothers. Hence, it can be used as a non-pharmacological method to prevent uterine subinvolution.

This type of study can be conducted on large samples to make broad generalization, can be undertaken at different setting. Similar study can be done in combination of other non-pharmacological method related to uterine involution as well as Comparative study can be done to evaluate effect of abdominal massage with other non-pharmacological intervention for accelerating uterine involution. Thus a simple measure of abdominal massage can be effectively used in a developing country, not only to accelerate the rate of uterine involution but also to prevent many maternal complications and help in making the postnatal period more joyful for the mother.

Conflict of Interest: None

Source of Funding: Self

Ethical Clearance: Ethical clearance was obtained from ARIP, Institute Ethical committee, Charotar University of Science & Technology, Gujarat, India.

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Effect of Sensory Motor Integration Technique on Motor Dysfunction in Guillain-Barre Syndrome.

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Abstract

Background: Guillian-Barre syndrome (GBS) is an autoimmune disorder that affects motor as well as sensory nerves. There is rapidly progressing muscle weakness typically pyramidal in distribution. Autonomic nervous system is also involved in this condition. The recovery is slow thus physical therapy along with medical management plays an important role. Sensory motor integration is a relationship between various sensory inputs to produce desired motor response.

Objectives: Objectives of the study were to determine the effect of Sensory Motor Integration Technique On Motor Dysfunction in GBS and to reduce the recovery time.

Material and Method: In this experimental study, 28 subjects with GBS were assessed with GBS disability scale and subjects were given Sensory Motor Integration Technique along with medical treatment and other therapies.

Results: Statistical analysis was done of GBS disability scalein 28 subjects in which it was seen that post treatment there was very significant effect of Sensory Integration Technique. (p value- 0.002)

Conclusion: The current study concluded that there is a significant effect ofSensory Motor Integration Technique On Motor Dysfunction in Guillain-Barre Syndrome. There was significant decrease in disability in GBS patients after the intervention thus Alternate Hypothesis accepted.

Keywords: *GBS, Sensory Motor Integration, Physical Therapy, GBS disability scale, Disability.*

Introduction

Guillian-Barre syndrome (GBS) is an autoimmune disorder which involves peripheral nervous system and is acute in onset.[1] GBS is rapidly progressing motor disorder associated with absent reflexes.[2] GBS varies in severity and in its severest form, could lead to respiratory paralysis and death.[3] Acute inflammatory demyelinating polyradiculoneuropathy (AIDP) is the most common type of GBS which primarily causes demyelination with varing degrees of secondary axonal damage. Acute motor axonal neuropathy (AMAN) is the next most common type of GBS which is primary considered as axonal disorder affecting just the motor nerves and causing motor symptoms.[4] Axonal variants that involve both sensory and motor symptoms are not seen much.[4]

It has shown that, with age, incidence of GBS could be more frequent and it is predominantly most common in males but some literature suggest that it is common in females.[2,5]

GBS is caused due to a viral or an bacterial infection, may be precipitated by a vaccination, could be caused

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after a major surgery due to several reasons or caused by prolonged use of several drugs such as zimelidine.[5] Studies have shown that *Campylobacter jejuni*, Epstein Bar virus, Mycoplasma pneumonia and Cytomegalovirus are the most frequent causative factors.[2,5]

The onset of the disease starts with sensory symptoms in the distal extremities followed by rapidly progressive distal weakness that spreads proximally.[2] The weakness seen GBS is typically pyramidal in distribution, for example, ankle dorsiflexion and knee and hip flexion are often severely affected and the weakness in the arms is usually more severe in shoulder abduction and elbow extension.[2] Sensory symptoms commonly seen although minor and include loss of vibration and proprioception. Symptoms such as areflexia, myalgia, sphincter disturbances and autonomic disturbances are commonly seen in GBS.[5]

GBS is a monophasic disease. The neuropathy typically begins 7–10 days after any triggering infection with weakness reaching its most severity in 4 weeks followed by a plateau phase and then followed by a recovery phase. 60% of patients are able to walk unaided by 12 months and the some patients are have various degrees of residual symptoms.[6] Mortality rate in GBS is between 5 and 10 percent and the major causes of death include infection, emboli and autonomic instability.[2,7]

GBS is medically managed by plasmaphereis, steroid therapy and IgG [5] but supportive management has been more effective in improving mortality in patients with GBS with good ICU care and modern method of ventilation. Passive movement of the extremities and active physiotherapy including chest physiotherapy once the initial acute stage commences, is seen to very beneficial.[2] Since much of the damage to nerves occurs early in the course of the disease it may be more effective to look at treatments capable of improving nerve regrowth and regeneration with medical drugs as well as newer physiotherapy management approaches. Increased knowledge of GBS and its pathophysiology may form a base for new, targeted and personalized treatments that hopefully will improve the outcome for the patients.[8]

Katz defines sensory integration as "an innate neurobiological process in which the brain integrates and interprets sensory stimuli in the environment"[9]

Sensory integration (SI) is the ability to organize sensory information to make an adaptive response.[10] Sensory input from the environment and from the body provides information to the brain. The brain then organizes, integrates, synthesizes and processes this information to obtain appropriate response to stimuli. The processing of information allows individuals to receive sensory inputs and respond automatically, efficiently and comfortably to it.[10]

There exists a relationship between motor responses, sensory input and normal sensorimotor development which will be helpful for providing a treatment approach in GBS patients.

It has been noted that sensory system has facilitatory or inhibitory influences on the motor systems. Motor system needs inputs from various sensory systems. Research shows that, sensory integration techniques stimulates cutaneous sensations, proprioceptors, visual component to produce the desired motor response.

Aim and Objectives:

Aim: To find the effect of Sensory Motor Integration Technique On Motor Dysfunction in Guillain-Barre Syndrome.

Objectives:

- To determine Effect of Sensory Motor Integration Technique On Motor Dysfunction in Guillain-Barre Syndrome.
- To reduce the recovery time and make patient ambulatory while studying the effect of sensory motor integration technique along with other therapies given.

Materials and Methodology

- **Type of study**- Experimental study
- **Study Design-**Pre-test and post test
- **Place of Study-**Krishna hospital, Karad
- **Sample formula –** $n= 4 X SD^2/(X€)^2$
- **Sample size-** supposed to be 30
- **Sampling Method-**Consecutive sampling
- **Study duration-** 6 months

Materials Required:

- GBS disability scale.

Selection Criteria:

Inclusion Criteria:

- Both Male and Female
- Have neurological impairment secondary to GBS
- Unable to ambulate more than 200 feet without assistive devices
- Able and willing to comply with the protocol

Exclusion Criteria:

- Recent of History of seizures
- Evidence of upper motor neuron involvement
- Any medical condition, including psychiatric disease, which would interfere with the interpretation of the study monitors.
- Clinically diagnosed diabetic neuropathic individuals.

Outcome measures: Gullian Barre Syndrome Disability scale

Procedure: Individuals with GBS were selected on basis of inclusion and exclusion criteria. Informed consent was taken from the patients. Subjects were assessed before starting with the protocol. Subjects will be explained about the procedure of the study.

- Subjects were selected through consecutive sampling.
- Pre test assessement was taken using GBS disability scale.
- Exercise session were given for 30-45 minwith rest intervals for 4 days/week for a duration of 8-10 weeks.
- Sensory Motor Integration techniques were given to these patients which included vestibular based activities including swiss ball and wobble board exercises along with assisstance, proprioception exercises that included weight bearing with the help of closed kinematic chain exercises such as mini squats by holding the bar with assisstance and wall pushups, stretching of major muscle groups was also done, tactile stimulaton included prehension by holding objects with different surface designs such as soft ball and asking the patient to feel the pressure and use of ADL table, co ordination activities included throwing the ball, catching the ball, hitting the ball, etc and cobmination of all these exercises were given to the patient along with visual and auditory cues.
- After the intended duration of treatment the efficacy of the treatment protocol in both the groups were compared.
- Post test assessment was taken after 4 weeks by using GBS disability scale.
- Pre-test and Post-test, the data collection sheets were filled and assessed.
- Statistical analysis was done using appropriate biostatistical tools.

Findings:

Table 1: Age Distribution

Study Variables	N	Minimum	Maximum	Mean	Std. Deviation
Age (in Years)	28	18	40	29.71	6.26

Interpretation: Table 1 represent quantitative study variables distribution among study population. Here minimum age of participants was 18 years and maximum age of was 40 years, also average age of 29.71±6.26.

Table 2: Gender Wise Distribution of Study Population.

Gender	Frequency	Percent
M	15	54%
F	13	46%
Total	**28**	**100%**

Interpretation: Out of 28(100%) study participants 15(54%) were males and 13(46%) were females. [Seen in Table 2]

Table 3: Gullian Barre Syndrome Disability scale

Sr.No.	Parameter	Pre-test	Post-test	t value	p value	Inference
1.	GBS Disability Scale	3.10±1.13	2.07±1.27	3.213	<0.002	Very Significant

Result

Within the group statistical analysis (Table 3) shows that there was significant decrease in GBS diability after the intervention. The mean pre intervention was 3.10 ± 1.13 which significantly decreased to 2.07± 1.27 post intervention.

Discussion

This study was conducted to study the effect of Sensory Motor Integration Technique on Motor Dysfunction In Guillain-Barre Syndrome. Guillian-Barre syndrome (GBS) is an rapidly progressing autoimmune motor disorder which is acute in onset and which involves involvement of peripheral nervous system. GBS varies in its severity, there are patients with mild to moderate residual symptoms and in its severest form, it could lead to respiratory paralysis and death.[3] Griffin JW et al. suggests that there are various types of GBS including acute motor axonal neuropathy (AMAN) which is one of the most common type of GBS-primary considered as axonal disorder affecting just the motor nerves and causing motor symptoms.[4] The treatment approaches used in this study will be more beneficial to such patients. However the incidence of GBS is 1 in 100,000, thus due to the limitations faced this study focuses on GBS as a broad terminology and includes patients diagnosed with GBS as a diagnosis. The causative factors of GBS in these patients were not known but some presented a history of previous infection.

The onset of the disease starts with sensory symptoms in the distal extremities followed by rapidly progressive distal weakness that spreads proximally. Winer JB states that the weakness seen GBS is typically pyramidal in distribution. Ankle dorsiflexion and knee and hip flexion are often severely affected and the weakness in the arms is usually more severe in shoulder abduction and elbow extension. This in turn affect the balance, posture and gait in these patients leading to no or less motor control required for activities of daily living. Sensory symptoms commonly seen include loss of vibration and proprioception which play an important role in coordination and activation of neuromuscular system. Symptoms such as areflexia, myalgia, sphincter disturbances and autonomic disturbances were also seen in severe cases of GBS.[5]

Winer JB also suggests that 60% of patients are able to walk unaided by 12 months and the some patients are have various degrees of residual symptoms.[6] The objective of this study was to enhance the recovery with less time and make patient ambulatory with sensory motor integration along with other therapies employed.

Ayres studied the relationship between motor responses, sensory input and normal sensorimotor development. She defined sensory integration (SI) as the ability to organize sensory information to make an adaptive response. Sensory integration (SI) is a term that states combination of various sensory inputs to get the desired motor response.[5] Katz defines sensory integration as “an innate neurobiological process in which the brain integrates and interprets sensory stimuli in the environment”[9]

The main aim of this study was to see the effectiveness of sensory motor integration technique on motor dysfunction in Guillain-Barre Syndrome. Objectives of the study were to determine the effect of sensory motor integration technique on motor dysfunction in guillain-barre syndrome and to reduce the recovery time and make patient ambulatory with sensory motor integration technique along with other therapies already given.

30 individuals were selected over a period of 6 months and they participated in the study out of which all individuals fulfilled the selection criteria but 28 individuals continued their participation in the study for 8 weeks. Subjects were screened by Gullian Barre Syndrome disability scale pre-test. Out of 28 individuals 15 were males and 13 were females. Male predominance was seen. A study titled “Population incidence of

Guillain-Barré syndrome: a systematic review and meta-analysis, " by J. J. Sejvar et al. supports this difference noted, by suggesting that GBS is more common in male population.[11]

Treatment included vestibular based activities which were carried out with movable surfaces like swiss ball or tilt board activities to stimulate the patient affected with GBS and improve their righting reactions, equilibrium and autonomic responses. These exercises helped in improving balance, postural control, muscle tone and co activation of different muscle groups. They also promoted self control and security with movement.[5] Also tactile based activities helped to facilitate body image awareness and included deep or light pressure input and self controlled tactile stimulation by prehension exercises and use of objects with various surface modifications. Various weight bearing activities such as CKC exercises which included mini squats and wall pushups followed by stretching of major muscle groups stimulated proprioception and improved co activation of muscle groups and body perception. Co-ordination activities included kicking the ball, catching ball, hitting a ball with a plastic bat and writing etc which incorporated timing of responses, pairing of vision with motor outcomes as well as muscle activation patterns also improved. All sensory integration techniques were combined and incorporated and the desired results were obtained.[5] Task related training plays an important role in improving lower limb control which in turn enhances walking performances[12].

The treatment sessions were carried out for 4 days per week for 8 weeks. Post 8 weeks Gullian Barre Syndrome disability scale was again assessed among the subjects. Outcome measures showed significant difference among disability status. This was confirmed using statistical analysis by using 'Paired t- test' for within group comparison.

Within the group comparison, the Gullian Barre Syndrome disability status pre treatment was 3.10±1.13 which changed to 2.07±1.27 (P value <0.0002)considered very significant which showed small but significant improvement in GBS patients. According to mean GBS disability score, pre intervention the patients were able to walk 10 meters across in an open space with help or assistance and after the treatment session which patients were able to walk 10 meters or more without assistance in less period of time. Myalgia was also considerably reduced and General Health of individuals was better than pre-intervention. Patients were able to do activities of daily living well due to the therapies employed.

Conclusion

This study found out that there is a significant effect of Sensory Motor Integration Technique On Motor Dysfunction In Guillain-Barre Syndrome. There was significant decrease in disability in GBS patients after the intervention.

Conflict of Interest: There is no conflict of interest concerning the content of the study.

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Ethical Clearance: The study was approved by the institutional ethics committee of KIMSDU.

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Risk Factors for Ectopic Pregnancy: A Case Control Study in Tertiary Care Hospitals in Mangaluru

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Abstract

Background: Implantation of the fertilised egg in a non-uterine environment is known as ectopic pregnancy. The extra uterine implantation does not support life and if left to grow can lead to the damage of nearby organs with life threatening loss of blood and several other morbidities.

Objective: The study was undertaken to determine the potential modifiable and non-modifiable risk factors for ectopic pregnancy, treatment and management.

Method: A case control study was conducted in Mangalore in May 2018 based on the medical records accessed from the Obstetrics and Gynaecology Department of Government Lady Goschen Hospital and Kasturba Medical College Hospital. Records of patients diagnosed with ectopic pregnancy and normal pregnancy were defined as cases and controls respectively and were assessed. A semi-structured pro forma was prepared. The information obtained was analysed using SPSS 17.0.

Results: The study included a study population of 142 (cases-68 and controls-74) Analysis of the obtained data led to the identification of several risk factors. Among them spontaneous abortion had the highest association with ectopic pregnancy accounting up to 50% followed by induced abortion accounting up to 45.6% of the case population. Multiple caesarean section account up to 17.6% of the case population.

Conclusion: It was concluded that the most potential risk factors for ectopic pregnancy include spontaneous and induced abortions, with multiple C sections being an antecedent cause none of which are modifiable.

Keywords: *Ectopic pregnancy, Risk factors, Abortion, Diagnosis, Management, Treatment.*

Introduction

Ectopic pregnancy is defined as the implantation of the embryo within the abdominal structures other than the uterus. Women belonging to the age group of 19-40 are at a higher risk for ectopic pregnancy. The major site of ectopic pregnancy (90 per cent) are the fallopian tubes which is clinically classified as tubal pregnancy, while other sites of attachment include the cervix, ovaries, abdomen etc.

Conditions that can lead to ectopic pregnancy include pelvic infection, infertility and priorectopic pregnancy, usage of contraception and prior LSCS and tubal surgeries. The warning signs of ectopic pregnancy include pain in the abdomen or pelvis, often expressed as a stabbing or sharp pain of varying intensity and duration and vaginal bleeding.

Organs other than the uterus are hostile to the embryo thus restricting its growth. As the embryo grows in size it leads to the breach of the neighbouring

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structures and the ectopic site ultimately leading to massive haemorrhage. The aftermath of heavy bleeding is mostly hypovolemic shock.

The purpose of our research is to study the risk factors for ectopic pregnancy as well as to throw light upon its early diagnosis and management.

Materials and Method

In this case control study, obstetric records of 142 patients were analysed. The study was conducted in the month of May 2018 in the medical records department of Government Lady Goschen Hospital and Kasturba Medical College in Mangalore. It was a case-control study which included the medical records of those patients diagnosed with ectopic pregnancy in the last 10 years.

The total number of medical case records for consideration were 148.This sample size was calculated based on the findings of previous case control studies wherein 17.4% of controls had history of abortion with OR(Odds Ratio) of 1.93. By considering an alpha error of 5% and a power of 80% with equal ratios between cases and controls, the sample size was calculated to be 134. Further adding a non-response error of 10% increased the sample size to 148.

Data was captured using a semi-structured pro forma which was prepared after extensive review of literature. It consisted of 6 sections; Section A – General participant information; Section B- Current Obstetric History; Section C- Past Obstetric History; Section D- Gynaecology History; Section E- Contraceptive History; Section F- Lab and any other Investigations. The study protocol was approved by the Institutional Ethics Committee (IEC) of Kasturba Medical College, Mangalore. Permission was taken from the Dean of the institution as well as the Medical Superintendent of Katurba Medical College Hospital, Attavar and Government Lady Goschen Hospital to access the records from the Medical Records Department. The records were selected based on our definition of cases and controls and relevant study variables were entered into the pro forma.

Data was entered and analysed by using statistical software- Statistical Package for Social Sciences (SPSS) Version 17.0. Descriptive statistics like proportions, mean (Standard Deviation), median (IQR), was used for expressing the results. A chi square test was done for comparing the qualitative data between cases and controls. Both univariate and multivariate analysis (binary logistic regression) was done for determining the factors responsible for Ectopic Pregnancy. Odds Ratio and corresponding 95% confidence interval was reported and P value <0.05 was considered as statistically significant.

Results

Table 1: Demographic Comparison Between Cases and Controls (N= 142)

Characteristics	Cases n= 68	Controls n= 74	P Value *
	Mean (SD)	Mean (SD)	
Age (Yrs.)	30.7 (61)	26.5 (4.1)	< 0.0001
Age at marriage (Yrs.)	22.4 (5.5)	22.4 (3.9)	0.998

Significance: P Value < 0.0005 shows that females over the age of 30 years are at a greater risk for ectopic pregnancy.

Table 2: Comparison Of Current Obstetric History Between Cases and Controls (N= 142)

Risk Factors	Cases n= 68 n- (%)	Control n= 74 n- (%)	ODDS Ratio (Confidence interval)	P Value
History of vaginal discharge				
Yes	33 (48.5)	1 (1.4)	68.83 (9.0 -523)	< 0.0001
No	35 (51.5)	73(98.6)	-	-

Risk Factors	Cases n= 68 n- (%)	Control n= 74 n- (%)	ODDS Ratio (Confidence interval)	P Value
History of bleeding PV				
Yes	45 (66.2)	1 (1.4)	142.8 (18.64 – 1094)	< 0.0001
No	23 (33.8)	73 (98.6)	-	-

Significance: Given OR (68.83) and OR (142.8) signifies that the history of vaginal discharge is 68 times and history of bleeding PV is 142 times more amongst the women diagnosed with ectopic pregnancy as compared to women with normal intra uterine pregnancy.

Table 3: Comparison Of Past Obstetric History Between Cases and Controls (N=142)

Risk Factors	Cases n= 68 n- (%)	Controls n= 74 n- (%)	ODDS Ratio (Confidence Interval)	P Value
History of prior tubal surgery				
Yes	3 (4.4)	0 (0)	-	-
No	65 (95.6)	74 (100)	-	-
History of C section				
Yes	12 (17.6)	9 (12.2)	1.548 (0.60 -3.9)	O.371
No	56 (82.4)	65 (87.8)	-	-
History of spontaneous abortion				
Yes	34 (50)	9 (12.2)	7.222 (3.1-16.7)	0.0001
No	34 (50)	65 (87.8)	-	-
History of induced abortion				
Yes	31 (45.6)	2 (2.7)	30.16 (6.8 – 133)	< O.OO1
No	37 (54.4)	72 (97.3)	-	-
History of prior ectopic pregnancy				
Yes	4 (5.9)	0 (0)	-	-
No	64 (94.1)	74 (100)	-	-

Significance: Given OR (1.548), OR (7.222) and OR (30.16) signify that history of prior C Section, history of spontaneous abortion and history of induced abortion are seen 1.5, 7 and 30 times more amongst women who were diagnosed with ectopic pregnancy as compared to the women having normal intra uterine pregnancy respectively.

Table 4: Comparison Of Gynecology History Between Cases and Control (N=142)

Risk Factors	Cases n= 68 n- (%)	Controls n= 74 n- (%)	ODDS Ratio (Confidence Interval)	P Value
History of prior PID				
Yes	2 (2.9)	0 (0)	-	-
No	66 (97.1)	74 (100)	-	-
History of infertility				
Yes	5 (7.4)	1 (1.4)	5.794 (0.65 – 15.9)	0.096
No	63 (92.6)	73 (98.6)	-	-
Irregularity of menstrual cycle				
Yes	10 (14.7)	3 (4.1)	4.08 (1.07-15.5)	0.032
No	58 (85.3)	71 (95.9)	-	-
History of spotting or leaking PV				
Yes	30 (44.1)	1 (1.4)	57.63 (7.5 – 39)	< 0.0001
No	38 (55.9)	73 (98.6)	-	-

Significance: Given OR (5.794), OR (4.08) and OR (57.63) signifies that history of infertility, irregular menstrual cycle and history of spotting or leaking PV is seen 5,4 and 57 times more amongst the women who were diagnosed with ectopic pregnancy as compared to those with normal intra uterine pregnancy respectively.

Table 5: Comparison of Contraceptive History Between Cases and Controls (N=142)

Risk Factors	Cases n= 68 n- (%)	Controls n= 74 n- (%)	ODDS Ratio (Confidence Interval)	P Value
History of tubal ligation				
Yes	10 (14.7)	1 (1.4)	12.59 (1.5-101.2)	0.003
No	58 (85.3)	73 (98.6)	-	-

Significance: Given OR (12.59) signifies that history of tubal ligation is seen 12.59 times more amongst women who were diagnosed with ectopic pregnancy as compared to those with normal pregnancy.

Discussion

A successful spontaneous pregnancy is the outcome of a synchronized movement of the ovum and sperm to form a zygote at the ampullary isthmus junction, followed by implantation.[1]

The synchronized movement is the result of complex co-ordination between ciliary activity, muscular contraction and the flow of tubal secretions. [1] It has been found that cigarette smoking, endometriosis and various microbial infections have a profound impact on ciliary activity and tubal contractility leading to ectopic pregnancy and infertility. [1]

Despite continual improvements in medical facilities, ectopic pregnancy is the leading cause of mortality among women in their early trimester, accounting for up to 10 per cent of the total. [2] Global incidence of ectopic pregnancy accounts for up to 1-2 per cent, with the highest number of cases among those who adopted ART. [2] As reported by Centres for Disease Control and Prevention, 2.7 per cent of all pregnancy related deaths was due to ruptured ectopic pregnancy making it the foremost causes of haemorrhage related mortality. [2]

Our study revealed that 50 per cent of cases had histories of spontaneous abortion and 45.6 per cent had histories of induced abortion, therefore making the two the potential risk factors for ectopic pregnancy.

A similar study was conducted among Cameroonian women to identify the risk factors for ectopic pregnancy and the outcome of their study was strikingly different from ours as none of the four risk factors identified in their population were present in our study. [3]This included pelvic inflammatory disease, the use of emergency contraceptive pills like levonorgestrel (LNG-EC), previous use of depot medroxyprogesterone acetate (DMPA) and smoking during pregnancy. [3]

Another retrospective case control study conducted in 2017 and a case control study done in 2014 too concluded smoking at the time of conception and spouse's cigarette smoking as the leading cause of ectopic pregnancy. [4]

A prospective and descriptive study was carried out in Chennai to determine the risk factors for ectopic pregnancy. [5] The study bears considerable resemblance with our study by various factors, one being the incidence of ectopic pregnancy within the age range 18-45 years and one of the common risk factors being previous caesarean section. The study also revealed a success rate of 83.33% among patients who underwent methotrexate medical treatment. [5]

A study was conducted in 2019 to determine the pearl index of levonorgestrel intrauterine system (LNG-IUS) and its adverse effects. [6] The chances of ectopic pregnancy increases if the woman has taken LNG-IUS after the day of ovulation or has pre-existing pelvic inflammatory disease or endometriosis. [7]

A prospective cohort study conducted in America led to the conclusion that women who smoked or were heavy smokers, with significant exposure to diethyl-stilbestrol in utero, alcohol consumption of more than or equal to 10g/day, intake of oral contraceptive pills since adolescence or with a history of infertility, tubal ligation and usage of intrauterine devices are prone to ectopic pregnancy. [8]Two of the risk factors that reflected in our study too are infertility and tubal ligation accounting up to 7.4 % and 14.7 % of the cases.

A systematic review of a case report on abdominal ectopic pregnancy after IVF-ET was done in 2016. [9] IVF-ET was carried out in these patients which resulted in 46% of heterotopic abdominal pregnancy and abdominal ectopic pregnancy accounting up to 54%. [9]

The regulation of smooth muscle contraction and signalling during initiation of primordial follicle formation in human foetal ovary is due to the expression of protein prokineticin receptor 1, encoded by PROKR1 gene. [10]

The chief component of tobacco or cigarette smoke nicotine increases the expression of PROKR1. Nicotine not only increases but also alters the expression of PROKR1 which results in altered tubal motility. [10] This results in delayed transport of ovum to during the time conception, resulting in infertility.

A cohort study conducted in the Middle- East throws light upon the various factors that could lead to the recurrence of ectopic pregnancy in women. [11] This included previous miscarriages, extraction of retained products of conception, poor surgical treatment approach and inadequate haemoglobin level at the time of first ectopic pregnancy. [11]

Chlamydia trachomatis infection and gonorrhoea leading to tubal infection can be a potential platform for the occurrence of ectopic pregnancy by forming abscesses in the fallopian tubes leading to fluid accumulation. Even after an effective treatment a scar can be formed in the fallopian tube which can obstruct the passage of the ovum. [12]

In 2015, a descriptive hospital based study was conducted in Assuit University Egypt and remarkably, the potential risk factor recognized among the patients was internal venereal disease accounting for up to 72.5 per cent. [13] The following year, a retrospective study regulated by the Department of Obstetrics and Gynaecology, Thanjavur Medical College, Tamil Nadu identified pelvic infection (15.7 %), previous ectopic pregnancy (8.33%) and infertility (7.01%) as the most common risk factors. [12]

In TVS the presence of 'blob' sign is indicative of tubal pregnancy whereas interstitial line sign is indicative of interstitial ectopic pregnancy. [14] TVS coupled with beta HCG test makes the ultimate diagnostic modality for ectopic pregnancy. [14]

The success of ectopic pregnancy treatment and management depends upon the feasibility, patient's compliance, cost, equipment and trained health care personnel. [15] Though ectopic pregnancy is identified promptly on TVS the treatment technique to be undertaken depends upon the haemodynamic stability of the patient. [15]A haemodynamically stable patient with low initial serum beta-HCG concentration and no signs of active bleeding or rupture of tubes can undergo a non-invasive outpatient medical treatment like systemic methotrexate with regular follow up. [15][16]

From all the studies conducted across the world it is possible to conclude that smoking, pelvic infection and usage of emergency contraception are the major risk factors in the Western and developed countries. Whereas in developing countries like India, previous abortions and ectopic pregnancy, multiple caesarean section and tubal surgeries are the widely identified risk factors.

Therefore, to prevent recurrence of ectopic pregnancy early diagnosis and management of primary ectopic pregnancy with transvaginal sonography, human chorionic gonadotropin assay, systemic methotrexate or laparoscopy must be revolutionized.

Conclusion

On evaluating the data collected in our research "Risk Factors For Ectopic Pregnancy – a case control study in tertiary care hospitals in Mangaluru "we can conclude that the factors that account as the most potential risk for ectopic pregnancy include spontaneous and induced abortions, with multiple C sections being an antecedent cause .

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Comparison of Color, Coverage and Caries (CCC) Evaluation System and Simonsen's Criteria in Assessing the Retention of Pit and Fissure Sealants

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Abstract

Objectives: The purpose of this study was to compare the efficacy of Color, Coverage and Caries (CCC) evaluation system and Simonsen's criteria in assessing the retention of pit and fissure sealants.

Materials and Method: Sixty children with the age group of 6-8 years were chosen for a split mouth randomized clinical trial. Permanent mandibular first molars on either side were treated with 37% phosphoric acid [Vococid (VoCo)] followed by the application of a resin-based sealant [Clinpro TM 3M ESPE, USA]. The teeth were then evaluated on one side with CCC evaluation system and the other side with Simonsen's criteria at a period of six, twelve and eighteen months respectively. The results were calculated, tabulated and statistically analyzed using SPSS version 21 software (IBM SPSS Statistics, IBM Japan, Tokyo, Japan). On the basis of categorical scores given to retention of sealants, Pearsons Chi-square test was used for analysis. The level of significance was set at $p<0.05$.

Results: Complete retention was found in 86.7%, 80% and 71.7% of the subjects at the end of six, twelve and eighteen months respectively using CCC evaluation system. Sealant covering more than 50% was found in 10%, 11.7% and 13.3% at the similar recall intervals respectively whereas sealant was missing in only 1.7% and 6.7% at the end of 12 and eighteen months respectively. This difference was not statistically significant ($p>0.05$). When the sealants were evaluated using the Simonsen's criteria, it was observed that complete retention were seen in 85%, 76.7% and 70% of the children at the end of six, twelve and eighteen months respectively. Partial retention of sealants was observed in 15%, 21.7% and 23.3% of subjects at the end of six, twelve and eighteen months respectively. This difference was not significant ($p>0.05$). Almost similar results were obtained when both CCC evaluation system and Simonsen's criteria were compared.

Conclusion: This study concluded that CCC evaluation system appears to be a convenient method for use to evaluate sealed surfaces and provides a flexible tool for the clinician, researcher and academics. However, Simonsen's criteria is also a simple method to assess retention of sealants as it records the presence or absence of sealants in the occlusal surfaces.

Keywords: *Pit and fissure sealants, CCC evaluation system, Simonsens criteria, Retention.*

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Introduction

Dental caries has been the point of concern globally for its progressive and inescapable nature of decaying teeth. This is particularly because of the anatomy of the tooth which favors the stagnation of bacteria and their products which ultimately leads to destruction of the

dental tissues.[1] In spite of various preventive procedures such as fluoride treatment, oral hygiene measures, dietary modifications; caries continues to play in the progression of decay in the tooth.

Sealants have been introduced in the market to seal the pit and fissures that could prevent further stagnation of microorganisms. But for an effective bonding, the enamel surface has to be completely free of any debris and the pellicle for deeper penetration of the sealants into fissures.[2] This can be achieved by the use of various pretreatment techniques such as acid etching, air abrasion, air polishing, laser etching and ozone applications. The sealant retention can, therefore, be expected to increase after these procedures. However, sealant integrity requires periodic follow-ups for the effective prevention of dental caries.

Sealants need to be assessed for a clinician planning patient health care, to reapply sealant if the sealants are lost and to monitor the caries. The prime factors required to assess sealant retention is sealant identification, coverage, color, caries status and the differentiation between the preventive and restorative sealants.[3-6] The Color, Coverage and Caries (CCC) Evaluation system described by Deery et al. is a simple, legitimate and reproducible method to detect sealant integrity since it helps to determine all the three factors (Color, Coverage and Caries) responsible for sealant retention.[3]

Simonsen's criteria are based on the amount of sealant retained on the tooth surface. Accordingly, they are classified as: 1) Completely retained; 2) Partially retained and 3) Missing. Because of its simplicity, convenience, high reliability and validity, it has been used commonly to evaluate sealant retention in several studies.[4-11] An unreliability still exists in the system of sealant evaluation even after years of research studies. Unfortunately, we could not find literature related to comparison between the CCC evaluation system and Simonsen's criteria. Therefore, this study was conducted with the research hypothesis of comparing the efficacy of two sealant evaluation systems - CCC Evaluation System and Simonsen's criteria.

Materials and Method

The present study was a split mouth randomized clinical trial conducted on 6-8 years old children after obtaining ethical approval from the institution. Informed consent was obtained from parents who were informed that strict confidentiality would be maintained throughout the course and they were free to withdraw their child. Also, the children were benefitted with any other oral treatment if they needed for free.

A co-operative child having permanent erupted mandibular molars with no history of cavitation, previous restoration or sealants were included in the study. Children with medically compromised conditions contra indicating the treatment of teeth were excluded. Before starting the procedure, intra-examiner reliability was calculated by examining a group of 5 children and the re-examination was carried out at least 30 minutes after the initial examination. The kappa value was 0.88, which denoted substantial level of agreement between the examinations.

The sample consisted of 60 children with 60 teeth per group. Group 1 was evaluated using CCC evaluation system and Group 2 by Simonsen's criteria. Each child selected for the study received sealants in the form of split mouth design. The right permanent mandibular first molars were first etched followed by sealant application and were then evaluated using CCC evaluation system during recall visits. The left mandibular first molars were treated in the same way but were evaluated at the recall visits using Simonsen's criteria.

The protocol for the procedure was as follows:

- The children were asked to dry brush their teeth while waiting for their turn of treatment.
- The surfaces were then cleaned with prophylaxis paste utilising pumice and water for 15 seconds and dried lightly with packed oil-free air.
- The permanent mandibular first molar was etched using 37% phosphoric acid gel [Vococid (VoCo)] for fifteen seconds followed by flushing with water for 15 seconds and air dried. Strict isolation was maintained throughout the procedure using cotton rolls and suction.
- The teeth were then sealed with a pit and fissure sealant [Clinpro TM 3M ESPE, USA] utilising a syringe provided by the producer.
- Any excess sealant was removed with an explorer and light cured for twenty seconds. The color of the sealant changed from pink to opaque white on curing.
- Occlusal adjustment was done using composite finishing strips after checking for any high points.

- Patients were released and planned for review visits at an interval of six, twelve and eighteen months interim.

The method of examination was visual using blunt probe and mirror.

Group 1: Patients scheduled for recall visits were evaluated for sealant retention using CCC evaluation system and the codes used for evaluation were as follows:

Sealant covering all of the fissure system

Sealant covering more than 50% of the fissure system but some sealant missing

Sealant covering less than 50% of the fissure system

Group 2: Sealants were evaluated at recall visits using Simonsen's criteria. The categories of evaluation were as follows:

Completely Retained: Presence of sealant with some amount of wear such that ledges are not seen which indicate bulk amount of sealant loss. Also, there should be no exposure of pits and fissures due to loss of sealant.

Partially Retained: Part of sealant present due to some wear, pits or fissures or both are exposed due to loss of sealant.

Missing: Complete loss of sealant.

Statistical Analysis: The results were calculated, tabulated and statistically analyzed using SPSS version 21 software (IBM SPSS Statistics, IBM Japan, Tokyo, Japan). On the basis of categorical scores given to retention of sealants, Pearsons Chi-square test was used for analysis. The level of significance was set at $p<0.05$.

Results

Table 1. Sealant coverage at different intervals evaluated with CCC evaluation system.

CCC criteria of sealant retention	Six Months N (%)	Twelve Months N (%)	Eighteen Months N (%)
Complete sealant coverage	52 (86.7)	48 (80)	43 (71.7)
Sealant covering more than 50%	6 (10)	7 (11.7)	8 (13.3)
Sealant covering less than 50%	2 (3.3)	4 (6.7)	5 (8.3)
No sealant present	0 (0)	1 (1.7)	4 (6.7)
Total	60 (100)	60 (100)	60 (100)
Chi Square test	7.35		
P value	0.296		

Sixty children were recruited in this split mouth clinical trial and all of them participated till the end of the study. Complete retention was found in 86.7%, 80% and 71.7% of the subjects at the end of six, twelve and eighteen months respectively. Sealant covering more than 50% was found in 10%, 11.7% and 13.3% at the similar recall intervals respectively whereas sealant was missing in only 1.7% and 6.7% at the end of 12 and eighteen months respectively. This difference was not statistically significant ($p>0.05$).

Table 2. Sealant coverage at different intervals evaluated with Simonsen's criteria

Simonsen's criteria of sealant retention	Six Months N (%)	Twelve Months N (%)	Eighteen Months N (%)
Completely retained	51 (85)	46 (76.7)	42 (70)
Partially retained	9 (15)	13 (21.7)	14 (23.3)
Missing	0 (0)	1 (1.7)	4 (6.7)
Total	60 (100)	60 (100)	60 (100)
Chi Square test	12.28		
P value	0.212		

When the sealants were evaluated using the Simonsen's criteria, it was observed that complete retention were seen in 85%, 76.7% and 70% of the children at the end of six, twelve and eighteen months respectively. Partial retention of sealants was observed in 15%, 21.7% and 23.3% of subjects at the end of six, twelve and eighteen months respectively. This difference was not significant (p>0.05).Almost similar results were obtained when both CCC evaluation system and Simonsen's criteria were compared.

Discussion

The vulnerability of the pits and fissures to retain the micro-organisms and their byproducts because of their morphology has been an extreme concern with regard to the progression of dental caries.[5] However, application of sealants to these pits and fissures can overcome the development of caries as the sealants prevent the access to bacteria and their by products deep into the fissures. For an effective prevention method to sustain, it is imperative that the sealants be monitored for their retention periodically. There has not been a standardized method of assessing and evaluating the retention of sealants for a clinician planning recall visit. Many previous studies have used different criteria or have used their own to assess the retention of sealants.[6-9] We could not find any study that compared the evaluation systems to assess the retention of sealants such as CCC evaluation system and Simonsen's criteria. The present study necessitates the importance of the same and was therefore performed to compare the evaluation of sealant integrity using CCC evaluation system and Simonsen's criteria.

When the sealants were evaluated using CCC sealant evaluation system, complete retention was seen in 86.7% and sealant covering more than 50% was found in 10% at the end of six months. Similar findings were observed in the study of Khatri et al.[10] where at 6 months, complete sealant retention was observed in 78% teeth and at the end of 12 months, 71.9% sealants were completely retained. Mohammed et al.[11] found 66.7% complete sealant retention and 23.3% for sealants covering more than 50% of the occlusal surfaces at the end of six months. However, Fray et al.[12] found 90.47% complete loss of sealants and 9.53% of sealant in less than 50% of the fissures system at the end of six months.

Retention of sealant can be described in several ways. For example, some studies have reported sealant coverage according to 'sites' rather than the whole surface. In these cases, sealant covering half of the occlusal surface can be reported as complete coverage according to 'sites' criteria whereas the same would be regarded as 50% when it is categorized according to whole surface. Such results when directly compared could be misleading. CCC evaluation system has been considered by many researchers to be simple, effective, flexible and constructive as it determines all the three important criteria required to assess the retention of sealant that is discoloration, sealant coverage and development of dental caries.[3,12,13] When the sealants were evaluated using Simonsen's criteria, 85% of sealants were completely retained as compared to 15% of sealants that were retained partially at the end of six months. Similarly, 12 months results showed 76.7% complete retention as opposed to 21.7% partial retention. These findings were similar to the results of Ratnaditya et al.[14] where complete retention was observed in 82% of sealants at the end of six months and partial retention was observed in 9% of sealants. However, Simonsen[15] in his clinical evaluation of sealants for 24 months found complete retention in 96.7% which was quite high. Simonsen's criteria has been preferred by many authors due to its clarity, ease of use, reliability, high validity and reproducibility.[4,16,17] When both CCC evaluation system and Simonsen's criteria were compared, the CCC evaluation system was found to be more reliable and consistent in the form of assessment as it was efficient in recording all the prime factors responsible for the efficacy of sealant that is discoloration, sealant coverage and development of dental caries. Simonsen's criteria on the other hand are simple to follow but do not cover all the aspects required for sealant retention.

Conclusion

This study concluded that CCC evaluation system appears to be a convenient method for use to evaluate sealed surfaces and provides a flexible tool for the clinician, researcher and academics. However, Simonsen's criteria is also a simple method to assess retention of sealants as it records the presence or absence of sealants in the occlusal surfaces. This can be a beneficial tool for researchers assessing only retention of particular surface rather than the other prime factors such as discoloration and presence or absence of dental caries responsible for the assessment of the efficacy of sealants.

Conflicts of Interests: None

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Assessment of Knowledge, Attitude and Practice of Parents on Childhood Immunisation Programme in a Tertiary Care Hospital in Calicut

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Abstract

Background: Immunization is an important factor for preventing the severe infections disease in humans. This study is to assess the Knowledge, Attitude and Practice to the immunization schedule of paediatrics by their parents using a questionnaire in a tertiary hospital at Calicut.

Methodology: A prospective observational study that was carried among the parents of kids in the Paediatric O.P department of PVS hospital, Calicut. A questionnaire was prepared and administered to the parents to assess their KAP, on immunization.

Result: A total of 200 participants were included in the study. Around 40% parents had good knowledge, 80% had positive attitude 89% had revealed positive practice towards immunization. Maternal education (χ^2=35.64; p<0.01) and area of living (χ^2=22.99; p<0.01) were significantly associated with knowledge of mothers .Maternal education level (χ^2=20.76; p<0.01) were significantly associated with favourable attitudes. Good infants immunization practice was significantly associated with number of children in a family (χ^2=12.15 p<0.002). About 50 (42.3%) cases of child being ill were identified as a reason for vaccine hesitancy from 118 cases (59%).

Conclusion: The majority of the respondents have positive opinion about the importance of childhood immunization in study areas. However, some respondents had insufficient knowledge on this issue. Educational intervention should be recommended to improve this scenario and recommended special emphasis on the rural area.

Keywords: *Childhood immunization, Knowledge, Attitude, Practice.*

Introduction

The World Health Organization (WHO) has defined immunization as the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. These vaccines help to stimulate the body's own immune system to protect the person against subsequent infection or disease. Immunization is one of the most successful and cost effective public health interventions in the constant effort of human beings against diseases that affect our well-being.[4] Vaccination has made an enormous contribution to global health. Global vaccination coverage against many important infectious diseases of childhood has been enhanced dramatically since the creation of WHO"s Expanded Programme of Immunization. Parental decisions regarding immunization are very important

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for increasing the immunization rate, compliance and for decreasing any possible immunization errors. Parent's knowledge, attitude and practices regarding immunization are the major factors that contribute to their vaccination decisions. There are many barriers against immunization, including misinformation about vaccines, lack of proper knowledge regarding minor adverse effects of vaccines and very few contra indications of vaccines.[10]

In recent years, vaccine hesitancy has been the subject of growing attention as an emerging term in the literature.[11] A critical factor shaping parental attitudes to vaccination is parent's interaction with the healthcare professionals. An effective interaction can address the concerns of the vaccine supportive parents and motivate a hesitant parent towards vaccine acceptance. Conversely, poor communication can contribute to rejection of vaccination or dissatisfaction with care. To improve parent's awareness, good knowledge regarding vaccination is required. Therefore, physicians, pharmacists, nurses and others health care providers should provide parents with correct information about the advantages ofvaccines.[14]

Material and Method

A prospective observational study design was done in the Paediatric outpatient department of PVS Hospital (P) Ltd, Calicut for 6 months (October 2017 – April 2018). The study was conducted after attaining approval from the institutional ethics committee of the hospital and informed consent form was obtained from the parents. The parental Knowledge, Attitude and Practice were assessed using pre- designed questionnaire via interview. The pre-designed questionnaire contains 3 domains in it. The first domain was included with the socio-demographic data of the parents.The second domain had 45 multiple choice questions related to Knowledge, Attitude and Practice. There were 15 questions each for Knowledge, Attitude and Practice. The response that were given choice were 'Yes', 'No' and 'Occasionally' for Knowledge, 'Agree', 'Disagree' and 'Uncertain' for Attitude and 'Yes', 'No' and 'Don't Know' for Practice. The third domain had questions related to the Vaccine hesitancy. Scores of the questions were determined in such a way that the correct answers were given a score of two, wrong answer with score zero and indefinite, unclear were given a score of one. The respondents to knowledge based questions were divided as 'Good', 'Fair' and 'Poor'. The 'Good' included score more than 65%, 'Fair' 51%-65% and 'Poor' was less than or equal to 50%.The respondents of Attitude and Practice based questions were divided using Median Split Method as 'Positive' and 'Negative'. The 'Positive' had included greater than and equal to 60% and 'Negative' included with less than 60%.These scoring techniques was first checked and validated by performing a Pilot study with a sample size of 20 parents. After the interview if the parents showed a 'Fair' or 'Poor' Knowledge, Attitude and Practice then the parents were given with a short session of verbal counselling and provided with Patient Information Leaflet on Immunisation. The Patient Information Leaflet had basic information on vaccination, the need, the controversies faced and their scientific reasoning along with the Immunisation Schedule followed in the hospital. The collected data was correlated with the Socio-demographic data of the parents by using Statistical analysis. The impact of counselling were determined, whether the short session of counselling had made a change in the attitude of the parents. Statistical analysis was performed using chi-square test and SPSS software 4 windows version 20.

Findings:

Socio-demographic characteristics: Among 200 parents interviewed 176 were females of which 142 were housewives. Maximum numbers of parents (136) were in the age group of 26 to 35years, 106 parents had 2-3 children. 142 parents came from a rural area. There were 104 parents with UG or PG level of education.

Parents Knowledge: The overall knowledge of the 200 parents on immunization was found to be Fair [108(54%)].

Influence of socio-demographic characteristics on knowledge:

The level of education was significantly associated (X^2 value = 35.65, p value = <0.01) with how knowledgeable parents were on immunization. Most of the parents with a UG/PG level of education (Good: 60; Fair: 38; Poor: 6) were found to respond correctly to the questionnaire. The location or geographical area had also shown significant association (X^2 value = 22.99, p value = <0.01) with parent's knowledge on immunization.

Parents Attitude: The overall attitude of the parents on immunisation was found to be positive as about 80% of parents were found to have a positive attitude.

Influence of socio-demographic characteristics on Attitude: The level of education was significantly associated ((Chi^2 value = 20.769, p value = <0.01) with positive attitude of parents on immunisation, the higher the education, the more positive their attitude towards immunisation [UG/PG: 94(58.35%)].

Parent's Practice: The overall practice of the immunisation was found to be positive as almost 89% of parents were found to have a positive attitude.

Influence of socio-demographic characteristics on Practice: The number of children was significantly associated (Chi^2 value = 12.15, p value = 0.002) with practice of the parents. The association was found to be a negative association as increased number of children showed an increase in negative practice for immunisation.

Vaccine Hesitancy: Vaccine hesitancy here indicates the delay or refusal for vaccination by the parents. There were a total of 118 (59%) cases of vaccine hesitancy. The most common reason observed was, the child being ill"; that was about 50 (42.3%) cases

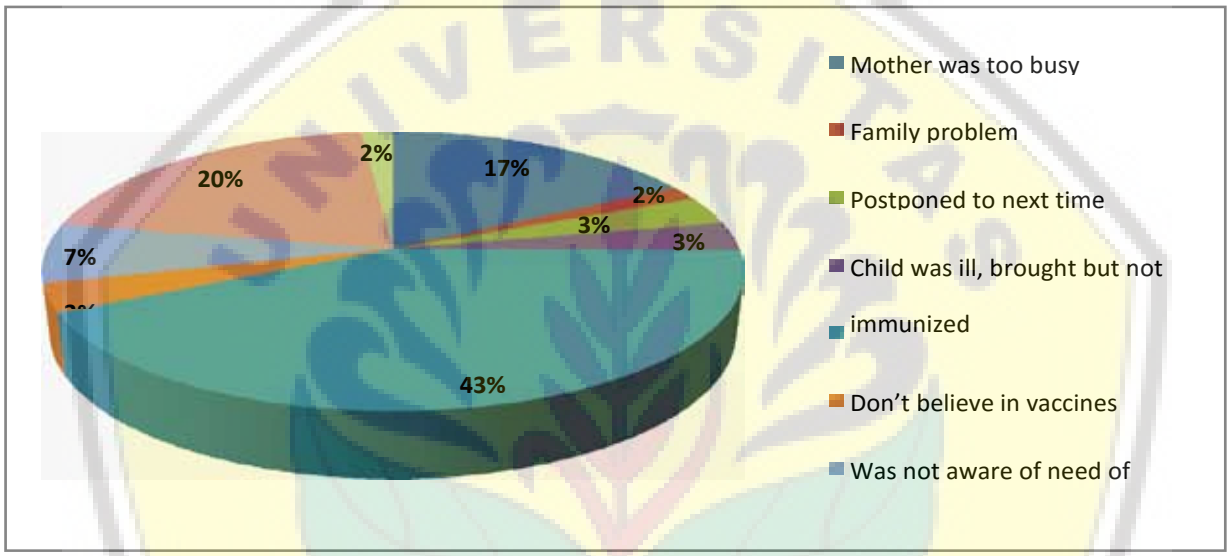

Figure 1: Distribution of reasons for Vaccine hesitancy

Impact of counselling on Vaccine hesitancy: Out of 200 parents included in the study 24 parents showed a negative attitude and hesitancy on vaccination due to the reason of hearing bad things about Immunisation. With the help of verbal counselling along with patient information leaflet and scientific literatures we were able to minimise their hesitancy towards vaccination to an extent.

Table 1: Reasons for parent's negative attitude towards vaccination

Sl.No.	Aspects on Vaccination	Parents Showed Hesitancy
1.	Infertility	14
2.	Pulse polio (extra dose)	3
3	Herd Immunity	5
4	Religion	2

Conclusion

Overall prescribing practices were in fair compliance with guidelines but still have a room for further improvement. Compliance to JNC 8 guideline resulted in better hypertension control in patients suffering from cardiovascular comorbidities. Poor adherence to guidelines in patients suffering from Diabetes mellitus and poor control among patients receiving mono therapy are the areas which need further probing and focus in the future. Different strategies like continuous medical education, seminars, reminder tools and the availability of clinical pharmacist to participate in collaborative practices and motivating patients to participate in BP goal achievement could increase guideline adherence and hypertension control.

Conflicts of Interest: The authors of this study

declare that there are no conflicts of interest regarding the publication of this article

Ethical Clearance: The study was conducted after attaining Approved by the Institutional Ethics Committee, P V S Hospital (P) LTD, Calicut and Kerala Ref. No. PVS/EC/02/17-18 (Dated on24/01/2017) and informed consent form was obtained from the parents.

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Effect of Audio Assisted Relaxation Therapy on Level of Blood Pressure among Mothers with Pregnancy Induced Hypertension

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Abstract

Introduction: The incidence of PIH is about 8-10% of pregnancies. Hypertensive disorder of pregnancy if unchecked will result in eclampsia with generalized convulsions, HELLP syndrome etc. It is usually managed with medicines. There are various non-pharmacological treatment like muscle relaxation, meditation, breathing etc. which are used to control of hypertension. Present study was aimed to assess the effectiveness of audio assisted relaxation therapy on level of blood pressure among mother with pregnancy induced hypertension.

Method: Experimental approach with one group pretest- posttest design was used for the study. Study was conducted among 30 antenatal mothers diagnosed with PIH admitted in Kamla Nehru Hospital, Shimla H.P, selected by using convenience sampling technique. Semi structured interview schedule is used to collect background information and sphygmomanometer was used to measure the level of blood pressure. The blood pressure (BP) was monitored three times a day for two days to obtain a baseline data and average of it was considered as pre-test. Audio assisted relaxation therapy was then administered for 20 minutes per sessions, two times a day for three days. The blood pressure (BP) was monitored before and after each session of relaxation therapy

Results: The mean posttest systolic is BP, 139.81 mm of Hg was significantly lower than the mean pretest systolic BP, 146.45 mm of Hg. The mean posttest diastolic BP, 87.63 mm of Hg was also ower than the mean pretest diastolic BP, 92.06 mm. Both differences were significant at the level of <0.001.

Discussion: The result of present study shows there is a significant difference in BP before and after intervention. So audio assisted relaxation therapy can be used as an effective add on intervention for the management of with women hypertension during pregnancy.

Keywords: *Pregnancy induced hypertension, Audio Assisted relaxation Therapy, Pregnant Mothers, blood pressure.*

Introduction

Pregnancy-induced hypertension (PIH) is a condition which present with high blood pressure with or without proteinuria and edema, with other clinical manifestation usually occurring late in pregnancy and regressing after delivery of the conceptus[1].

According to American College of Obstetricians and Gynecologists (ACOG) 2013 guidelines, the criteria for PIH is systolic blood pressure of 140 mm Hg or higher, or diastolic blood pressure of 90 mm Hg or higher occurring after 20 weeks of gestation in a pregnant mother whose blood pressure (BP) has previously been normal. Preeclampsia is diagnosed by persistent high BP that develops during pregnancy or during the postpartum period that is associated with a lot of protein in the urine or visual disturbances[2,3]. Indian scenario the incidence of PIH ranges from 5-15% in the

primi gravid mothers, whereas it is 16% in multigravida mothers[4]. Several epidemiological studies have been performed to determine the prevalence and risk factors of hypertensive disorder of pregnancy (HDP) as well as its subtypes. It was found in a study taht prevalence of HDP is 5.2–8.2%, gestational hypertension 1.8–4.4% and preeclampsia is 0.2–9.2%, respectively[5]. WHO estimates that out of 5,29,000 maternal death reported globally each year, 1,36,000 (25.7%) was contributed by India. Among these 16% are due to pregnancy related complications. According to WHO census 2010 the risk of a woman dying from a pregnancy-related cause is about 36 times higher during her lifetime in a developing country as compared to a woman living in a developed country.[6] According to WHO censes 2013 every year Nearly 76,000 women die globally due to preeclampsia[7]. Global scenario incidence of PIH is range from 1 to 35%. WHO estimates the incidence of preeclampsia to be seven times higher in developing countries[8]. Incidence rate of PIH is 8-10% in India[9].

According to WHO expert committee and Joint National Committee recommends non pharmacological treatment like muscle relaxation, meditation, breathing therapy as the first measure used to control of hypertension. Relaxation therapy is beneficial as it counteracts the physiological effects of stress and fight or flight response.[10,11,12] Present study was aimed to assess the effectiveness of audio assisted relaxation therapy on level of blood pressure among mother with pregnancy induced hypertension.

Materials and Method

The aim of the study was to find out the effectiveness of audio assisted relaxation therapy on level of blood pressure. So an experimental approach was appropriate for the study. One group pretest- posttest design with multiple observations is used for this study. As BP is a variable which is subject to variations due to the effect of many external and internal factors, average of three observations per day for two days was obtained to get the baseline blood pressure. The average of baseline measures is considered aspretest. Average of three observations on the last day was considered as the posttest. Intervention included the administration of audio assisted relaxation for 20 minutes two times a day for three days. In order to find the immediate effect of each session of audio assisted relaxation, the blood pressure level before and after intervention was measured.

The setting of the study was Kamala Nehru Hospital, Shimla Himachal Pradesh (KNH).A sample of 30 antenatal mothers diagnosed with PIH admitted in Kamala Nehru Hospital District Shimla, Himachal Pradesh was recruited for the study by using convenience sampling technique. The study included mothers who are willing to take part in the study, diagnosed with PIH and admitted in KNH and understand Hindi or English. The study excluded the mothers whose medication or dose changed in the past three days, variability in BP more than ten mmhg between mean of first and second day, having complications like eclampsia, HELLP syndrome and having mental illness.

A detailed explanation was given to participants about the purpose of the study and intervention and it was informed that intervention does not cause any harm to them. Participation was based on their willingness and written informed consent was obtained from each participant prior to data collection and they were allowed to withdraw from the study at any point. On recruitment Semi-structured interview schedule was used to collect Background information. Sphygmomanometer was used to measure the Level of blood pressure at the specified intervals and blood pressure was recorded in a flow sheet.

Audio assisted relaxation therapy (AART)was given to antenatal mothers along with routine medication and care. AART included sessions of guided relaxation of 20 minutes duration administered to mothers with PIH, with the help of prerecorded instructions by using headset for three continuous. It was developed and validated by experts in relaxation therapy. The intervention was administered in a separate quite room and was guided by prerecorded instructions. The mother was allowed to assume a sitting or side lying position as per her comfort and preference. The technique used for relaxation is focused attention. It is a prerequisite for meditation as a person is required to channelize all his attention to a specific sound and his breath. Focused attention helps in keeping the mind free from any distractions and channelizing thoughts in one direction towards slow breathing

The data was analyzed using frequency and percentage for distribution of background information. Mean and standard deviation and Paired t test to compare pretest and posttest level of blood pressure.

Results

Background information: Based on demographic variables majority 73.3% of mothers were in age between 19-30 years, 43.3% of them having diploma or degree and 76.6% of mothers were homemaker. Majority 53.3% of women's were belongs to joint family. Majority 30% of mothers were having monthly income of 10001-20000 monthly family income. About 66.6% of mothers were primigravidae and 46.6% of them were in gestational week between 36-40 weeks. None of them from any coexisting complications during pregnancy.

Based on PIH related data 40% of mothers were diagnosed with pregnancy induced hypertension at 31-35 weeks of pregnancy. Majority 60% of mothers were taking Labetalol for the treatment of PIH and also among them 51% of mothers used 50 mg dose for once a day. Majority, 87% of mothers were not received any teaching regarding relaxation therapy. About 20% of mothers reported to receive some informal teaching regarding management of PIH by restriction in diet like salt and oil free diet, avoid stress, positioning, fluid intake etc. None of them were not using any Non Pharmacological method.

Baseline Level of Blood Pressure:

Table 1. Frequency and Percentage Distributions based on baseline level of Blood Pressure: N=30

Variables	BP in mm of Hg	Frequency	Percentage
Level of systolic BP at the time of diagnosis	Less than 140	1	3%
	141-150	20	67%
	151-160	7	23%
	161-170	2	7%
Level of diastolic BP at the time of diagnosis	Less than 90	3	10%
	91-95	17	57%
	96-100	8	27%
	101-110	2	7%
Level of systolic BP on the day of recruitment.	130-140	5	17%
	141-150	14	46.6%
	151-160	11	36.4%
Level of Diastolic BP on the day of recruitment.	86-90	2	7%
	90-95	12	40%
	96-100	16	53%

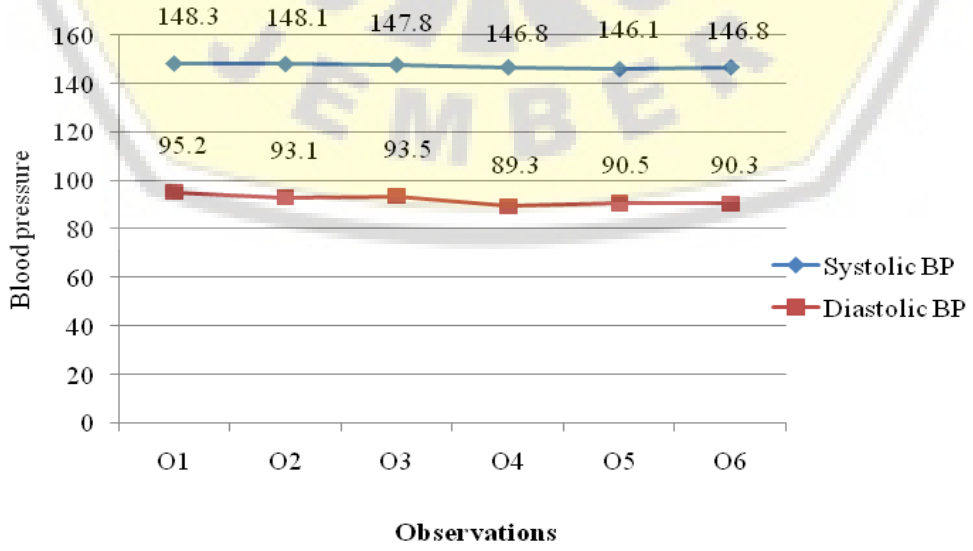

Fig 1: Line graph showing the mean blood pressure on first and second Day (N=30)

Figure no 1 shows that systolic and diastolic BP in first and second day was stable. Systolic BP of first and second day ranges from 148.3 mm of Hg to 146.8 mm of Hg and diastolic BP ranges from 95.2mm of Hg to 90.3mm of Hg.

Effect of Audio assisted relaxation therapy on level of blood Pressure:

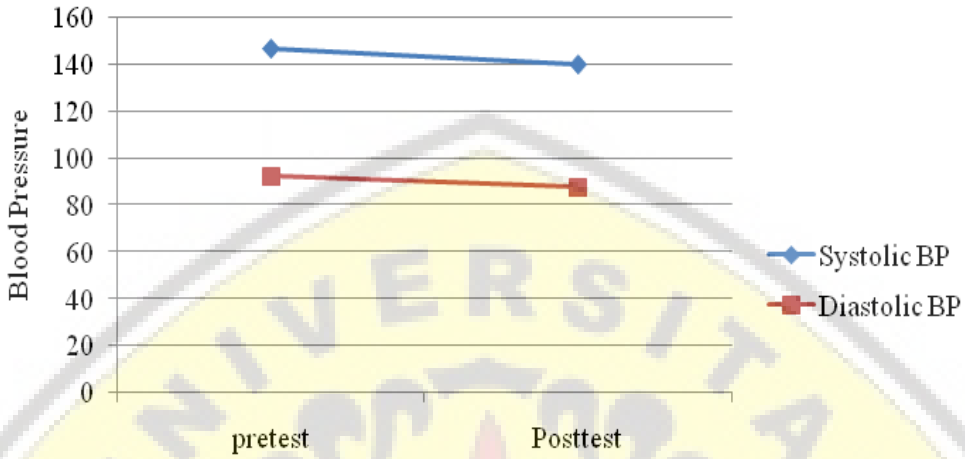

Fig. 2 Line graph showing the mean of pretest and posttest Systolic and Diastolic BP (N=30)

The fig. 2 shows that the mean systolic and diastolic BP is lower in posttest than the pretest. The pre-test systolic and diastolic BP is lower than the prestest with each session of the interventions (Fig. 3).

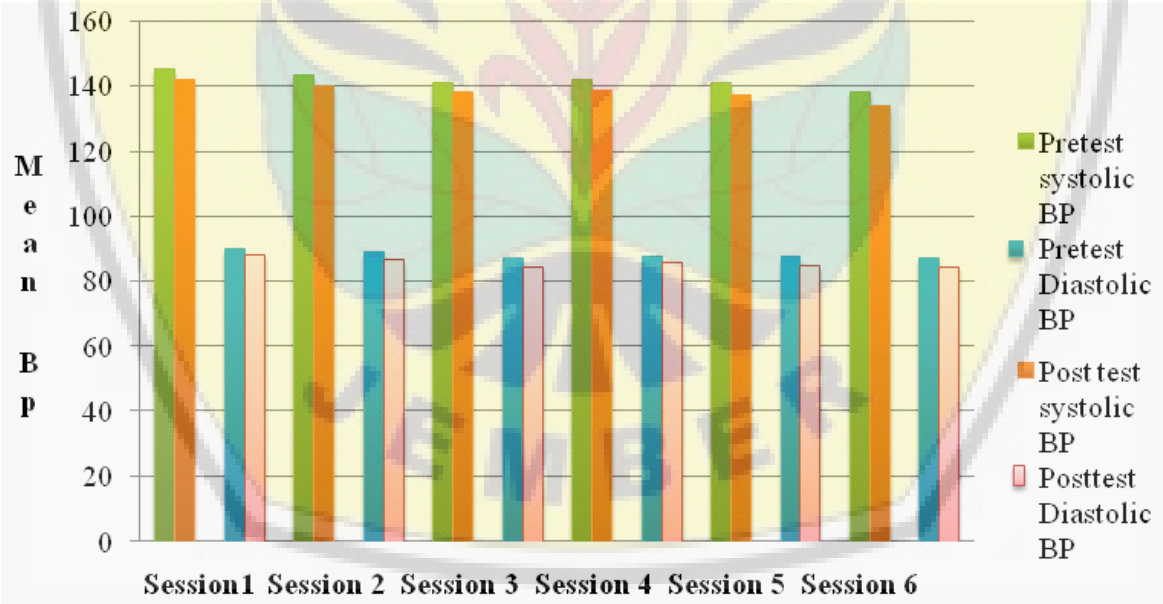

Fig. 3. Bar diagramme showing the immediate pretest and posttest systolic and diastolic blood pressure with each session of audio assisted relaxation (N=30)

Table: 2. Comparison of pretest and posttest Systolic and Diastolic blood pressure. N=30

	Pretest BP Mean± S.D.	Posttest BP Mean± S.D.	Mean Difference	t value	P value
Systolic BP	146.45±7.846	139.81±8.103	6.643	5.314	0.000**
Diastolic BP	92.06±3.820	87.63±5.581	4.427	5.101	0.000**

** Highly significant at P<0.001

Table 2 showed that there was significant (P<0.001) difference in the systolic blood pressure and diastolic blood pressure in pre-test and post- test. The mean pre-test scores of Systolic BP was 146.45 & diastolic BP was 92.06 significantly higher than the mean of post -test scores of Systolic BP was 139.81 & diastolic BP was 87.63. Hence, the null-hypothesis H_{01} was rejected and the research hypothesis was accepted.

Table: 3. Comparison of pre-test and post-test Systolic blood pressure for mothers receiving medications (group 1) and not taking any medications (group 2) N=30

		Pretest BP Mean± S.D.	Posttest BP Mean± S.D.	Mean Difference	t value	P value
Systolic BP	Group 1	149.23±4.47	142.06±7.48	7.17	5.17	<0.001**
	Group2	143.76±4.88	137.24± 8.66	6.51	4.29	<0.001**
Diastolic BP	Group 1	92.34±3.45	87.94±6.36	4.39	3.40	<0.001**
	Group2	91.06±4.257	86.06±4.40	4.00	5.52	<0.001**

Discussion

The present study was aimed to assess an effect of Audio assisted relaxation therapy on level of blood pressure among mothers with pregnancy induced hypertension. Findings of the study showed that AART was a safe method and helps to reduce systolic and diastolic BP and there was a positive strong correlation between AART and level of BP. So there is need to focus on use of non-pharmacological method to manage PIH and it can be implemented throughout the pregnancy.

Research studies conducted on effectiveness of interventions focusing on level of BP has shown to improve BP among mothers with PIH. A quasi experimental study was conducted at Government hospital and A.J Hospital, Mangalore in India in 2012 to evaluate the effectiveness of relaxation therapy on Mild Pregnancy Induced Hypertension. The results showed that the mean of pre-relaxation score (17.40) was significantly higher than the mean of post relaxation score (7.17). Since the difference in mean post therapy score is evident[13].A study was conducted to assess the effectiveness of guided imagery on level of blood pressure among PIH mothers in selected hospital in Pankajam Sitharam hospital at Trichy District, Tamilnadu 2015. A quantitative approach using quasi experimental pre-test post-test design with control group. Study sample is 60 PIH mothers were selected using Non-probability purposive sampling technique was used. Guided imagery was given to the mothers in experimental group for 10 minutes duration twice a day for 3 days. Sphygmomanometer was used to assess the level of blood pressure. Analysis using paired 't' test was obtained for level of blood pressure in control group was 0.84 which is not significant at p<0.05. For experimental group, the t value obtained was 22.52, which is highly significant at p<0.05 level. The findings of the study revealed that Guided Imagery helps in reducing blood pressure among PIH mothers[14]. In present study there was a significant difference in level of systolic and diastolic BP in pretest and posttest at level of 0.001.

So Audio assisted relaxation therapy can be used as an add on therapy for the management of mothers with pregnancy induced hypertension.

Conflict of Interest: The investigator has no conflict of interest.

Source of Funding: The study is funded by self.

Ethical Clearance: Ethical clearance was obtained from the institutional Ethics committee of Akal College of Nursing. Participation was based on willingness and written informed consent was obtainedfrom all participants.

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Vigilant Role of Microbiologist and Rapid Actions of Public Health Can Prevent Large Outbreak: A Japanese Encephalitis Report from Central India

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Abstract

Introduction: Japanese encephalitis virus (JEV) belongs to Flavivirus group of viruses and is most important cause of Acute Encephalitis Syndrome (AES) in South East Asia. JEV has known to cause major epidemics in India leading to high mortality and morbidity. This study reports a seasonal outbreak of JEV in Central India.

Materials and Method: Serum samples were collected from patients and were processed by Ig M Capture ELISA (kit manufactured and supplied by NIV, Pune) as per the manufacturer's instructions. Vector surveillance was undertaken in the affected area and vector control measures were initiated.

Results: Among 28 samples, 15(53.57%) showed the presence of JEV antibodies. 86.6% paediatric population was affected. *Culex* density crossed critical level of 10%.

Conclusion: Vigilant role of microbiologist and rapid actions of public health workers can prevent JEoutbreaks and epidemics.

Keywords: *Japanese encephalitis, Seasonal outbreak, Vector surveillance.*

Introduction

Japanese encephalitis (JE) is a common mosquito borne flaviviral infection. It is one of the leading forms of viral encephalitis worldwide and is mostly prevalent in Southeast Asia, covering a population of over three billion.[1] Though all the age groups are vulnerable, predominantly it affects children (less than 14 years of age) in endemic regions. JE virus (JEV) infections mainly remain asymptomatic in humans, but 1% of infections result in clinical disease with a fatality rate of 20-30% and 30-50% of recovered patients may undergo everlasting neuropsychiatric sequelae. [2, 3] The ratio of overt disease to inapparent infection varies from 1:250 to 1:1000. Thus the cases of JE represent tip of the iceberg as compared to the large number of inapparent infections.[4] JE is said rarely to be mild and presents more often as frank encephalitis than do infections with other tropical flaviviruses.[5] Neurologic disease is the most prominent clinical feature of the systemic infection.[6]

The natural cycle of JEV in Asian continent involves water birds, *Culex* mosquitoes and an amplifying host. Humans and equines are considered to be the dead-end host since the viremia in peripheral blood is low and transient. *C.vishnui complex* act as a principal vector of JEV which breeds in water bodies with frank vegetation and spread in highest density between June and

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November in temperate zones.[7] *Culex tritaeniorhynchus* is the most important and is associated with agricultural practices like rice cultivation or irrigated crop fields.[8] In Asia, pigs are considered to be the most important amplifying host, providing a link to humans through their close proximity to residential areas. Moreover, ardeid birds are considered responsible for the long-distance propagation of JEV and act as reservoir for the disease.[9]

In India, JE is a leading paediatric health issue and epidemics have been reported from many regions since 1955.[10] In recent past, India witnessed alarge outbreak in Malkangiri during 2012 and Manipur in July 2016.[11] Maharashtra is one of the most affected states along with some others in India.

The recommended method for laboratory confirmation of a JE infection is presence of JEV-specific Ig M antibody in a single sample of cerebrospinal fluid(CSF) or serum.The JEV-specific Ig M antibody capture ELISA has now become the first-line diagnostic assay recommended by WHO for detection of acute infections.[12]

The present study reports a seasonal outbreak of JEV with its epidemiological markers.

Materials and Method

The study was performed in Gadchiroli district in June-July 2018 which is highly maoist affected area located in east Maharashtra with a population of 1,072,942 (Population Census 2011-03-01).[13] JE and Dengue Ig M ELISA (kit manufactured by NIV, Pune) was done on all the samples as per manufacturer's instruction. The public health workers of the area assessed for presence of reservoir host such as pigs, cattle, poultry in the near vicinity of suspected cases. Vector surveillance was initiated immediately, that included collection of larvae and adult mosquitoes, identification of vector *species* and calculating their density. For adult vector collection, indoor and outdoor resting and dusk collection was carried out from fixed as well as random sites such as such as human dwelling, cattle sheds, mixed dwelling, bushes, plantations, standing crops, etc. by hand catch method using glass suction tubes. Per Man Hour Density (PMHD) was calculated.

PMHD = Number of mosquitoes collected

Actual man hours spent i.e. number of persons collecting X time spent in hours

For vector larvae,collection was done using dip method where the collecting equipment was immersed in the breeding places (edges of swamps, ditches, streams, rice fields other bodies of waters) at an angle of 45 º and larvae was collected. Larval density was calculated as –

Larval Density = [Total no. of larvae collected/Total no. of larval dips taken] × 100

Results

As Table 1 shows,out of total 28 serum samples tested for JE, 15(53.57%) showed the presence of JE Ig M and 4(14.28%) showed presence of dengue virus (DENV) Ig M. 3(10.71%) were positive for both JEV and DENV creating a diagnostic dilemma.

Table 1. Result of JE and Dengue Ig M ELISA

Sr.No.	Lab No.	Age in years	Sex	Result of JE Ig M	JE Ig M (Convalescent serum)	Dengue Ig M
1	75	14	Male	Positive		
2	76	14	Male	Positive		
3	77	40	Male	Equivocal		
4	79	12	Female	Equivocal		Negative
5	80	12	Female	Positive	Positive	Negative
6	81	12	Male	Positive	Positive	Negative
7	82	14	Male	Equivocal		Equivocal
8	83	14	Male	Negative		Negative
9	84	8	Female	Positive	Positive	Positive
10	85	13	Male	Positive	Positive	Equivocal
11	86	9	Female	Positive	Positive	Positive

Sr.No.	Lab No.	Age in years	Sex	Result of JE Ig M	JE Ig M (Convalescent serum)	Dengue Ig M
12	87	13	Female	Positive	Positive	Negative
13	88	13	Female	Positive	Positive	Equivocal
14	89	4	Female	Positive	Positive	Equivocal
15	90	32	Female	Equivocal		Equivocal
16	91	10	Female	Positive		Negative
17	92	10	Male	Equivocal		Equivocal
18	93	15	Male	Equivocal		Negative
19	94	28	Female	Positive		Negative
20	95	11	Male	Equivocal		Negative
21	96	10	Male	Equivocal		Negative
22	97	26	Female	Positive		Negative
23	98	5	Male	Positive	Positive	Positive
24	99	60	Male	Negative		Negative
25	100	6.5	Female	Negative		Negative
26	101	6	Male	Positive	Positive	Equivocal
27	102	14	Female	Negative		Positive
28	103	2.5	Female	Negative		Negative

Among positive, 6(40%) were male and 9(60%) were females. 13(86.6%) were children ≤ 14 years of age (lowest age was 4 years) and 2(13%) were adults less than 30 years of age. Maximum positivity was seen in age group of 4-6 and 7-9 years. Table 2 shows age wise distribution of positive cases.

Table 2. Agewise distribution of cases

Age group (in years)	No. of positive cases	Total no. of cases	% Positivity
1-3	0	1	0%
4-6	2	3	66%
7-9	2	3	66%
10-12	3	7	43%
13-15	5	9	55%
16-18	0	0	0%
>18 (adults)	2	5	40%

WHO says 'To confirm that a seasonal outbreak is due to JE, suspected cases should be tested until 5-10 are laboratory-confirmed as JE'[12] declaring this to be seasonal outbreak of JEV which was contained on a very primitive stage due to vigilant and active involvement of microbiologist leading to rapid actions as mentioned below taken by public health workers.

1. Insecticidal spray
2. Releasing guppy fishes
3. Mosquito net distribution
4. Educating people via mass meetings, handouts and posters
5. Checked for household water reservoirs and decant them if they had mosquito larva
6. Put tamifos in water bodies
7. Vector surveillance in and around the houses of confirmed and suspected cases. Results are shown in Table 3. It shows that only *Culexspecies* has density above the critical level of 10% beyond which epidemics are likely to occur.[14]

Table 3. Vector surveillance results

Vector Species	Density of adult (per man hour density)	Density of larva (per dip)
Anopheles culicifacies	5.2	108
Anopheles stephensi	0.0	
Anopheles fluventis	0.0	
Other Anopheles	7.2	
Aedesspecies	0.0	0.0
Culex quinquefasciatus	168	476
Culexvishnui	24	
Sandfly	0.0	0.0

Some confirmed cases were pig rearers having backside pigyards . Also, sudden increase in number of pond herons habitating near house of confirmed cases was noted.

Discussion

Out of 28,15(53.57%) showed the presence of JE specific antibodies in single serum specimen defining it as seasonal outbreak. In a study by Saikia L, 40.77 % were diagnosed as JE in patients of Acute Encephalitis Syndrome (AES).[15] Also, Anuradha SK showed 23.17% positivity for JE in viral encephalitis patients.[16] In a large outbreak in Uttar Pradesh, JEV was main viral etiology (49.4%) associated with AES cases applying serology.[17] Our positivity rate lies well in range as mentioned in other hospital based and outbreak studies.[18,19]

4(14.28%) showed presence of Dengue antibodies but in field surveys Aedes mosquito was not found. Absence of Aedes mosquito rule out the presence of dengue infection. There was also no history of travel in study patients. 3(10.71%) were positive for both JEV and DENV. Similar finding was demonstrated by Kaleshwar Prasad Singh *et. al.*[20]and other studies as well. [21,22] Presence of antibodies to both JE and dengue creates a diagnostic dilemma. In such cases, serological ratio of anti - dengue Ig M to anti- JE Ig M >1.1 defines infection with dengue virus, between 1.1 and <1.1 but >0.91 defines infection with unknown flavivirus and ≤ 0.91 defines a Japanese encephalitis virus infection .[23]In our study the ratio was≤ 0.91 and thus, these samples could be considered as JE positive increasing positivity to 64.28%.Nearly, similar positivity was noted in a large epidemic that took place in 16 districts of Uttar Pradesh, where 66.6% were positive for JEV.[24] Clinical presentation and other laboratory investigation can alsodifferentiate between JE and dengue infection.[25]

JE mostly affects children and is often referred to as "kid killer".[26] In our study, maximum positivity was seen in age group of 4-6 and 7-9 years. Similar findings are seen in a study by Auradha SK *et al.*[27]Epidemiological data collected from various JE endemic states of India during 2008–2013 also support our finding.[28]

About 25%–30% of JE cases are fatal and 50% result in permanent neuropsychiatric sequelae.[29]Case fatality rate (CFR) in our study is 7.14%which is low due to early detection and management of cases. The area specific case fatality rate ranged from 0 to 55.5% in the different districts or states during the period 1998 to 2002.[30]

Vector surveillance showed increased density of *Culexspecies* in the area showing need to do vector surveillance on routine basis and to watch for the early epidemiological warning signs. Other parameters like rainfall, rice field irrigation, migratory birds also affect transmission of JE and thus should be closely noted. Piggeries should be away from human residential areas as domestic pig rearing is an important risk factor in the transmission to humans.[31]Education plays an important role in preventing outbreaks of JE.[32]In our study also, different measures were taken to counsel and educate the population of the affected area where vector control and personal protective measures remained the mainstay.

Conclusion

This study reports the seasonal outbreak of JE in Central India which was contained at a very primitive stage due to vigilance of microbiologist and rapid actions taken by public health sector. AES caused by JE has high mortality and morbidity and due to early containment of the outbreak, this was prevented. Regular epidemiological surveillance is the key factor to prevent an epidemic.

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A Study of Stress Level among Medical and Paramedical Students in Western Up India

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Abstract

Introduction: Medical and paramedical students need high qualities of mental health as the education is highly stressful as compared to other professional modules. Minimal stress is sometimes subsidiary for a salubrious outwitting; high caliber of stress may have a negative effect on mastery of the academic curriculum and overall health.

Objectives: i. To assess the prevalence level of stress among medical and paramedical students. ii. To study the various factors associated with stress among medical and paramedical students.

Method: A cross-sectional-questionnaire based study was conducted among medical and paramedical students in Swami Vivekananda Subharti University, Meerut (U. P.). The stress was assessed by using Kessler 10-item psychological distress scale (K10) along with a pretested sociodemographic and preventive variables. Data were entered in Microsoft Excel and analyzed using SPSS version 19.0 statistical software. chi-square test was used

Results: In this study, it has been found that 59(21.6%) medical students were suffering from severe stress and 46(16.1%) paramedical students were suffering from severe stress. The female students had higher stress as compared to male students. The students of age >20 years had higher stress as compared to students of age <20 years. There was statistically lesser stress in students who practiced exercise and yoga daily as compared to students who did not practice exercise and yoga.

Conclusion: The medical students had higher severe stress as compared to paramedical students. The physical exercise and yoga were found to be very useful in prevention of stress among the students.

Keywords: *Stress, medical students, yoga, k10.*

Introduction

Medical and paramedical students need high qualities of mental health as the education is highly stressful as compared to other professional modules. Stress is stereotype in medical & paramedical students. Minimal stress is sometimes subsidiary for a salubrious outwitting; high caliber of stress may have a negative effect on mastery of the academic curriculum and overall health.[1]

Studying in university is one of the stressful stages of life and it is characterized by quite a bit of change in students lifestyles which is stress inducing. In

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fact, the person experiences stressful events such as, changes in friendship relations, staying away from their home and family and education. In addition, studying medicine and Para medicine, by themselves, seem to be stressful due to their communication with patients, intensive curriculum and academic demands, including forced night awakenings for shifts and even for exam preparation .[2]

Medical & Paramedical education is highly stressful as compared to other professional curricula. Stress in medicos is not unorthodox and is process orientated. The enormous syllabus, peer competition for academic performance, perpetual evaluation and long duration of training are precipitating factors for stress s in medical & paramedical students.[3]

Stress is the condition that results when person-environment transactions lead the individual to perceive a discrepancy, whether real or not, between the demands of a situation and the resources of the person's biological, psychological or social system.[4]

Positive stress is called Eustress and Negative stress Distress. Eustress triggers the body alarm and enhances attention, performance and creativity; Distress has negative effects on the body impairing the person's physical and mental wellbeing. Different studies conducted worldwide among medical students have reported prevalence of stress ranging from 27-73%.[5]

There are ample academic stressors such as information receptivity overload, hectic routine that is devoid of socialization, minimal leisure time and recurrent academic evaluations. Some researches have shown that depression may lead to the state of fright, low motivation, despondency, anger and retaliation.[6] The continuous evaluation process, exhausting work hours, striving for earning high grades, goals etc. are not the only source of stress for medical students.[7,8]

The present study was undertaken to estimate the prevalence of psychological stress and association between the levels of stress and study variables among Subharti medical and paramedical students.

Aims and Objectives

I. To assess the prevalence level of stress among and paramedical students.

II. To study the various factors associated with stress among medical and paramedical students.

Material and Method

A cross sectional descriptive study was carried out at Swami Vivekananda Subharti University, Meerut (U. P.) from May 2017 to December 2018. Sample size was calculated using EPI INFO StatCalc, by using the following data; prevalence rate 50%, significance level 0.05 and power of the study 90%. Thus in this study, the minimum size was calculated as 270. Therefore, 273(medical) and 286(paramedical) students were randomly selected for the study. The sample was drawn from each semester of medical and paramedical undergraduate students of the university through systematic randomized sampling. The students who gave consent were included in the study and the students who were absent on the day of data collection were excluded from the study.

Study Tool: Data collection was performed by using the Kessler 10-item psychological distress scale (K10). It was designed to quantify current 4 weeks distress in population surveys. The K10 comprised of 10 questions. Each question scored on Likert scale ranging from 1to 5 The cut-off scores were used as < 20 no stress; 20–24 mild stress; 25–29 moderate stress; 30–50 rigorous stress[9-10]

Statistical Analysis*:* Data were entered in Microsoft Excel and analyzed using SPSS version 19.0 statistical software. Chi-square test was used to observe and quantify an association between the categorical outcome and different study variables. A p-value of < 0.05 was considered statistically significant.

Results

Table 1: Association of Demographic Variables of Medical Students & Paramedical Students and their stress level

Variables		Kessler Psychological Distress Scale (K10)								Total		P-Value
		Well		Mild		Moderate		Severe				
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
Age	< 20 Years	55	28.2	70	54.3	60	46.2	34	32.4	219	39.2	0.001
	>20 Years	140	71.8	59	45.7	70	53.8	71	67.6	340	60.8	
Sex	Female	83	42.6	76	58.9	75	57.7	60	57.1	294	52.6	0.007
	Male	112	57.4	53	41.1	55	42.3	45	42.9	265	47.4	
Residence	Rural	44	22.6	28	21.7	33	25.4	33	31.4	138	24.7	0.267
	Urban	151	77.4	101	78.3	97	74.6	72	68.6	421	75.3	
Religion	Hindu	156	80.0	96	74.4	112	86.2	89	84.8	453	81.0	0.086
	Muslim	31	15.9	31	24.0	16	12.3	13	12.4	91	16.3	
	Others	8	4.1	2	1.6	2	1.5	3	2.9	15	2.7	
Total		**195**	**100.0**	**129**	**100.0**	**130**	**100.0**	**105**	**100.0**	**559**	**100.0**	

1. In this study, 195(34.9%) students had no stress, 129(23%) students had mild stress, 130(23.2%) students had moderate stress and 105(18.8%) students had severe stress.
2. 219 (39.2%) of students were <20 years of age and 340 (60.8%) were> 20 years of age. A proportion of 70 (54.3%) mild, 60 (46.2%) moderate and 34 (32.4%) severe stress was found in < 20 years of age. 59 (45.7%) mild, 70 (53.8%) moderate and 71 (67.6%) severe stress was found in >20 years of age. There was statistically significant difference between the age group.
3. Gender wise distribution was found as 265 (47.4%) of students were males and 294 (52.6%) were females. A higher proportion of female students were found. 76 (58.9%) mild, 75 (57.7%) moderate and 60 (57.1%) severe stress was measured. Among male students 53 (41.1%) mild, 55 (42.3%) moderate and 45 (42.9%) severe stress was found in this study. There was statistically significant difference between the genders.
4. 138 (24.7%) of students belongs to rural community and remaining 421 (75.3%) belongs to urban area. 101 (78.3%) mild, 97 (74.6%) moderate and 72 (68.6%) severe stress was found in urban respondents. 28 (21.7%) mild, 33 (25.4%) moderate and 45 (42.9%) severe stress was found in rural respondents. There was not statistically significant between the residences of students.
5. 453 (81.0%) of students were Hindus and 91 (16.3%) were Muslim by the religion. 96 (74.4%) mild, 112 (86.2%) moderate and 89 (84.8%) severe stress was found among Hindu respondents. 31 (24.0%) mild, 16 (12.3%) moderate and 13 (12.4%) severe stress was found among Muslims. There was not statistically significant between the religions.

Table 2: Comparison of stress among medical and paramedical students

Variables	Kessler Psychological Distress Scale (K10)								Total		P-Value
	Well		Mild		Moderate		Severe				
	FREQ	%	FREQ	%	FREQ	%	FREQ	%	FREQ	%	
Medical	121	44.3	45	16.5	48	17.6	59	21.6	273	100	<0.001
Paramedical	74	25.9	84	29.4	82	28.6	46	16.1	286	100	Sig.

In this study, it has been found that 45(16.5) had mild stress, 48 (17.6%) moderate stress and 59(21.6%) medical students were suffering from severe stress. 84(29.4%)had mild stress,82(28.6%) moderate stress and 46(16.1%) paramedical students were suffering from severe stress .The results were found to be statistically significant.

Table 3: The association of addiction and stress level of study subjects.

Variables		Kessler Psychological Distress Scale (K10)								Total		P-Value
		Well		Mild		Moderate		Severe				
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
Smoke	No	186	95.4	125	96.9	126	96.9	102	97.1	539	96.4	0.814
	Yes	9	4.6	4	3.1	4	3.1	3	2.9	20	3.6	
Alcohol	No	194	99.5	127	98.4	128	98.5	105	100.0	554	99.1	0.475
	Yes	1	0.5	2	1.6	2	1.5	0	0.0	5	0.9	

Only 20 (3.6%) of respondent were ever smokers, out of them 4(3.1%) mild, 4(3.1%) moderate and 03(2.9%) severe stress was found in ever smoker, although 2(1.6%)mild, 2(1.6%)mild, 2(1.5%) moderate was found in alcoholic respondents. There was no statistically significant association.

Table 4: The association of exercise or pray with stress level of study subjects.

		Kessler Psychological Distress Scale (K10)								Total		P-Value
		Well		Mild		Moderate		Severe				
		Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
Exercise/ Yoga	No	79	40.5	46	35.7	50	38.5	61	58.1	236	42.2	0.003
	Yes	116	59.5	83	64.3	80	61.5	44	41.9	323	57.8	
Pray	No	7	3.6	5	3.9	5	3.8	3	2.9	20	3.6	0.975
	Yes	188	96.4	124	96.1	125	96.2	102	97.1	539	96.4	

323 (57.8%) of students were engaged in physical activities such as exercise and yoga. Out of them, 83 (64.3%) mild, 80 (61.5%) moderate and 44 (41.9%) severe stress was found in active students. There was statistically significant association present.

539 (96.41%) of respondents did prayer regularly. Out of them, 124(96.1%) mild, 125 (96.2%) moderate and 102 (97.1%) severe stress was found in respondent who did prayer regularly. There was no statistically significant association present.

Discussion

The present study found out that students suffering from severe stress was more in medical (21.6%) compared to paramedical students (16.1%) and it was found to be statistically significant. The academic burden and competition of postgraduate seats might have caused much severe stress in medical students as compared to paramedical students. Singh A and Singh S (2008)[9], Moayedi et al (2016)[2] found prevalence of perceived stress seems to be high among medical students. The study by Shapiro SL et al (2007)[10] also had documented high ratio of substance abuse interpersonal relationship problems, stress, depression and anxiety among medical students. The same study also reported that lack of social support, loneliness, specific personality factors and poor emotional adjustment of the professional students caused high stress in medical and paramedical students.

In our study it was seen that girls had more stress as compared to boys. A recent research reported similar findings by Mohsin S. et al. (2010)[11] that the overall mean perceived stress was significantly higher among female students but with the contrast that stress was not found

to differ significantly on the basis of sex as reported by Supe AN (1998)[12]. In fact, the literature revealed inconsistent data about gender difference and stress. The inconsistency in the data might be due to the reason that stress is itself a manifestation of multiple factors like biological, sociocultural or variable combinations of each.

In our study, students were >20 years of age had signicantly more stress as compared to students <20 years. The high stress in students >20 years might also be due to higher academic burden and competition for the postgraduate seats. Similarly, Yousif W (2016)[13] showed a significant association between stress and student age more than > 20 years.

The students living in urban area (68.6%) were seen to be suffering from severe stress compared to rural students (31.4%) which not found to be statistically significant. There was no significant association was observed between dietary pattern and stress. Also there was no significant relation found between stress and habits like smoking and alcohol.

323(57.8%) of students were engaged in physical activities such as exercise and yoga. The present study showed that exercise & yoga including physical postures, breathing exercises and meditation may be effective in reducing stress levels In a study done by Lona Prasad et al (2016)[14], yoga and exercise showed a statistically significant reduction in perceived stress. Andrée-Anne Simard & Melissa Henry (2009)[15] reported that the students reported improvements in overall health, perceived stress and depressive symptoms following the yoga intervention. Ms. Christine Michael (2017)[16] reported the stress among nursing students decreased with the practice of Yoga Nidra[17].

Conclusion

The medical students had higher severe stress as compared to paramedical students. The female students had higher stress as compared to male students. The stress level of students increased with age and academic year of curriculum. The higher level of stress among medical and paramedical students might be due to high academic burden during the studies. The physical exercise and yoga were found to be very useful in prevention of stress among the students. Therefore, it is recommended that the physical exercise and yoga should be used as preventive strategies of stress among medical and paramedical students.

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Influence of Chair Based Exercises on Quality of Life among Frail Elderly

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Abstract

Frailty, a progressive physiologic decline in multiple body systems, marked by loss of function, loss of physiologic reserve and increased vulnerability to disease and death. The overall prevalence of frailty is 22.7%. Frailty is more common in women (25.3%) than in men (18.6%).[1] Exercise has a wide range of health benefits in older people.[2,3] Mostly for community-dwelling population there is a clear evidence to support exercise in improving health and quality of life with well evidenced exercise programs. These programs have shown to reduce the risk of falls with associated benefits on mortality, morbidity and costs to health and social care.[5,6]Frail elderly people are often unable to undertake high intensity exercise programmes.[7] Therefore chair based exercises are been used as an alternative. Many research studies have reported the benefits of chair based exercises as a physical activity for older adults and individuals with limited movement.[4]

Method: The subjects in the KIMSDU campus were screened and 42 subjects fulfilling the criteria were involved. Prior consent was taken. Treatment protocol consists of chair based exercises for 4 days per week for 6 weeks The interpretation of the study was done on the basis of comparing pre-test and post-test assessment of QOL and 6MWT.

Result: Intra group comparison results showed that chair based exercises are effective and QOL and 6MWT were statistically significant ($p<0.0001$) and (0.0431) respectively.

Conclusion: Chair based exercises were significantly effective in improving the mobility and function and preventing the risk of falls among frail elderly population.

Keywords: *Frail elderly, Chair based exercises, Quality of Life questionnaire (SF-36), 6 Minute Walk Test.*

Introduction

Frailty, a progressive physiologic decline in multiple body systems, marked by loss of function, loss of physiologic reserve and increased vulnerability to disease and death. With increase in age the prevalence of frailty increases. The overall prevalence of frailty is 22.7%. Frailty is more common in women (25.3%) than in men (18.6%).[1] Exercise has a variety of health benefits in older people.[2,3] Physical activity is the single most beneficial thing that individuals can do to maintain their health and function and quality of life.[4] Mostly for elderly population there is a clear evidence to support exercise in improving health and quality of life with well evidenced exercise programs widely engaged in clinical practice. These programs have shown to reduce the risk of falls with associated benefits on mortality, morbidity and costs to health and social care.[5,6]

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Frail elderly people are often unable to undertake high intensity exercise programmes.[7] Therefore chair based exercises are been used as an alternative. Many research studies have reported the benefits of chair based exercises as a physical activity for older adults and individuals with limited movement.[4]

Research in the general population has shown that the elderly population who took part in regular, moderate chair based exercises have experienced increase in stamina and energy to do work than who doesn't. Chair based exercises increases the release of endorphins by the brain which raise the pain threshold and thus helps to increases the endurance. Chair based exercises is a modified form of exercises which mainly works upon the musculoskeletal and cardiovascular fitness of an individual.

Chair based exercises have been shown to have a beneficial effect at maintaining or promoting independence and mobility in older people.[8] The range of improvements demonstrated in research trials, lasting 8 weeks or longer, considering chair-based seated and chair-assisted standing exercises in both community dwelling and frail institutionalized older people include:[8]

- ↑Strength[9]
- ↑Power[10]
- ↑Flexibility[11]
- ↑Ability to perform everyday tasks[12]
- ↑Balance[9]
- ↓Depression[10]
- ↓Body fat[13]
- ↓Arthritic pain[14]
- ↓Postural hypotension[15]
- ↓Risk of falls[16]
- ↑ Reaction time
- ↓Stress and anxiety

Compliance to chair based programs is generally better than that of standing or dynamic exercise, especially amongst the oldest old and amongst those with low baseline levels of fitness and function. Chair based exercise has specific benefits as a training method.[17]

- It stabilises the lower spine by providing a fixed base (particularly important in those with kyphosis or lordosis of the spine).
- It facilitates greater range of movement by providing points of leverage and support.
- It minimises load-bearing and reduces balance problems in those with particularly poor mobility and arthritic pain.
- It increases confidence in those unable to perform free-standing exercise.[17]

Although chair based exercise has been shown to be effective, it should, in principle, be a starting point for those with low baseline function and be a part of a fuller rejuvenation/rehabilitation process. Ideally, for full preservation of independence, a programme that moves on, in time, to standing and to more dynamic challenges will better preserve gait, balance and mobility which intend may help to improve the quality of life.[17]

The chair based exercises are as follows:[18]

1. Marching
2. Knee Lift
3. Half Jack
4. Criss-Cross (along with arm movement)
5. Single Knee Raise
6. Mambo
7. Side Kick
8. Back Kick
9. Squat
10. Side Step
11. Swing

It is found in earlier studies that physical activities improve the metabolism and blood circulation. However there is limited research available to show any significant impact of chair based exercises on quality of life among frail elderly.

Materials and Methodology

An approval for the study was obtained from the Protocol committee and institutional Ethical Committee of Krishna Institute of Medical Sciences Deemed To be University. The subjects in Krishna Institute of Medical Sciences Deemed To be University campus were screened and those fulfilling the inclusion and exclusion criteria were involved. Participants were informed about

the study and consent was taken. Pre-test assessment was taken by using Quality of life questionnaire (SF-36) and 6 Minute Walk Test.[19] Chair Based Exercises was then given as per the protocol for 4 days per week for 6 weeks. Post-test assessment was taken by using Quality of life questionnaire (SF-36) and 6 Minute Walk Test. The interpretation of the study was done on the basis of comparing pre-test and post-test assessment of Quality of life questionnaire (SF-36) and 6 Minute Walk Test.

Chair Based Exercise Protocol:[20,21]

1. **Warm UP** (6 minutes),
   - Heel digs
   - Side to touch
   - Back to touch
   - Knee raise
   - Punches
   - Trunk twist

   Each move will have 20 repetitions.
2. **Workout** (18 minutes)
   - (Sitting Position)
     - Marching
     - Knee lift
     - Half jack
     - Criss cross
     - Single knee raise
     - Mambo
   - Standing Position
     - Side kick
     - Back kick
     - Squat
     - Side step
     - Swing
   - Sitting Position
     - Marching
     - Knee lift
     - Half jack
     - Criss cross
     - Single knee raise
     - Mambo

   Each move will have 20 repetitions.
- **Cool Down** (6 minutes)
  - Hamstring stretch
  - Adductor stretch
  - Trunk side flexor stretch
  - Triceps stretch
  - Pectoral stretch

  Each stretch will be held for 20 seconds.

This protocol will be conducted for 4 days in a week for 6 weeks.

Statistical Analysis: Statistical analysis was done manually and by using the statistics software's INSTAT so as to verify the results derived. The statistical analysis of parametric data was done by using paired t test. Paired t test was used for statistical analysis of pre and post intervention within the group.

Results

1. Age Distribution

Table 1: Age distribution

Age Group	No. of Individuals
60-64 yrs	8
65-69 yrs	22
70-74 yrs	12

2. Gender Distribution

Table 2: Gender distribution

Gender	No. of Individuals
Male	25
Female	17

3. Outcome Measures

(6 Minute Walk Test and Quality of Life)

Table 3: Comparison of pre and post 6MWT and QOL within the group

Outcome Measures	Pre-test	Post-test	P value	t value	Inference
6 MWT	286±27.57	298±23.91	0.0431	2.055	Significant
QOL	56.14±6.561	60.23±6.199	0.0001	30.222	Extremely Significant

In present study the pre-test mean of 6MWT was 286±27.57, whereas post-test mean was 298±23.91. The pre-test mean of QOL was 56.14±6.561, whereas post-test mean was 60.23±6.199. Intra group analysis of 6MWT and QOL revealed statistically increase in post-test 6MWT and QOL scores. This was done by using paired t test. 6MWT (P=0.0431), QOL (P<0.0001).

Discussion

Frailty is often clinically apparent to geriatricians, especially in its end stages. Frailty, a progressive physiologic decline in multiple body systems, marked by loss of function, loss of physiologic reserve and increased vulnerability to disease and death. Frailty increases susceptibility to acute illness, falls, disability, institutionalization and death. The prevalence of frailty increased with age in men and women. The overall prevalence of frailty is 22.7%. Frailty is more common in women (25.3%) than in men (18.6%).[4] Exercise has a wide range of health benefits in older people.[5,6] Physical activity is the single most useful thing that individuals can do to maintain their health and function and quality of life.[7] Mostly for community-dwelling population there is a clear evidence to support exercise in improving health and quality of life with well evidenced exercise programs widely employed in clinical practice. These programs have shown to reduce the risk of falls with associated benefits on mortality, morbidity and costs to health and social care.[8,9]The present study "Influence of chair based exercises on quality of life among frail elderly" was conducted to see the effects of chair based exercises on quality of life among frail elderly.

The objectives of this study were to assess pre-test and post test measures of frail elderly using Quality of life questionnaire (SF 36) and 6 Minute Walk Test. To decrease the risk of falls and increase the ability to perform everyday in frail elderly population. To maintain their functional status, reduce the postural stress and to promote safe exercises. To specify the beneficial and harmful effects as per individual performance. To motivate repetitive movements with confidence and perform it regularly without supervision. This study has been designed to assess the influence of chair based exercise on mobility and function among frail elderly.

The study was conducted with 42 subjects. The subjects in the KIMSDU campus were screened and those fulfilling the criteria were involved. Subjects were informed about the study and prior consent was taken. The treatment protocol was carried out for 4 days in a week for 6 weeks. The outcome measures for this study were Quality of life questionnaire (SF-36) and 6 Minute Walk Test.

The results of this study showed that there was a significant difference in improving the mobility and function of frail elderly population after 6 weeks of intervention by giving chair based exercises.

Paired t test was used to analyze the influence of chair based exercises on quality of life among frail elderly and showed that there was significant improvement in mobility and function in frail elderly according to the 6MWT score (p=0.0431) and QOL questionnaire score (p<0.0001).Research in the general population has shown that the elderly population who took part in regular, moderate chair based exercises have experienced increase in stamina and energy to do work than who doesn't. Chair based exercises increases the release of endorphins by the brain which raise the pain threshold and thus helps to increases the endurance. Chair based exercises is a modified form of exercises which mainly works upon the musculoskeletal and cardiovascular fitness of an individual. Physical activity is the single most useful thing that individuals can do to maintain their health and function and quality of life.[4]Mostly for community-dwelling population there is a clear evidence to support exercise in improving health and quality of life with well evidenced exercise programs widely employed in clinical practice. These programs have shown to reduce the risk of falls with associated benefits on mortality, morbidity and costs to health and social care.[8,9]Chair based exercises have been shown to have a beneficial effect at maintaining or promoting independence and mobility in older people. Compliance to chair based programs is generally better than that of

standing or dynamic exercise, especially amongst the oldest old and amongst those with low baseline levels of fitness and function.[22]

Therefore the result of present study showed that chair based exercises intervention was significantly effective on improving the quality of life among frail elderly population.

Conclusion

Chair based exercises were significantly effective in improving the mobility and function and preventing the risk of falls among frail elderly population.

Conflict of Interest: The authors of this study do not have any conflict of interests.

Source of Funding: This project was self funded by the author (s).

Ethical Clearance: This study was undertaken after obtaining the approval of Protocol committee and Institutional Ethical committee of KIMSDTU.

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Efficacy of Core Strengthening Exercises on Swissball Versus Mat Exercises for Improving Trunk Balance in Hemiplegic Patients Following Stroke

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Abstract

Background and Purpose: In stroke, there is paralysis or weakness of one side of the body including upper limb, trunk and lower limb leading to the disturbances in the trunk muscles. Trunk is often neglected part in the stroke rehabilitation, trunk training exercises and Swiss ball exercises results in better recruitment of trunk muscles thus improving sitting balance. Core strengthening is said to be essential for balance and independent ambulation but it often been omitted in stroke rehabilitation.

Objective: To compare the effect of core strengthening exercises on Swiss ball and Mat, to improve trunk balance in hemiplegic patients following stroke.

Material and Method: A total number of 70 subjects were screened as per inclusion and exclusion criteria. The subjects were divided into two groups, Group-A received core strengthening exercises on Swiss ball along with conventional treatment and Group-B received core strengthening exercises on Mat along with conventional treatment. Treatment session was done 5 days a week for 6 weeks for 45-60 minutes. Pre and Post evaluation was done on the basis of Trunk impairment scale (TIS) score, Brunel balance assessment (BBA)score and Modified Barthel Index (MBI). **Results:** Subjects showed improvement in trunk balance following 6 weeks of core strengthening exercises. Post-intervention the TIS, BBA and MBI score of both groups improved but the Group-A improved more significantly than Group-B. The level of significance was P<0. 0001.

Conclusion: This study concluded that both the interventions have improved the trunk balance and activity of daily living by making the patient functionally independent.

Keywords: *Stroke, Swiss ball, Core strengthening, Trunk balance, Mat.*

Introduction

The "American Heart Association/American Stroke Association"(2016), stated that on a normal, in every 3 minutes 42 seconds, somebody dies of stroke.(1) World Health Organization (WHO) defined stroke as: "rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer or leading to death, with no apparent cause other than of vascular origin".(2) Among the non-communicable illnesses as assessed by Indian council of medical research, mortality rate is resulted in 41% cases and differently-abled is observed in 72% of stroke.(3) Throughout the United States, roughly 1 of each 19 expiries(1) and more than 7,95,000 individuals consistently experience the ill effects of a stroke.(4) The trunk muscles are impaired on both ipsilateral and contra lateral side of body to that of site of lesion, because the trunk muscles of the two sides of the body functions in synchrony.(5) The back extensors and the abdominal muscles are the two group of muscles which

are essentially important for moving and controlling the trunk.[6] The pelvic movement originates from trunk muscles, as pelvis is a part of trunk that supports further extremity movements.[7]

Balance is defined as the ability to maintain functional equilibrium.[8]Balance is a complex process which includes the integration and reception of sensory inputs and,[5] the visual, proprioceptive and vestibular system, along with the central functions of planning and execution of movement.[9]Anticipatory postural adjustments (APA) predicts the level of balance impairment and related danger of mobility as well as falls and are significant neuromuscular biomarkers.[10]

Core stability is regarded as recovery of balance after perturbation, by utilizing the capability of the lumbo-pelvic-hip complex to prevent buckling of the vertebral column.[11] A "core" comprising of the abdominals anteriorly, backside gluteal and paraspinal muscles, diaphragm as the roof and hip girdle and pelvic floor muscles at the bottom, is referred as box. [12] Bergmark (1989) [13] had differentiated the muscles as "local" muscles and "global" muscles, on the basis of the activity on the lumbosacral spine. The local muscles are actively involved in segmental stability of trunk, whereas the global muscles modulate the spine and trunk movement.[14]

Swiss ball (physio ball), also known as Pezzi ball, was created in 1963 by Aquilinocosani, an Italian plastic manufacturer [15].Before testing the patient's balance on the Swiss ball, the balance during static and dynamic condition is checked on a rigid and steady support in sitting and standing posture. [16]

The **Mat** program includes the patient in exercises that combines both movement and stability. [17] Functional exercises on mats are planned dynamically for improving the patient's independence. [18]

As a primary and secondary outcome measures, the results are estimated for the control of trunk by using the Trunk Impairment Scale (TIS) and the Brunel Balance Assessment (BBA) and Modified Barthel Index (MBI) for assessing functional balance after the stroke.

Methodology

Method: The study was conducted after taking approval from the institutional research ethics committee, approval no. (DMIMS(DU)/IEC/2018-19/7197) in Department of Neuro Physiotherapy, Ravi Nair Physiotherapy College, Acharya Vinoba Bhave Rural Hospital, Sawangi (Meghe), Wardha. Inclusion criteria were patients suffered from first episode of stroke within 1-3 months of duration, age between 40 to 60 years, stage 2, on the Modified Ashworth Scale, no visual and sensory deficits, ability to communicate verbally. Exclusion criteria were the existence of any other neurological or orthopaedic diseases, haemorrhagic stroke, patients having cognitive problems. of each of the 70 subjects composed pre informed consent, marked or with thumb impression was taken toand they were told about the conceivable result of the intercessions. Pre and post TIS score, BBA score and MBI score was taken. Patients were distributed in two groups with 35 subjects in each group respectively and were chosen randomly.

Subjects in a Group-A received core strengthening exercise on Swiss ball along with conventional treatment and subjects in the Group-B received core strengthening exercise on Mat along with conventional treatment. The total duration of exercises was almost approximately, 45 minutes to one hour. Subjects have permitted to take rest for 2 minutes in the middle of each new exercise or as and when he/she wished. Also, for core strengthening the patient had to asked to draw-in the abdominal muscles for 5 counts or 5 seconds.

Conventional physiotherapy- was received for 15 minutes by the both groups which includes, Active assisted range of motion exercise of upper limb (15 times each movement)-Shoulder, Elbow and Wrist and finger range of motion exercise.

Lower limb(15 times each movement)-Hip, knee and ankle range of motion exercise.

Core strengthening exercises on Swiss ball (GROUP-A) was given in supine-lying position,with upper trunk flexion and with lateral upper trunk flexion.

Interventional exercise (GROUP-A):

Supine-lying exercises: Bridging, Unilateral Bridging, Lower trunk rotations.

Sitting exercises: Static sitting balance, Forward trunk flexion, Lateral trunk flexion, Trunk rotations in sitting, Weight shifts, Forward reach, Lateral reach, Perturbations, sit to stand.

Core strengthening exercises on Mat (Group-B): Supine-lying position- Core strengthening exercise on

Mat was done in crook lying position, Upper trunk in flexion, Upper trunk diagonal rotation.

Common mat activities: Rolling-From the Supine-lying to Prone-lying: Flexion/abduction pattern of upper-limb, Flexion/abduction pattern of lower-limb.

From Prone-lying to Supine-lying-Flexion/ abduction pattern of upper limb to roll from prone-lying to supine- lying.

Bridging, Unilateral pelvic bridging, Upper trunk rotation, Lower trunk rotation, Prone on elbow, Quadruped position, kneel sitting, Kneel standing, Half kneeling.

Data Analysis: Statistical analysis was done by using descriptive and inferential statistics using chi square test, Wilcoxon Signed Rank Test and Mann Whitney U test as well as SPSS version 22.0 and Graph Pad Prism 7.0 version. The $p<0.05$ is considered as level of significance.

Table 1: Comparison of mean difference in Total Trunk Impairment Scale Score in Group A and Group B

Mann Whitney U Test:

Group	N	Mean	Std. Deviation	Std. Error Mean	z-value
Group A	35	10.71	0.57	0.09	4.83 P=0.0001, S
Group B	35	9.77	1.00	0.16	

According to table 1, based on Mann Whitney U test, the mean difference of total Trunk Impairment Scale score in Group-A and Group-B was compared. The P value was 0.0001 ($P<0.05$), which was found to be significant and represented graphically.

Table 2: Comparison of mean difference in Brunel Balance Assessment Scale at 1 week and at 1 month in Group A and Group B

Mann Whitney U Test:

	Group	N	Mean	Std. Deviation	Std. Error Mean	z-value
1 week	Group A	35	0.37	0.49	0.08	0.49 P=0.62,NS
	Group B	35	0.31	0.47	0.07	
1 month	Group A	35	4.88	0.58	0.09	10.47 P=0.0001, S
	Group B	35	3.40	0.60	0.10	

According to table 2, based on Mann Whitney U test, the mean difference of Brunel Balance Assessment Scale in Group-A and Group-B was compared at 1 week and 1 month. The P value was 0.62 ($P>0.0001$), which is found to be non-significant at 1 week in both groups respectively while the P value 0.0001($P<0.05$) was found at 1 month which was found to be significant and represented graphically.

Table 3: Comparison of mean difference in Modified Barthel Index Score in Group A and Group B

Mann Whitney U Test:

Group	N	Mean	Std. Deviation	Std. Error Mean	z-value
Group A	35	11.65	0.59	0.09	8.64 P=0.0001, S
Group B	35	9.65	1.23	0.20	

According to table 3, based on Mann Whitney U test, the mean difference of Modified Barthel Index score in Group-A and Group-B was compared. The P value was 0.0001 ($P<0.05$), which was found to be significant and represented graphically.

Discussion

Regain of the trunk balance or proximal and distal stabilization is an important part of stroke rehabilitation, as trunk balance is related with a marked improvement of functional activity of daily living.[19] Usually, the functional exercises of everyday living require the co-ordination between the limb and the trunk. The goal of the current study was to analyze the impact of Swiss ball exercises and Mat exercises combined with conventional treatment for increasing the strength of core muscles to improve trunk balance in subacute stroke patients.

Static sitting balance assesses the capacity to sit upright in sitting position within the normal base of support or when the base of support has been decreased. Results indicated noteworthy improvement in the two groups following intervention. The mean pretest score was improved from 5.51 to 7.00 following 6 weeks of treatment in Group-A while the Group-B improved from 5.65 pretest score to 7.00 post test score following intervention which was significant. Anyhow, when we correlate the mean difference in static sitting balance in Group-A and Group-B with the mean values of 1.48 and 1.34, there was no significant change found, P value was 0.22. The dynamic sitting balance domain assesses

specific side flexion of upper and the lower part of trunk. Over a 6 week's time of treatment, the mean pre and post test scores of the dynamic sitting balance domain of TIS in the Group-A enhanced from 4.77 to 9.94 while the Group- B improved from 4.91 to 10.00. But, when we compared the mean difference in dynamic sitting balance in Group- A and Group- B with the average values was 5.17 and 5.08, which shows that there was no significant difference found. The co-ordination domain of TIS assesses the upper and lower trunk rotations independently and checks for the symmetry in the rotations. Following intervention mean score of co-ordination in the Group-A improved from 2.00 to 6.00 and 1.88 to 5.22 in Group- B and after comparing the average difference of co-ordination scores in Group-A and Group-B with the mean values of 4.00 and 3.34, a significant enhancement was found in two groups, P value was less than 0.05.

Following a month of intervention, the mean pretest and post test scores of BBA at baseline evaluation, one-week evaluation and following 1 month of evaluation changed from 5.62 to 6.00 and 10.51 respectively in Group-A and from 5.48 to 5.80 and 8.88 in Group-B. However, by comparing the mean difference of BBA at one week and one month we found that the mean values were increased from 0.37 to 4.88 in Group-A and 0.31 to 3.40 in Group-B respectively.

Significant improvement of Modified Barthel Index scores in both the groups might be because of the common conventional treatment which was given to both the groups. Average pre-test grade of Modified Barthel Index in Group-A and Group-B was 6.05 and 6.41. Following 6 week of treatment program the average post-test grade in Group-A and Group-B stood 17.71 and 15.80, which was found to be significant. Also, when we compare the mean difference in Modified Barthel Index score in Group-A and Group-B which was 11.65 and 9.65 respectively.

Conclusion

This study concluded that both the interventions have improved the trunk balance and activity of daily living by making the patient functionally independent.

Conflict of Interest: No

Source of Funding: Self

Ethical Clearance: Ethical clearance was obtained by Ethical Committee of Datta Meghe Institute of Medical Sciences.

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A Study to Aseess the Level of Knowledge on Diabetic Diet among Diabetic Patients in Selected Villages, Kanchipuram District, Tamil Nadu, India

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Abstract

Diabetic diet is one of the best tool for managing diabetes. It is a healthy eating plan that's naturally rich in nutrients and low in fat and calories. The study topic is A study to assess the knowledge on diabetic diet among diabetic patients in selected village, Kancheepuram District, Tamil Nadu. The objectives of this study are to assess the knowledge on diabetic diet among diabetic patients and to associate the knowledge on diabetic diet among diabetic patients with selected demographic variables. The sampling technique used was simple random sampling technique with the sample size of 50 diabetic patients. An extensive review of literature with the guidance of experts formed the foundation to the development of questionnaires. Structured interview schedule was used to assess the knowledge on diabtetic diet. The collected data was tabulated and analyzed by using descriptive and Chi-squire test. The study shows that the diabetic patients have inadequate (26%), moderate (24%) and adequate (50%) knowledge on diabetic diet. Hence health education was given for the diabetic patients with inadequate and moderate knowledge score to improve the patient knowledge. There is a significant relationship between selected demographic variable such as sex, income, duration of disease and family history of diabetes mellitus withe their knowledge.

Keywords: *Assess, knowledge, diabetic diet, diabetic patients.*

Introduction

Hasnain S (2013) .A diabetic diet is a dietary pattern that is used by people with diabetesor high blood glucose to manage diabetes. Adiabetic diet is the best eating plan for most everyone. More modern history of the diabetic diet may begin with Frederick Madison Allen and Elliott Joslin, who, in the early 20th century, before insulin was discovered, recommended that people with diabetes eat only a low-calorie and nearly zero-carbohydrate diet to prevent ketoacidosis from killing them. While this approach could extend life by a limited period, patients developed a variety of other medical problems. The introduction of insulin by Frederick Banting in 2015 allowed patients more flexibility in their eating. [1]

Reader DM (2014) viewed that diet has been the mainstay of therapy in diabetes for centuries. A number of factors influence glycemic response to food, including the amount of carbohydrate, type of sugar, nature of starch, cooking and food processing and food structure as well as other food components that slow digestion-lections, phytates, tannins, starch protein and starch lipid.[2]

Need for the Study: A cross sectional study conducted among 155 diabetic mellitus patients to assess knowledge, attitude and practice of dietery pattern.

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Samples were selected from the out patient department, primary health centre. The study result shows the majority of the patients did not followed diabtic diet (56%) and only 15% were followed the therapeutic diet regimenn. The majority of the patients took only 1-2 serving of starch and less than one serving of fruits per day and 41% of patients drank only four cups of water per day. [3]

A study was conducted in 2017 to assess the knowledge and practice of type 2 diabtes mellitus patients among 33 diabetec patients for the period of three months. The sample HbA1c result has also considered to assess micro and macro vascular complications. In developing countries the success of management of diabetes mellitus requires the health professionals should orient about the cultural beliefs, family & communal networks of the patients. The patients should also have good knowledge about the disease and diet. [4]

Objectives of the Study:

- To assess the knowledge on diabetic diet among diabetic patients
- To associate the knowledge on diabetic diet among diabetic patients with selected demographic variables.

Methodology

Research Approach: Non experimental-Quantitative Research Approach.

Research Design: Descriptive research design .

Research Setting: The study was conducted in selected village- Perumaleri, Kanchipuram district

Sampling Technique: Simple random sampling technique

Sampling Size: 50 diabetic patients

Sampling Criteria:

Inclusion Criteria:

- Patients with Diabetes Mellitus (Diagnosed patients)
- Patients who are willing to participate

Exclusion Criteria:

- Patients with elevated blood glucose (Un-diagnosed patients)
- Diabetic patients who are not present at the time of the study

Development and Description of the Tool: The tool was developed by the researcher on reviewing literature and in consultation with nursing experts in the field of community medicine and nursing.

Description of the Tool:

The tool consist of two sections: Section A: Demographic variables such as age, sex, education, monthly income, dietary habits, duration of diabetes mellitus and family history of diabetes mellitus

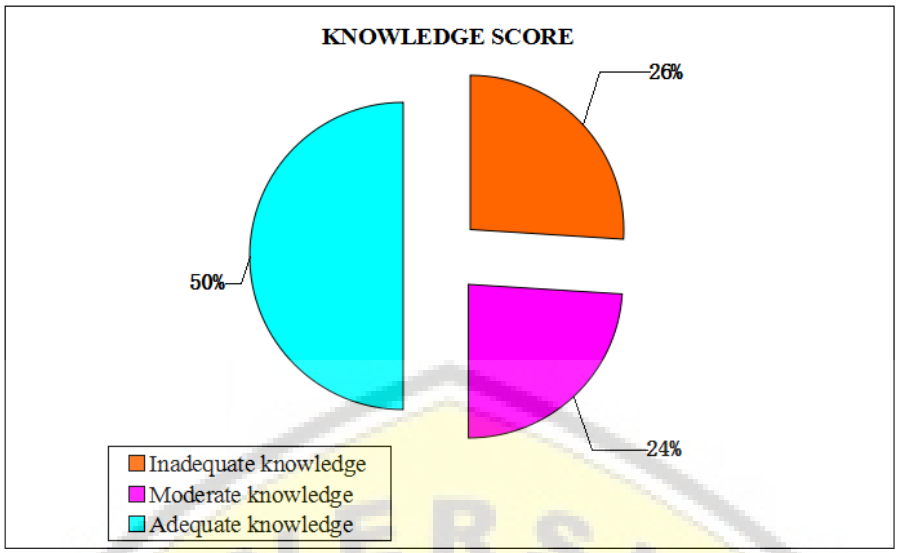
Section B: Questionnaire to assess the level of knowledge on diabetic diet among diabetic patients

Method of Scoring and Interpretation: Tool consist of 15 questions. Right response was given 1 score. Wrong response was given 0 score. 0-5 knowledge score was named as Inadequate Knowledge, 6-10 knowledge score named as moderate knowledge and 11-15 knowledge score named as adequate knowledge.

Method of Data Collection: The data was collected by using semi-structured interview technique. The duration of data collection period was 20 - 30 minutes per subject.

Statistical Analysis: The descriptive statistics like mean, percentage was used to assess the level of knowledge on diabetic diet among diabetic patients and Chi-square was used to find out the association between knowledge on diabetic diet among diabetic patients with selected demographic variables.

Study Finding: The collected study was tabulated and analyzed.. The study shows that 50% of sample had adequate knowledge. 24% of sample had moderate knowledge and 26% of sample had inadequate knowledge. There is a significant association between selected demographic variable such as sex, income, duration of disease and family history of diabetes mellitus with their knowledge. There is no significant association between age, education and dietary habits of diabetic patients with their knowledge.



Conclusion

According to the proverb prevention is better than cure, it is better to rectify abnormalities rather than to treat the complications. So that the Diabetic patient first make themselves physically fit with good dietary habits and Body Weight and serve the society around them.

Ethical Clearance: Obtained from Institutional Human Ethical Committee

Source of Funding: Self

Conflict of Interest: Nil

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Determine the Validity and Reliability of Structured Questionaire on Knowledge Regarding Care of Neonates among Peri Natal Mothers

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Abstract

A study to assess the validity and reliability of structured questionnaire regarding knowledge on care of neonates among perinatal mothers.. The objectives of the study were to assess the validity and reliability of structured questionnaire regarding care of neonates. A total of 50 peri natal mothers were participated in this study.The structured questionnaire was formulated. The total number of items in the questionnaire was 30. The reliability of the tool was assessed by Test-Retest split half and internal consistency reliability method . The validity of the questionnaire was measured by the face validity, content validity, construct validity and criterion validity method. The study results shows that in the test retest method the value for a Pearson's coefficient was r = 0.98, the spilit half techniques showed that r = 0.81. Cronbach's alpha value was r = 0.82, hence the questionnaire was highly reliable in assessing the level of knowledge on care of neonates among the perinatal mothers.

Keywords: *Validity, Reliability, care of neonates, Perinatal mothers.*

Introduction

In our world 140 million children are born every year. Where as 8 million infants die out of which 4 million infants die during the neonatal period, 98% of them do so in developing countries. Neonatal Mortality Rate is higher in rural area i.e. 49 per 1000 live birth and 27 per 1000 live birth in urban area[2].

According to a new UNICEF report (20.02.2018), the country's neonatal mortality rate at 25.4 deaths per 1,000 live births makes it 12th worst among 52 "lower middle-income countries" that pose risk for newborns. India is also the only major country in the world to have a higher mortality for girls than boys[4].

Neonatal mortality rate of India fell gradually from 49 deaths per 1000 live births in 1997 to 25.4 deaths per 1000 live births in 2018. Sanjay P Zodpey, conducted a study on Neonatal Morbidity and Mortality in Tribal and Rural Communities in Central India. Results showed that Pregnancy outcomes were available for 1,136 women, with an overall neonatal mortality of 73 per 1,000 live births[1]. The main causes of neonatal mortality were sepsis and respiratory illness. For tribal babies, mortality was also associated with maternal morbidity and delay in the initiation of breastfeeding. The knowledge on care of neonates among the mother is very essential in reducing the neonatal morbidity and mortality and to promote the optimal growth and development of neonates[3].

Topic of the Study: "A study to construct and to assess the validity and reliability of the questionnaire on knowledge regarding care of neonates among perinatal mothers in ante natal out patient department at selected tertiary care hospital, Kelambakkam, Kanchepuram District, Tamilnadu, India. ''

Objectives: To assess the validity and reliability of the structured questionnaire on knowledge regarding careof neonates among perinatal mothers.

Research Methodology

Research approach & research design: In this study the research approach was quantitative non-experimental evaluative approach and the research design was descriptive design.

Research Setting: The present study was conducted at ante natal out patientdepartment in Chettinad Hospital & Research Institute (CHRI), Kelambakkam, Kanchipuram District, Tamil Nadu.

Population: Perinatal mothers attendingantenatal out patient department in Chettinad Hospital & Research Institute (CHRI), Kelambakkam, Kanchipuram district, Tamil Nadu.

Sample technique & sample size: Non probability– Purposive sampling technique was used to select the perinatal mothers and the sample size was 50.

Inclusion Criteria: The study includes the peri natal mothers (mothers during 3rd trimester of pregnancy to 7th day of postpartum period), who are

- Able to read Tamil or English.
- Willing to participate in the study.

Exclusion Criteria:

The study excludes the perinatal mothers, who are

- Critically ill

Description of the tool: As the study aimed at evaluating the validity & reliability of the tool, A structured self-administered questionnaire containing 30 multiple choice questions with 4 possible options (total 120 items) were used to assess the knowledge on care of neonates. The researcher developed the tool by extensive review of literature.

The structured questionnaire consists of 6 aspects of neonatal care.

Which are:

- breast feeding
- thermo regulation measures for neonates
- infection control measures for neonates
- care of elimination of neonates
- Immunization for neonates
- danger signs of the neonates.

Tool Validity:

1. **Face validity:**

The questionaire is subjectively viewed for covering all the components of care of neonates by the experts and their suggestions and corrections were incorporated.

2. **Content validity:** The content validity of the tool was established in consultation with 10 experts i.e. 5 experts from Nursing & 5 experts from pediatric medical department and statistician. As per the suggestions of the experts the researcher has made the necessary modifications in the tool.

3. **Construct Validity:** The construct validity shows that the mothers who are already having children scored consistently higher than the primi mothers in the other group

The mothers who are already having children had an average score (mean±SD) of 18.2 ± 3.4 . The primi mothers had an average score (mean±SD) of 13.4 ± 4.3, hence the mothers who are already having children answered more questions correctly compared to the primi mothers.

4. **Criterian Validity:** In this study, Researcher has done a predictive validity on neonatal care based on the reviewed literatures. The reviewed literatures supported the criteria's presented in the tool.

Tool Reliability:

1. **Test-retest method:** Test-retest reliability involves administering the same measure to the same group of test-takers under the same conditions on two different occasions and correlating the scores. The reliability coefficient is simply the correlation (a Pearson's correlation) between the scores on the first and the second testing.

The value for a Pearson's coefficient was r = 0.98

2. **Split - half reliability:** The reliability of the tool was established by using splihalf method for assessment of the level of knowledge. The structured questionaire which has 30 items in it, was divided into odd and even items, to check its internal consistency. The co-rrelation co-efficient was calculated using the Spearman correlation coefficient formula.

The calculated value of r = 0.81. There by the tool was considered as highly reliable.

Internal consistency:

- The tendency towards consistency found in repeated measurements of the same phenomenon is referred to as reliability. Cronbach's alpha was used in assessing the reliability of tests for knowledge on neonatal care with questions that have four possible responses. Cronbach's alpha ranges from r=0 to 1, with r=0.7 or greater considered as sufficiently reliable.
- Cronbach's alpha value was r = 0.81. (questionairre)

Conclusion

The structured self-administered questionnaire (demographic proforma and knowledge questionnaire) evaluated in this study proved to be a valid and reliable to measure the knowledge on care of neonates. The questionnaire regarding care of neonates help to assess the level of knowledge on care of neonates which provides base for assessing the mother's knowledge and facilitates to organize health education sessions to the perinatal mothers in hospital and community setting. This must be addressed whenever they come for the ante natal review and the delivery of a baby. Further this will helps in creating awareness about care of neonates which in turn to promote the growth and development of neonates and help to reduce the neonatal morbidity and mortality.

Conflict of Interest: Nil

Source of Funding: self funding and no external funding.

Ethical Clearance: Obtained clearance from institutional human ethical committee on 12.09.2017.

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Effectiveness of Aerobic Exercise on Short Term Memory and Sustained Attention among Developmental Coordination Disorder Children

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Abstract

The aim of the study is to determine the effects of aerobic exercise on the short-term memory & sustained attention among Developmental coordination disorder (DCD) children. The study is designed as single group experimental study. The study setting was done in school at Chennai according to the inclusion and exclusion criteria. Sampling technique used was Random sampling. The sample size was 20 subjects. The materials required were pulse oximeter, Bicycle ergometer, Weight machine, Stopwatch, Measuring tape, Stoop Test and Digit span Test. The result of the study from post-test value of Stroop test is 6.70 and pre-test is 11.30 there is slight decrease in the mean value this shows that stroop test due to aerobic exercise of high intensity interval training intervention slightly improved. P value is less than <0.001. The post-test value of digit span test is 0.460 and the pre-test is 0.537 from this there is slight difference in the statistical mean. P value is equal to 0.001. It has been concluded that the present study evaluated the impact of an aerobic exercise of high intensity interval training intervention on cognitive performance of short-term memory and sustained attention in school students. The result demonstrates the high intensity interval training improved the subjects short term memory and sustained attention by following the pre and post-test values of stroop test and digit span test.

Keywords: *Short-term memory, DCD, digit span test, stroop test.*

Introduction:

Developmental coordination disorder (DCD) is a mark of impairment in motor development which significantly interferes child's activities of daily living. Physical inactivity is due to wide spread sedentary lifestyle[1].

Children with developmental co-ordination disorder (DCD) face evident motor difficulties in activities of daily living (ADL).Assessment of their capacity in ADL is essential for diagnosis and intervention, in order to limit the daily consequences of the disorder. The aim of this study is to systematically review potential instruments for standardized and objective assessment of children's capacity in ADL, suited for children with DCD.As a rest step, databases of MEDLINE, EMBASE, CINAHL and PsycINFO were searched to identify studies that described instruments with potential for assessment of capacity in ADL, This life style change is associated with substantial increase in obesity, high blood pressure, high cholesterol, type2 diabetes & coronary heart disease throughout the life span during the childhood[2].

Regular physical activity has been shown to reduce the morbidity & motility associated with many of these chronic diseases. A large body of research shows that physical activity improves cognitive functioning[3].

Short term memory is the capacity for holding, but not manipulating, a small amount of information in mind in an active, readily available state for a short period of time. The duration of short-term memory seems to be between 15 to 30 seconds and capacity about 7 items[8]. Digit span test is a measuring tool for short term memory. Stroop test is a demonstration of interference in the reaction time of a task. when the name of a color (e.g. blue, green, red) is printed in a color which is denoted by the name (i.e. word red printed in blue ink instead of red ink)[9].

Hence the aim of the study is to evaluate the effect of aerobic exercise on short term memory in DCD children and to evaluate the effect of aerobic exercise on sustained attention in DCD children.

Methodology

The study is designed as single group experimental study. The study setting was done in school at Chennai according to the inclusion and exclusion criteria. Sampling technique used was Random sampling. The sample size was 20 subjects.

The inclusion criteria were DCD children were only included, both genders were taken between the age of 13 to 15 years who Did not have any musculoskeletal disorders. The exclusion criteria were BP greater than or equal to 150/90mm hg, Cerebral dysfunction, Cardiovascular problem and children with Allergies were excluded.

The materials required were pulse oximeter, Bicycle ergometer, Weight machine, Stopwatch, Measuringtape, Stoop Test and Digit span Test.

Procedure:

Data Collection Procedure: Atotal of 20 DCD children were diagnosed by DSM 5 criteria according to inclusion and exclusion criteria and the informed consent were obtained from all the subjects. The safety and simplicity about of the procedure explained. All the 30 subjects were selected using a random sampling technique. Subjects have been assigned into single group and high intensity interval training was given. Pre-test and post-test values of before and after exercise has been noted and considered as outcome values. The outcome measures are stroop test and digit span test. The data collected and tabulated was statistically analyzed.

Treatment procedure: Vitals (Blood Pressure, Heart Rate, pulse rate, respiratory rate) has been checked before starting the treatment procedure.

- Warm up phase. (10 minutes)
- Condition phase (20 minutes)
- Cool down phase (10 minutes)

The study was conducted as 3 sessions. In the 1st session the subject performed two pre-intervention working memory test: DIGIT SPAN TEST & "STROOP TEST" and values have been recorded and the 2nd session is a physical activity session in which the high intensity interval training has been given. and the last session is the post-intervention session immediately after the post intervention memory test and values has been recorded. This procedure has been given for the school students for 4 weeks, 3 days per week has been implemented and recorded.

High Intensity Interval Training:

Warm Up Phase: Stretching (3mins): Hamstring, quadriceps, gastrosoleus (each muscle for 15 secs, 3 repetition and rest period between each muscle is 15 secs).

Active range of motion (7minutes for both upper limb and lower limb).

Upper limb:

- Shoulder: flexion, extension, abduction, adduction, internal rotation and external rotation.
- Elbow: flexion and extension.
- Forearm: supination and pronation.
- Wrist: flexion, extension, ulnar deviation and radial deviation. Fingers: flexion, extension, abduction, adduction and opposition.

Lower limb:

- Hip: flexion, extension, abduction, adduction, internal rotation and external rotation.
- Knee: flexion and extension.
- Ankle: dorsi flexion, plantar flexion, inversion and eversion.
- Toes: flexion, extension, abduction and adduction.

Conditioning Phase: Subjects has been asked to peddle in bicycle ergo meter for 20 minutes (4*1 minute, 4min= peddling, 1min= recovering, gradually decreasing the intensity by 60 rotation per min) with the maintenance of % peak heart rate between 70 – 89 %. This % peak heart rate has been monitored by using the pulse oximeter.

Cool Down Phase: Stretching (3minutes): Hamstring, quadriceps, gastrosoleus (each muscle for 15 secs, 3 repetition and rest period between each muscle is 15 secs).Active range of motion (7minutes) for both upper limb and lower limb.

Upper Limb:

- Shoulder: flexion, extension, abduction, adduction, internal rotation and external rotation. Elbow: flexion and extension.
- Forearm: supination and pronation.
- Wrist: flexion, extension, ulnar deviation, radial deviation.
- Fingers: flexion, extension abduction, adduction and opposition.

Lower Limb:

- Hip: flexion, extension, abduction, adduction, internal rotation and external rotation.
- Knee: flexion and extension.
- Ankle: dorsi flexion, plantar flexion, inversion and eversion.
- Toes: flexion, extension, abduction and adduction.

Results

From the statistical analysis made with the quantitative data relieved a statistically slight difference between pre-test and post-test. The post-test value of stroop test is 6.70 and pre-test is 11.30 there is slight decrease in the mean value this shows that stroop test due to aerobic exercise of high intensity interval training intervention slightly improved. P value is less than <0.001.

The post-test value of digit span test is 0.460 and the pre-test is 0.537 from this there is slight difference in the statistical mean. P value is equal to 0.001.

Statistical analysis of both the stroop test and the digit span test revealed that there is a slight statistical difference seen in both the pre-test and post-test value.

Table 1: Pre-test and post-test Stroop Test

Group	Mean	Standard Deviation	T Value	P Value
Pre-Test	11.30	3.58	6.2279	>0.0001
Post-Test	6.70	3.49		

Table 2: Pre and post-test value. Digit Span Test

Group	Mean	Standarad Deviation	T Value	P Value
Pretest	0.537	0.192	4.4899	0.001
Posttest	0.460	0.157		

Discussion:

DCD is characterized by marked motor impairment that affects functioning in daily activities in the absence of intellectual or neurological dysfunction.[1]

Aerobic exercise is a physical exercise of low to high intensity that depends primarily on the aerobic energy generating process. Aerobic literally means "Relating to involving or requiring free oxygen" and refers to use of oxygen to adequately meet energy demand during exercise via aerobic metabolism generally high to moderate intensity activities that are sufficiently supported by aerobic metabolism can be performed for extended periods of time[11].

The aim of this study was to determine the "effectiveness of aerobic exercise on short term memory and sustained attention among DCD children". 20 subjects fulfilling the inclusion criteria were assigned to this study by randomization technique. Subjects were assigned into single group and high intensity interval training was given. Informed consent was taken from the subjects and the procedure was explained. single group (n=20) were receiving a high intensity interval training intervention over a period of 4 weeks,3 days/ week. Stroop test and digit span test were used as the tools for analysis the sustained attention and short-term memory. The outcome measure was taken before and after the intervention and after the end of 4th week.

Frank fincham etal,discussed that the purpose of this study was to evaluate the impact of a 4 week high intensity interval training intervention on cognitive performance in emerging adults. High intensity interval training shortly improved their mathematic and reading working memory scores from pre-test to post-test[12].

Cristiano R. R. Alves et al, discuss that the objective of this study was to assess the effect of an acute high intensity interval training session on selected parameters of cognitive functionlike (executive function and short-term memory performance) in middle aged groups. The main finding was that the high intensity interval training session improve the performance in the stroop "color word" test, which has been thought to be a measure of selective attention and the susceptibility to interference from conflicting stimuli. Conversely, the high intensity interval training slightly improves the performance in the digit span forward test has been considered as a measure of short-term memory[13]. Some authors have speculated that the exercise intensity affects the cognitive performance in u-shaped fashion, meaning that a high intensity exercise would improve cognition were as moderate intensity would impair the cognition.

Tomposiki et al, discussed that the study was to further investigate if exercise. In the form of interval training has an effect on memory function. It was hypothesized that exercise training that includes intermittent bouts of bicycling will have positive effect on memory retention. past studies have shown that acute continuous high intensity interval training improves cognitive function these past studies used the stroop test to measure cognitive function. The present study combined the success to investigate if moderate intensity interval training could also benefit cognitive performance using a list of 15 randomly generated words rather than a stroop test[14].

Working memory skills can explain individual differences in learning. Poor performance on working memory measures is characteristic of children failing to progress normally in the areas of reading [15].

It is worth noting that although those with DCD can have comorbid language impairments, their memory profile does not differ greatly compared to children with DCD and typical language skills [16].

The present study reveals the subjects who received the high intensity interval training shows that the slight improvement in the subject's short-term memory and sustained attention by concluding the pre-test and post-test result of stroop test and digit span test.

Conclusion

It has been concluded that the present study evaluated the impact of a aerobic exercise of high intensity interval training intervention on cognitive performance of short term memory and sustained attention in school students. The result demonstrates the high intensity interval training improved the subjects short term memory and sustained attention by following the pre and post-test values of stroop test and digit span test.

Ethical Clearance: Taken from Ethical committee of Saveetha college of Physiotherapy

Source of Funding: Self

Conflict of Interest: Nil

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Effect of Moderate-intensity Aerobic Exercise in the form of Interactive Video Dance Gameon BMI and VO2 Max among Overweight Children between 9 to 14 Years

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Abstract

Background: Overweight reduces the VO2max in children hence they may have poor cardiovascular fitness, quality of life, lack of confidence and they are prone to develop cardiovascular diseases, diabetes mellitus, risk of fracture in future.

Objective: The objective of the study is effect of Interactive video dance game (IVDG) on Body mass index (BMI), maximum oxygen consumption (VO_2Max) and quality of life (QOL) in overweight children between age group of 9 to 14 years.

Method: The study is designed as an experimental study and the study setting is done Department of paediatrics, Saveetha medical hospital. sample size was 10 between the age 9 to 14 years and duration of the study was 8 weeks. Materials required for the study are Interactive Video Dance Game (IVDG), Short Form (SF) 36 questionnaire, stethoscope, pedometer and stop watch. BMI and VO_2Max of 20 samples were recorded as Pre-interventional score after a duration of 8 weeks again BMI and VO2max was recorded as post-interventional score.

Results: The pre-interventional score of mean and standard deviation of BMI were 24.2kg/m^2 ± 0.52. The mean and standard deviation of VO_2Max were 16.45ml/kg/min ± 2.05 the mean and Standard deviation of the score of SF 36 questionnaire was 47.3 ± 1.72 it shows a poor quality of life and reduced physical activities. the post-interventional score of BMI were 22.64 ± 1.02, VO_2Max were 21.97ml/kg/min ± 0.56, the Sf 36 questionnaire score were 56 .7 ± 0.63 shows an improved quality of life and physical activities.

Conclusion: Interactive video dance game is an effective and enjoyable exercise program for overweight children who wish to decrease their BMI and improve components of cardiorespiratory fitness.

Keywords: *Interactive video dance game, moderate-intensity, BMI, VO2 Max, overweight.*

Introduction

According to the new guidelines for Asians "BMI between 23 to 24.9kg/m^2 is considered to be overweight[1]. Overweight children may have a risk of developing obesity in future and this may causes dangerous complications such as, cardiovascular diseases like risk of both fatal and non-fatal myocardial infarction, Increased presence of atherosclerosis in both aorta and coronary artery and Hypertension[2], metabolic disorders such as Insulin resistance results in Type 2 Diabetes mellitus, Increased level of insulin in circulation and Dyslipidaemia[3], orthopaedic complications such as Greater risk of fracture when compared to underweight, Greater impaired mobility, Knee pain and Malalignment in both metaphyseal- diaphyseal and anatomic tibiofemoral angle[4]. Gastrointestinal system diseases such as Non-alcoholic fatty liver which is Seen in40 to 50% in children[5], psychosocial problems such as Depression, Abnormal eating and exercise pattern and Lower health-related quality of life[6], pulmonary complications such as sleep apnoea[7].

Overweight and obese children will have very high

lipoprotein which reduces the VO2max and this signifies the children have poor cardiorespiratory fitness, this may directly or indirectly cause the above-mentioned complications.

One of the main causes of obesity in present generation is lack of physical activities due to over usage of playing in smart phones, watching TV and video games. Many studies have been conducted with IVDG and it has been effectively increasing the physical activities[8,9,10]. It has been proven that energy expenditure is higher in IVDG when compare to sedentary video playing and walking[8].

aerobic exercise helps to improve the cardiorespiratory fitness. In our study we have preferred moderate-intensity aerobic exercise because high-intensity exercise in obese children may leads to musculoskeletal injuries whereas moderate-intensity effectively increases the VO_2Max and prevents skeletal muscle injuries.

Prescribing exercise for the overweight children may fail to follow the protocol and it may again worsen the condition hence interactive video dance game makes the physical activity enjoyable and interesting and hence the aim of the study is to reduce the BMI by using video game, to make exercise into an interesting activity and to improve VO_2max in overweight children and to improve physical activity and quality of life

Methodology

The study is designed as an experimental study and the study setting is done Department of paediatrics, saveetha medical hospital, thandalam, Chennai-602105, sample size was 2 between the age 9 to 14 years and duration of the study was 8 weeks.

Materials required for the study are Interactive Video Dance Game (IVDG) which is available in online stores and it is cheap, Short Form (SF) 36 questionnaire to determine the quality of life, stethoscope to measure heart rate, pedometer to monitor intensity of exercise and stop watch for monitoring duration of exercise.

The inclusion criteria for the study are Children within BMI of 23 to 24kg/m^2, Children between the age of 9 to 14years and Children with lack of physical activity. The exclusion criteria are Children with structural and functional abnormality of heart, Children who are already in weight loss program, Children with physical and mental disability, Children with endocrine pathology, Children with visual defect and Children with auditory defect.

Saveetha medical hospital has conducted a camp in which 67 apparently normal children's age, height and weight was recorded in which 20 children based on inclusion and exclusion criteria were selected for the study, their VO_2Max were recorded by measuring the resting heart rate and maximum heart rate by using 3-minute step test and SF 36 questionnaire were given and the score is recorded as pre-interventional score. The children undergo 5 minutes of Warm-up exercise followed by 20 minute of moderate-intensity aerobic exercise in the form of IVDG and 5 minutes of Cool-down exercise were given for 3 days per week. The protocol is followed for 8 weeks after that VO2max is again calculated and Sf 36 score were again measured and recorded as Post-interventional score respectively.

Results

The pre-interventional score of mean and standard deviation of BMI were 24.2kg/m^2 ± 0.52. The mean and standard deviation of VO_2Max were 16.45ml/kg/min ± 2.05 the mean and Standard deviation of the score of SF 36 questionnaire was 47.3 ± 1.72 it shows a poor quality of life and reduced physical activities as shown in Table No. 1. the post-interventional score of BMI were 22.64 ± 1.02, VO_2Max were 21.97ml/kg/min ± 0.56, the Sf 36 questionnaire score were 56 .7 ± 0.63 shows an improved quality of life and physical activities as shown in Table.no.2. The total decrease in BMI was 1.56kg/m^2 and increase in VO2Max was 5.52% ml/kg/min respectively as shown in Figure.no.1.

Table No. 1: Pre- interventional score

Components	Mean	Standard Deviation
BMI (kg/m^2)	24.2	0.52
VO2max (ml/kg/min)	16.45	2.05
SF- 36	47.3	1.72

Table No. 2: Post- interventional score

Components	Mean	Standard Deviation
BMI (kg/m^2)	22.64	1.02
Vo2 max (ml/kg/min)	21.97	0.56
SF-36	56.7	0.63

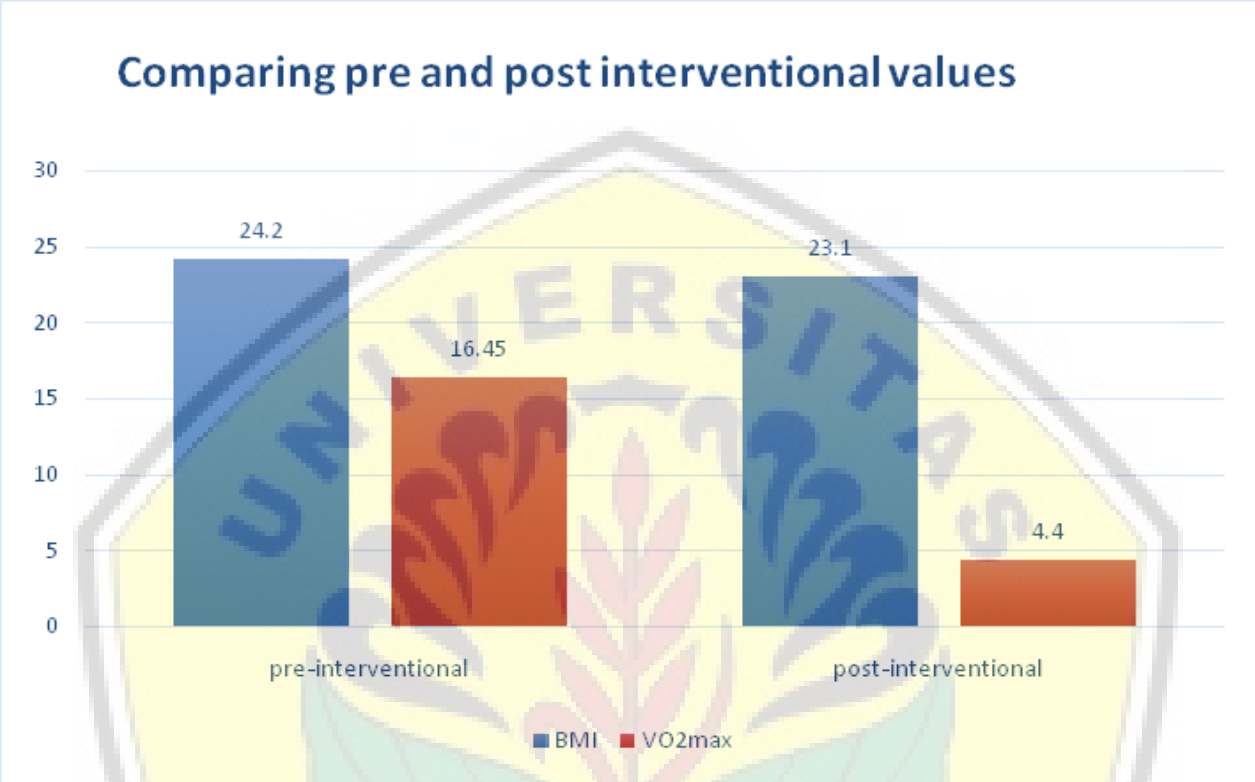

Figure No. 1

Discussion

The prevalence rate of obesity has been reached 1 billion overweight out of 300 million children[2]. School aged children are affected more[11]. The main causes for overweight are economic development, genetic factor, increased energy intake and lack of energy expenditure among the children[2,12]. Our study has decreased the BMI and improves VO_2Max through IVDG and moderate-intensity aerobic exercisewhich also improved their quality of life.

Mejia-Downs et al.,., has done a study by using IVDG among children with duration of 6 weeks and have reduced BMI of 0.75kg/m^2 and improved VO_2Max of 1.03ml/kg/min respectively[13] but in our study within the duration of 8 weeks BMI of 1.56kg/m^2 has been reduced in children and there is an significant improvement in VO_2Max 5.52% ml/kg/min, it may be due to the effect of Moderate-intensity aerobic exercise respectively.

Graciaet al.,have done a study by using high intensity interval training for a duration of 8 weeks and he determined that there are no changes in the BMI but there was an increase in VO_2Max 1.92ml/kg/min[14]but in our study there is a decrease in BMI and a significant increase of VO_2Max among children, hence our study is really an effective intervention.

Mogharnasiet al., have studied aerobic based training to reduce the BMI in a duration of 4 weeks and he determined that the BMI has been decreased 0.94kg/m^2 and VO_2Max has been increased 6.76%[15], their study has a significant decrease in BMI but it slightly increases the VO2Max but in our study the intervention was effect for both BMI and VO_2Max

Maffeiset al., have studied effects of cycling on

BMI and VO_2Max and he determined that BMI has decreased 0.62kg/m^2 and increases 6.02% of VO_2Max within the duration of 6 weeks respectively[16] but there is a significant decrease in BMI and increased VO2Max in our study when compared to their study.

Hence there was a drastically decrease in BMI and increase in VO2Max in our study when compared to other studies and hence the protocol designed by us was effective and it is enjoyable.

Conclusion

Interactive video dance game is an effective and enjoyable exercise program for overweight children who wish to decrease their BMI and improve components of cardiorespiratory fitness. Moderate- intensity aerobic exercise helps in cardiorespiratory fitness.

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Sociocultural Correlates of Infant Mortality among the Rural Tribes in Meghalaya

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Abstract

Background: The infant mortality is comparatively high among the rural tribes in India. This study examines the sociocultural factors that are correlated with infant mortality among the rural tribes in Meghalaya.

Method: Data from 900 tribal women lived in 142 villages which were randomly selected from 15 PHCs across five districts in Meghalaya. A semi-structured validated questionnaire consisting of socio-demographic details of the respondents, social profile of the deceased and sociocultural variables pertaining to the infant mortality rate (IMR).

Results: Respondents' median age was 28.9 years, 83% had primary education and 82% got married in the age group of 13–18 years. Over 96% of the respondents lived with their spouse and 80% had a monthly income ≤ Rs.5000. About 10.3% of respondents had three deliveries within a four-year period. Out of the deceased between the years 2014 and 2017, the infant mortality was 69% among the rural tribes. About 33.3% did not avail medical service from PHCs. Significant correlations were found between IMR and marital status (p=0.000), age of mother (p=0.003), frequency of antenatal check-ups (p=0.005), the immunization status of children (p=0.015) and family size (p=0.018).Mother's educational qualification, occupation and economic status were uncorrelated.

Conclusion: Infant mortality was correlated with maternal, prenatal, perinatal and neonatal determinants among tribes in rural Meghalaya. Findings support the need to focus on the age of the mother, marital status, family size and prenatal, perinatal and neonatal care.

Keywords: *Infant mortality, sociocultural, correlates, rural, tribe.*

Introduction

Infant and child mortality rates of a nation most often reflect its social and economic development. To this regard, India has made notable attempts in reducing both infant mortality and under-five mortality rates and a few states (namely Kerala, Tamil Nadu, West Bengal, Maharashtra, Punjab and HimachalPradesh) have almost achieved the Millennium Development Goal (MDG) by 2015[1 – 4]. However, as a nation India is yet to realize the same. It is evident that there are disparities related to socioeconomic condition, educational background, maternal health and child welfare, health facilities and environmental factors across different states and various social and/or ethnic groups in India. Besides, infant mortality has been higher among the scheduled tribe families in comparison to the generalpopulation[5]. Studies carried out in India and other nations found that infant and child mortality were associated with the sex of the child, mother's religion and ethnicity, income of

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the household, birth order, mother's age at marriage and childbirth, birth intervals, availability of professional antenatal and delivery care, full immunization of children, mother's education, urban-rural residence and mother's exposure to mass media[6-11].

One of the studies that found the decline in the infant mortality rate over a decade provided a framework foranalysing contributing factors[12]. These included: a) proximate factorssuch as nonmedical factors and medical care during the antenatal period,care at birth and preventive and curative care in the postnatal period); b) maternal factors like age, parity, andbirth intervals; and c) household and community-level factors such as water, sanitation and housing. This study has made a case for increased access to a minimum package of essential services in order to reduce the infant mortality rate. A few other studies also laid out intervention strategies and directions based on similar assumptions [13–17]. However, there was a gap in analysing the socio-economic and cultural factors correlated with the reduction of infant and child mortality rates in India.

As mentioned in the Mosley Chen Framework[18] the determinants of infant and childmortality are divided into three categories (i)biological factors; (ii)socio-economic factors; and (iii)environmental factors. In India, related to the socio-economic factors, a number of studies have shown that an infant born in a scheduled tribe has 19 per cent higher risk ofdying in the neonatal period and 45 per cent risk of dying in the post-neonatal period in comparison to other social classes. Besides, there is a disproportionate increase inchild mortality (aged 1-4 years) in scheduled tribes compared with the non-scheduled tribes[19-20]. Further, infant mortality is high among the scheduled tribes in rural areas compared to urban areas [20-21]. Overall, there is an increased possibility of deaths of infants in rural as compared to urban areas and the risk is exacerbated among scheduled tribes in India [22-23]. However, there is a dearth of studies carried out to understand the sociocultural correlates of infant mortality rate in India and to our knowledge this is the first of its kind study carried out in the state of Meghalaya.

Materials and Method

The present quantitative study was carried out in the Garo Hills Division of Meghalaya in 2017. There were five districts in the Garo Hills Division and the National Rural Health Mission (NRHM) provided health services through the Primary Health Centres (PHCs) and Community Health Centres (CHCs). People across the tribes in those districts started availing services from PHCs. A total of 37 PHCs were functional across five districts in the Garo Hills Division in 2017. For the purpose of the present study, we randomly selected 15 PHCs from a total of 37 PHCs and the random selection was done by the then government officials of the respective district. The then medical officers or their representatives, if the medical officer was unavailable, randomly sampled 142 villages mapped to the 15 PHCs. Senior staff from each PHC randomly selected five respondents each from 142 villages. Thus, the sample of the study consisted of a total of 900 respondents including 760 respondents randomly sampled from 142 villages and 140 Accredited Social Health Activists (ASHAs) worked in those sampled 142 villages. The principal and co-investigators met the Medical Officers in charge of the 15 PHCs and the meetings with ASHAs were ascertained. We obtained the Ethical Committee clearance to conduct the study.

Post to the receipt of the Ethical Committee's approval, the principal investigator trained the three co-investigators and an Auxiliary Nurse Midwifery (ANM) in the research protocol and the survey tool. The research team met the study participants and explained them about the objectives of the study. The research team ascertained the voluntary participation in this study and informed verbal consent was obtained from each respondent who volunteered to respond to the survey questionnaire. No personal identifiers were mentioned in the survey tool in order to maintain confidentiality.

The survey tool was first written in English and then got translated into the Garo language as it is widely spoken in the Garo Hills Division of Meghalaya. Later the tool was pilot tested on 60 subjects and we made a few changes in the questionnaire based on the answer options given by the pilot study respondents. Following the modification, we back-translated the questionnaire into English and tested again it on 60 respondents to check the reliability of the back-translated questionnaire and the Cronbach's alpha of the revised version of the survey tool was 0.89.The finalized version of the semi-structured interview schedule had a detailed proforma to recordsocio-demographic details, the dependent variables of infant and child mortality rates and the independent variables of sociocultural factors.

First, we entered the collected data into Microsoft

Excel and then we exported to IBM SPSS (version 20.0). We coded, recoded and analysed the data using SPSS version 20.0. We applied statistical method including descriptive statistics, inferential analysis to find correlations between variables and used Chi-square tests to find the statistically significant sociocultural correlates of infant and child mortality rates.

Findings: There were 900 women respondents from the randomly selected 142 villages spread across the five districts. The proportion of sample selected from each district is as follows: 13.3% from the East Garo Hills, 20.7% from the West Garo Hills, 12.7% from the South Garo Hills, 26.7% from the South West Garo Hills and 26.7% from the North Garo Hills of Meghalaya where all the NRHM program was implemented.

Table 1. Socioeconomic details of the respondents

	Women (N=900)	
Variable	**n**	**%**
Age of respondents		
17-25	353	39.2
26-35	376	41.8
36 & above	171	19.0
Education level		
Illiterate	156	17.3
Primary School	330	36.7
High School	357	39.7
Higher Secondary School	47	5.2
Graduation	10	1.1
Occupation		
Farming	582	64.7
Monthly salary earner	94	10.4
Daily wage earner	224	24.9
Monthly income		
Rs. 5000 or below	765	85.0
Rs. 5000- 7000	48	5.4
Above Rs.7000	87	9.6
Marital status		
Married & with husband	867	96.3
Widowed	33	3.7

The median age of the respondents was 28.9 years and about 96% of the respondents were married and had lived with their spouse at the time of the study. Almost 83% of them had a minimum primary education as their educational qualification. About 65% of them engaged in farming activities to earn their livelihood and 80% of the respondents had a monthly income of INR. 5000/or below. Out of the 900 study participants, 81.7% of them got married when they were in the age group of 13 – 18 years. While 87% of them chose their own life partner, 12% of the respondents had their marriage arranged by their family members. Before 18 years of age, almost 77% of the respondents had their first pregnancy. Between a four-year period from 2014 to 2017, over 10% of the respondents had three deliveries.

Table 2. Frequency and social profile of the deceased between 2014 and 2017

	Women (N=900)	
Variable	**n**	**%**
Death occurred in the family between 2014-2017		
Yes	81	9.0
No	819	91.0
Age group of the deceased (n=81)		
< 1 year	56	69.1
1-5 years	5	6.2
> 5 years	20	24.7
Sex of the deceased (n=81)		
Male	44	54.3
Female	37	45.7
Cause of death (n=81)		
Peri, neo and postnatal complications	34	42.0
Communicable diseases	2	2.5
Non-communicable diseases	45	55.5
Health services availed from PHC (n=81)		
Yes	54	66.7
No	27	33.3

In our study, 81 (9.0%) respondents reported at least one death in the family between 2014 and 2017. Out of the total 81 reported deaths, there were 44 male and 37 female family members. When the death occurred, 56 (69%) out of 81 were below the age of one (infant mortality) and five of them died when they were between the age of 1 – 5 years (child mortality). Out of the 56 deceased infants, 34 of them died due to perinatal, neonatal and postnatal complications. When the family member was ill before death, about 27 (33.3%) deceased were not taken for allopathic treatment.

Table 3. Sociocultural correlates of IMR

	Women (N=900)		
	IMR (n=56)		
Variable	**Yes (# & %)**	**No (# & %)**	**p-value**
Age of respondents			
17 to 20	10 (9.1)	100 (90.9)	0.003
21 to 25	24 (9.9)	219 (90.1)	
26 to 30	12 (4.7)	242 (95.3)	
>30	10 (3.4)	283 (96.6)	
Educational qualification			
Illiterate	7 (4.5)	149 (95.5)	0.625
Primary	25 (7.6)	305 (92.4)	
Above high school	24 (5.8)	390 (94.2)	
Age at marriage			
< 18	13 (12.1)	94 (87.9)	0.687
about 18 years	35 (5.7)	584 (94.3)	
about 21 years	8 (4.8)	166 (95.2)	
Marital status			
Married	44 (5.2)	797 (94.8)	0.000
Remarried	12 (20.3)	47 (79.7)	
Family size			
1 to 3	19 (9.0)	191 (91.0)	0.018
4 & 5	27 (6.4)	396 (93.6)	
6 & above	10 (3.7)	257 (96.3)	
No. of antenatal check-ups			
One	1 (3.7)	26 (96.3)	0.005
Two	3 (5.4)	53 (94.6)	
Three	11 (7.0)	147 (93.0)	
Four	40 (7.1)	526 (92.9)	
No antenatal check-ups	1 (1.1)	92 (98.9)	
Immunization status			
All children received	46 (6.3)	680 (93.7)	0.015
Some children received	4 (3.9)	98 (96.1)	
No children received	6 (8.3)	66 (91.7)	
Occupation			
Farming	31 (5.3)	551 (94.7)	0.230
Daily wage earner	21 (9.4)	203 (90.6)	
Monthly salary earner	4 (4.3)	90 (95.7)	
Monthly income			
< Rs.5000	47 (6.2)	716 (93.8)	0.438
> Rs.5000	9 (6.6)	128 (93.4)	

As evident in Table 3, there were statistically significant correlations between IMR and sociocultural variables such asthe age of the respondents, marital status, family size, number of antenatal check-ups and immunization status. In our study, variables such as educational qualification of mother, age at marriage, occupation and economic status did not have statistically significant correlation with the IMR. The Ch-square tests found the variable of marital status having the highest level of statistically significant correlation with IMR (p=0.000) followed by age of respondents (p=0.003), number of antenatal check-ups (p=0.005), the immunization status of children (p=0.015) and family size (p=0.018). Thus it is inferred that mother's educational qualification, her age at marriage, her occupation and income were not the correlates but marital status of the mother in the tribal village, family size, her age, the number of antenatal check-ups she had and the immunization status of her children were the significant correlates of IMR among the tribes in rural Meghalaya.

Conclusion

In conclusion, analysis of infant mortality in a four-year period showed a very slow decline among tribes in rural Meghalaya. For decreasing the IMR, the ongoing programmes of National Health Mission (NHM) aim at sensitizing women on sexual and reproductive health services, perinatal care, supplementary foods, breastfeeding practices and immunization. In addition to these, our study findings make a case for educating the tribal people on the sociocultural correlates such as increasing age at marriage, living with a spouse in the marital relationship, optimal family size, age at first birth, increasing the birth interval between two births and addressing gender-based discrimination among tribes.

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Ethical Clearance: This study was approved by the Institutional Review Board.

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Effect of pre-operative video teaching on anxiety among patients undergoing endoscopic urological surgeries

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Abstract

Introduction: Anxiety is a normal adaptive response among surgical patients. It is anticipated to occur due to the stress of surgery and can occur at any time throughout the perioperative period.

Potential sources of anxiety include anticipation of impending surgery, Pain and discomfort, changes in body image or function, role changes, loss of control, family concerns, or potential alterations in lifestyle. Preoperative video teaching about the procedure may help reduce anxiety among the patients.

Objective: The objective of this study was to assess effect of video teaching on anxiety levels among patients undergoing endoscopic urological surgery.

Materials and Method: Pre-experimental one group pre-test post-test design was used for the study. To assess the anxiety levels among patients undergoing endoscopic urological surgery. Nonprobability purposive sampling technique was used to select 60 samples from selected hospitals. Demographic details were collected with semi structured questionnaire, anxiety was assessed using Hamilton Anxiety Scale and structured video teaching was provided after pretest.

Results: The analysis was done by using descriptive and inferential statistics. Researcher applied paired t test for pre and posttest anxiety score assessment and Fisher's exact test for analysis of association of anxiety scores with demographic variables of the patients.

Conclusion: Anxiety if not addressed before surgery may cause varied levels of physiological responses which may interfere with postoperative recovery. Therefore it is good to plan a virtual education before planned surgery to eliminate adverse effects of unaddressed anxiety.

Keywords: *Effect, video teaching, anxiety, endoscopic surgery.*

Introduction

Since human beings first learned to perform surgeries, they have used their creativity and intelligence to develop surgical techniques. Each time more advanced than the previous. Today surgery has evolved into a medical art and science with various revolutions like minimal invasive surgeries, endoscopic and robotic surgeries. With recent advances in surgical techniques problems of bleeding, pain, scar, wound infections, as well as associated morbidity and mortality of open surgeries have been reduced significantly.

A study done on patients with coronary artery bypass surgery revealed that patients previous experience with any surgery along with other causative factors of anxiety are responsible for various physiological responses. Severity of anxiety may vary depending upon previous positive or negative impact of hospitalization. Factors

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like being in an unfamiliar environment, inability to decide care for oneself, fear of long-term effects of surgery, fear of complications, might increases anxiety.[1]

Comparative study of 200 patients undergoing cataract surgery revealed reduction in anxiety scores of patients undergoing cataract surgery in experimental group. Whereas, highest anxiety scores among control group were calculated. The Amsterdam Preoperative Anxiety and Information Score (APAIS) was used in this study.[2]

Dedicated healthcare staff for preoperative teachings to indoor patients may help reduce anxiety of hospitalization through patient and family education. Addressing their concerns and clearing their doubts about surgery. If patients and family members are allowed to verbalize their doubts physiological manifestations of anxiety may reduce and help in postoperative recovery and good postoperative results.

As anxiety may lead to increased protein breakdown, decreased wound healing, altered immune response and increased risk of infection and fluid and electrolyte imbalance. Pre-operative teaching about the procedure is proved to be an excellent tool for the positive impact on anxiety levels of any patient undergoing any procedure in the hospital environment.

A person undergoing operative intervention identifies anxiety as an unpleasant feeling, a state of apprehension, which may be observed as abnormal hemodynamics. Due to resultant autonomic nervous system stimulation, leading to fight or flight response. It begins as soon as the surgical procedure is planned and increases to maximal intensity at the moment of entering the hospital for surgery.

Preoperative period is the time when most patients experience significant fear regarding surgery and its outcome. They usually enter the clinic with fear of unknown. This study has demonstrated pathophysiological responses of preoperative anxiety. This anxious state tends to prevail through postoperative period. Researchers of this study recommended preparing patients (informing) about what to expect during the surgical experience, so that pathological effects of anxiety are reduced; as the patient feels more in control of his situations.[3]

Anxiety, fear and pain is never ending cycle. Especially when you are undergoing through an unknown or unexpected situation in life like; surgery, managing anxiety becomes the topmost priority to manage the situation with minimum distress.

A pre-experimental study was conducted by Samida Das from Bhubaneshwar, with purpose to assess the effect of pre-operative video assisted teaching (VAT) on knowledge and anxiety among the patient undergoing abdominal surgery. The study was done with one group pre-test post-test design total samples were (n=60). A self-structured questionnaire was developed to assess the knowledge (r = 0.72) and standardized Hospital Anxiety Depression Scale tool used to assess the anxiety. The pre-test was conducted, then VAT was provided, followed by post-test on 8th day. There was great increase in knowledge score (mean difference=8.12) and decrease in anxiety (mean difference=9.79) and a negative correlation between knowledge and anxiety. A chi square association was performed with knowledge showing significant relationship with age, sex, previous hospitalization, previous abdominal surgery, duration of hospitalization, types of abdominal surgery and socioeconomic status, but with anxiety showing significant relationship only with socioeconomic status (p=0.005). These results suggest that pre-operative education is effective and should be incorporated into routine practice in reducing anxiety and improving knowledge among patients.[4]

Research studies done worldwide evaluate the effect of anxiety on patients undergoing operative procedures even when the procedures are planned-ones; concluded that they create a lot of disturbance into one's emotional balance. Well informed or a virtual understanding of the fact may help in reducing fear and anxiety among patients.

As video teaching is a personalized intervention it may help them to express their concerns from known to the unknown.

As the researcher has more than 30 years of experience in the operation theatre and recovery units of multispecialty hospitals and seen many patients suffering with procedure related anxiety she has decided to work on the anxiety reduction of patients undergoing endoscopic urological surgeries.

A study done in China on patients undergoing cardiac surgery where the participants received preoperative education experienced a greater decrease in anxiety score (mean difference -3.6 points, 95%

confidence interval -4.62 to -2.57; P<0.001) and a greater decrease in depression score (mean difference education group reported less interference from pain in sleeping. The study confirms preoperative education -2.1 points, 95% CI -3.19 to -0.92; P<0.001) compared with those who did not. There was no difference between groups in average pain, current pain and interference in general activity, mood and walking ability. Researchers recommended that based upon existing evidence and international practice, preoperative education should be incorporated into routine practice to prepare cardiac patients for surgery.[5]

systematic review was conducted to investigate the effectiveness of various preoperative educational interventions in reducing preoperative anxiety. Fourteen interventional trials (12 randomized controlled trials and two pre/posttest trials) involving a total of 1752 participants were included in the review. Eight of the fourteen trials demonstrated that preoperative education intervention reduced preoperative anxiety significantly (P<0.05). It can be concluded that preoperative education interventions are promising in reducing preoperative anxiety in patients scheduled for surgical procedures.[6]

Material and Method

Study Objectives:

1. To assess the level of anxiety among patients before administration of video teaching.
2. To determine the effect of video teaching on the anxiety scores of patients undergoing endoscopic urological surgery.
3. To find the association of anxiety with selected demographic variables

Study Design: Study is based on Pre-experimental one group pre-test post-test category of quantitative experimental research, has some manipulation of independent variable in terms of the post video assisted teaching. Questions related to their surgery addressed in the video. Study has limited control over extraneous variables in terms of previous exposure to surgery or hospital environment. Assessment of anxiety status was done with help of Hamilton's anxiety assessment scale (HAM-A), a standardized anxiety rating scale.

Findings:

Section II:

Table 1: Effect of pre-operative video teaching onanxiety among patients undergoing endoscopic urological surgeries N=60

Anxiety	Pretest		Posttest	
	Freq	%	Freq	%
Mild (Score 1-3)	2	3.3%	30	50.0%
Moderate (Score 4-6)	13	21.7%	27	45.0%
Severe (Score 7-10)	45	75.0%	3	5.0%

Table 2: Paired t-test for the effect of pre-operative video teaching onanxiety among patients undergoing endoscopic urological surgeries N=60

	Mean	SD	T	df	p-value
Pretest	11.2	5.4	10.9	59	0.000
Posttest	3.7	2.7			

Researcher applied paired t-test for the effect of pre-operative video teaching on anxiety among patients undergoing endoscopic urological surgeries. Average anxiety score in pretest was 11.2 which reduced to 3.7 in posttest. T-value for this test was 10.9 with 59 degrees of freedom. Corresponding p-value was small (less than 0.05), the null hypothesis is rejected. This is evident that the anxiety of the patients undergoing endoscopic urological surgeries reduced significantly after pre-operative video teaching.

Section III: Analysis of data related to the association of anxiety with demographic variables

Table 3: Fisher's exact test for association of anxiety with demographic variables N=60

Demographic Variable		Mild	Moderate	Severe	p-value
Age in years	21-30	0	4	9	0.363
	41-50	1	1	16	
	51-60	1	5	9	
	61-70	0	3	10	
	71-80	0	0	1	
Gender	Male	0	4	19	0.503
	Female	2	9	26	
Education	Illiterate	0	1	9	0.087
	Primary	1	9	16	
	Secondary	0	1	13	
	Higher Secondary	0	2	2	
	Graduate	1	0	5	
Duration of surgery	Less than 2 hours	2	13	34	0.097
	2-4 hours	0	0	11	
Associated medical illness	Yes	1	9	30	1.000
	No	1	4	15	
Previous experience of surgery	Yes	1	10	30	0.658
	No	1	3	15	

Since p-values corresponding to all the demographic variables are large (greater than 0.05), none of the demographic variables was found to have significant association with the anxiety of the patients undergoing endoscopic urological surgeries.

Discussion

Study findings revealed reduced posttest anxiety scores among all cases undergoing endoscopic urological surgery. As more than 75% cases had recorded severe anxiety during pretest had reported reduction in anxiety score during posttest. Only 5% cases were recorded with severe anxiety scores during posttest.

Results of paired t-test for the effect of pre-operative video teaching on anxiety among patients undergoing endoscopic urological surgeries revealed that; Corresponding p-value for the pretest and posttest scores calculated was small (less than 0.05), therefore null hypothesis; There is no effect of video teaching on anxiety among patients undergoing endoscopic urological surgery was rejected.

Conclusion

It is evident from the research conducted that video teaching is a cost-effective method of reducing preoperative anxiety among patients undergoing endoscopic urological surgery. It is recommended for patients with or without previous experience of surgery as every experience is unique to the individual and psychological makeup varies with every experience.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Ethical clearance taken from ethical committee of, Dr. D.Y. Patil University.

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SAQ Training Effect on Coordinative Abilities of University Level Male Cricket Players

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Abstract

Objective: The objective of this study was to check the Speed Agility Quickness (SAQ) training effect on Coordinative Abilities on University level cricket players.

Method: A total no. of twenty (20) samples of boys of University level players of department of physical education from Lovely Professional University, were randomly selected for the study. The pre-test and post-test was taken for find out the appropriate outcome. To find out the effect of the SAQ training on coordinative abilities, some drills of Speed Agility and Quickness has applied on the group of experimental in comparison of control group.

Result: According to the present study, there is a significant effect of SAQ drills on coordinative abilities of University level cricket players.

Keywords: *Speed Agility Quickness (SAQ), Cricket, Coordinative Abilities*

Introduction

Speed Agility Quickness (SAQ) Programme: It is a programme to help athlete to reach their optimum level, the athlete enhance their performance level due to help of this programme in every sport. Speed, agility and quickness is useful in every sports. If any person learn and master the skills of SAQ, he can take his performance to next level (Sahan[1]; Jovanovic et al[2].). It an athlete has the training programme regular and systematic than he can develop his skills and also can develop a fine atmosphere. Training will focus on the developing explosive movements, sports specific skills, love strength and techniques (Zoran[3]).

Coordinative Abilities: An ability to perform quickly and purposefully in the different or difficult comprehensive movement structure. In his context, coordinative abilities as understood as an extremely visible manifestation (a clear appearance) of controlled and regulated process of a motor activity of the central nervous system (Rosin[4]). Coordination ability is used for maximal utilization of technical skill, tactical skill and coordinative ability. An ability to achieve a superior level of harmony of an individual in physically movements and phase turning. In this we can able to change the position (development) and movement of physical movement and space in relative of related field of action. It is much helpful to coordinate the body parts and combination of limbs. It is helpful to improve the ability for quick action a signal.

Objective of Study: To know the effect of SAQ drills on coordinative abilities.

Definition and Explanation of the Terms:

Quickness: Ability of as person/athlete to execute movement skill in comparatively brief amount of time is part of the athleticism continuum (time) [2]

Reaction Time: Time lapsed (time pass by) between the athlete's recognizing the used to art and initiating the appropriate action.

Total Reaction Time: To execute the reactionary movement is of concern in summation of reaction time and time it takes. These are: Proper movement skills, Speed of movement

Hypothesis: Study is highlighting a particular set of

coordinative abilities that can be improve through SAQ training.

Procedure and Method

Sampling- A total no. of twenty (20) samples of boys of University level players of department of physical education from Lovely Professional University, were randomly selected for the study. Further There is division of two groups, one is experimental (N=10) and the other is control group (N=10).

Method: The training is designed for checking the effect of SAQ on coordinative abilities. The SAQ are followed for 5 days a week. Training was given to the players for 6 week.[2] Different coordinative variable was selected i.e. Balance, Coupling, Orientation, Rhythm, Reaction. The pre-test and post-test was taken for find out the appropriate outcome

Day 1	Upper body (Strength)
Day 2	Lower body (Speed work/Quickness)
Day 3	Speed Agility Quickness Drills
Day 4	Lower body (Speed work/Quickness)
Day 5	Speed Agility Quickness Drills

Analysis of Data: To find out the effect of SAQ training on the pre determent variables analysis of co-variants was done for the experiment and control groups. In case of significant f-ratio, LSD was calculated on post hoc measure. The data was processed using SPSS (VERSION 22). The related results and the graphical representation of the data is presented in the chapter.

Balance: Pre and post- test (6 weeks) score of experimental and control group on balance is presented in table no. 1.

Table No. 1

Pre and post (3 weeks) test scores of experimental and control groups on balance.

Group	N	Pre-test		Post-test	
		Mean	SD	Mean	SD
Experimental	10	17.0470	3.12419	21.451	5.94175
Control	10	14.5480	4.42535	12.324	4.80881

The pre and post -test mean of 6 weeks training program on balance indicate that in case of experimental group, the pre and post -test Mean and SD were 17.0470 (3.12419) and 21.451(5.94175). Respectively. In case of control group the pre and post- test Mean and SD were 14.5480(4.42535) and 12.324(4.80881). Respectively

Coupling: Pre and post -test (6 weeks) score of experimental and control group on coupling is presented in table no. 2.

Table No. 2

Group	N	Pre-test		Post-test	
		Mean	SD	Mean	SD
Experimental	10	14.5010	1.49798	11.735	.078157
Control	10	14.6360	2.07138	12.106	1.06848

The pre and post -test mean of 6 weeks training program on coupling indicate that in case of experimental group, the pre and post- test Mean and SD were 14.5010(1.49798) and 11.735(0.078157). Respectively

In case of control group the pre and post -test Mean and SD were 14.6360(2.07138) and 12.106(1.06848). Respectively

Orientation: Pre and post -test (6 weeks) score of experimental and control group on orientation is presented in table no. 3.

Table No. 3

Group	N	Pre-test		Post-test	
		Mean	SD	Mean	SD
Experimental	10	2.4000	1.4298	3.6	0.69921
Control	10	2.0000	1.0540	2.8	1.0328

The pre and post -test mean of 6 weeks training program on orientation indicate that in case of experimental group, the pre and post -test Mean and SD were 2.40 (1.4298) and 3.6(0.69921). Respectively

In case of control group the pre and post -test Mean and SD were 2.00(1.0540) and 2.8(1.0328). Respectively

Rhythm: Pre and post -test (6 weeks) score of experimental and control group on rhythm is presented in table no.4

Table No.4

Group	N	Pre-test		Post-test	
		Mean	SD	Mean	SD
Experimental	10	7.2310	0.66368	6.803	0.56773
Control	10	7.2500	0.57795	7.477	0.56

The pre and post -test mean of 6 weeks training program on rhythm indicate that in case of experimental

group, the pre and post -test Mean and SD were 7.2310 (0.066368) and 6.803(0.56773). Respectively. In case of control group the pre and post -test Mean and SD were 7.25(0.57795) and 7.477(0.56). Respectively

Reaction: Pre and post -test (6 weeks) score of experimental and control group on reaction is presented in table no. 5.

Table No. 5

Group	N	Pre-test		Post-test	
		Mean	SD	Mean	SD
Experimental	10	3.0230	.79944	1.772	0.60426
Control	10	3.3750	1.12594	2.356	1.20057

The pre and post -test mean of 6 weeks training program on reaction indicate that in case of experimental group, the pre and post -test Mean and SD were 3.0230 (0.79944) and 1.772(0.60426). Respectively In case of control group the pre and post -test Mean and SD were 3.3750(1.12594) and 2.356(1.20057). Respectively

Conclusion

The objective of the study was to develop coordinative abilities of players, to develop the coordinative abilities through SAQ drills and to know the effect of SAQ drills on coordinative abilities. There were two groups in the study (Silva[5]; Thomas[6].). The experimental group was under training for compare with the control group which was not in training. The findings of the study is effected on players. According to the findings and the discussion, the effect of SAQ drills on coordinative abilities of cricket players is effective. On the basis of findings and discussion the hypothesis that there would be significant effect of SAQ training on coordinative abilities of cricket players is partially accepted on 2 coordinative abilities depicted significant difference out of selected abilities (Hoff[7]).

Ethical Clearance: Taken from LPU Physical Education Department.

Source of Funding: Self

Conflict of Interest: Nil

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Prevalence of Musculoskeletal Disorders among High School Children in Mangaluru

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Abstract

Background: Musculoskeletal Disorders (MSDs) are defined as musculoskeletal symptoms or pain that reflect a number of conditions, which affect the muscles, ligaments, tendons, nerves, bones and joints. The World Health Organization (WHO) commissioned a report describing the impact of impaired musculoskeletal health among the younger population. Anthropometric measures, school bag weight, faulty postures, student- furniture mismatch are some of the common risk factors associated with MSDs among school going children.

Objectives: To find the prevalence of musculoskeletal disorders among high school children in Mangaluru and to find the influence of risk factors for the musculoskeletal disorders.

Study Design: A cross sectional study.

Method: 326 high school children aged 12-16 years from different parts of Mangaluru district participated in the study. A questionnaire was designed to collect the general information. Assessment of the musculoskeletal disorders was done using the Standardized Nordic questionnaire (SNQ).

Results: Out of the 326 students assessed, prevalence of MSDs was found to be 40.2 %. While 40.4 % participants reported of discomfort with the dimensions of the desk and bench, 73.3% of the students cited that they carried heavy bags for at least 5-15 min on a daily basis and 74.8 % of the students stated that they travelled for at least 5 – 15 min of duration on a daily basis.

Conclusion: The prevalence of MSDs among school children was notable. It was also noted that, factors like, school bag weight, anthropometric measures, duration of school bag carriage, duration of travel, mode of transportation to and fro from school, furniture mismatch etc were evident among the population who suffered from MSD. Therefore, preventive and educational activities regarding the MSDs could be included among the population of school children to curb the future complications of these MSDs.

Keywords: *Musculoskeletal disorder, School bag, Bag weight, Furniture Mismatch.*

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Introduction

Musculoskeletal Disorders (MSDs) are defined as musculoskeletal symptoms or musculoskeletal pain that reflect a number of conditions, which includes a wide range of inflammatory and degenerative conditions affecting the muscles, ligaments, tendons, nerves, bones and joints.[1] Musculoskeletal diseases are prevalent and their impact is wide spread.[2] The occurrence of MSDs are often related to repetitive motion, forceful exertions,

non-neutral body postures and vibration which cause damages to tendons, bones, nerves and other soft tissues.[3] Over 150 diseases and syndromes have been identified to be associated with impaired mobility and function, reduced quality of life and mental well-being.[4] In a systematic analysis done to evaluate the worldwide disease burden and the years lived with disability, low back pain (LBP) was found to be the leading cause of years lived with disability in the world, followed by neck pain and other MSDs in the fourth and fifth place respectively.[5] The World Health Organization (WHO) commissioned a report which described the profound impact of impaired musculoskeletal health on aging among the population.[6] Musculoskeletal problems tend to be recurrent often lasting from adolescence into adulthood. Physical deformities left untreated over time was found to be progressive, causing debilitating consequences.[7, 8]

On an average school children spend at least 5 hours a day at school.[9] A population based study among children and adolescents, had reported a prevalence of MSD which varied between 10- 67%.[10] Another study done among children aged between 5–16 years reported a prevalence of idiopathic musculoskeletal pain of 16.2%. The authors also highlighted the association between the affect of these MSDs on the daily activities and the percentage of absenteeism from school.[11]

A number of studies have proved that school children prone to get musculoskeletal problems, mainly involving the body areas that included the neck, shoulder, upper back, lower back.[12,13,14,15] School bags often consist of books, tiffin box, water bottle and other necessary types of equipment which all the students carry to school. It was reported in a study that 6 out of participants who carried heavy back packs experienced chronic back pain and also reported of upper and mid back pain resulting from changes in posture.[9] Greater bag weight was related to spinal misalignment or curvature, muscle strain and spasms of the back and shoulders.[9] In another study the authors evaluated the effect of backpacks on the lumbar spine in children by performing standing MRI and found that increasing backpack loads significantly compressed lumbar disc and thereby significantly increased lumbar asymmetry.[12] Researchers have also reported that, faulty postures maintained for a prolonged period of time could result in various musculoskeletal illness.[16] Postural deviations are a common problem among children due to long-term poor posture in modern lifestyle. Motorized transportation and lack of regular physical activity are some of the other risk factors associated with postural deviation among children.[17] Mode of transport to and fro from the school is one of the known contributors to MSDs.[13]

In Mangaluru, school children constitute about 21.4 % of the total population. As per Dakshina Kannada statistics (31-3-2016), there were around 272 high schools in Mangalore Thaluk with 32595 students among which 16756 were boys and 15389 were girls.[18] The purpose of this study was to find the prevalence of musculoskeletal problems among high school children in Mangaluru and to find the influence of risk factors associated with MSDs.

Materials and Method

The cross-sectional study included 326 high school students, which was selected randomly from the different parts of Mangalore district. High school students of both the gender, age group between 12 – 16 years were selected randomly (184 boys and 142 girls). Following patients were excluded: (1) Participants under any medication such as antiepileptics, analgesics etc. and (2) participants with the history of previous surgeries/ recent surgeries (involving back, neck, upper limbs and lower limbs). The study was approved by Yenepoya (Deemed to be) University Ethical committee. Children along with the teachers were explained about the purpose of the study. Those who fulfill the criteria were included in the study. Informed consent was given to the parents and an assent was taken from the students. A validated General Performa included the details about each participant such as age, height, weight, bag weight, duration of school bag carriage, method of school bag carriage, duration and mode of travel to and fro from school, duration of sitting hours at school and school furniture discomfort was given to the students. Along with General Performa, SNQ was also given. For a better understanding, questionnaires were translated in to regional language. For the younger students and those who couldn't understand the questionnaire, data were collected orally and filled accordingly. Adequate time was given for the completion of questionnaire and was collected on the subsequent visits.

Height was measured using stadiometer, weight was measured using calibrated weighing machine and school bag weight was measured using portable weight checker. BMI and Bag weight to body weight ratio of each participant was calculated and noted.

Findings:

Table 1: Characteristics of study participants

Characteristics (n = 326)	Mean ± SD
Age (Years)	13.567±0.7147
BMI (kg/m^2)	18.561±3.5349
Bag weight (kg)	4.573±0.9597
Sitting hours (min)	5.471±0.6981

Table 1 shows mean and standard deviation of variables.

Table 2: Prevalence of musculoskeletal disorder (n=326)

Variables	Frequency	Percentage (%)
Musculoskeletal Disorder		
Reported 'Yes' to MSDs	131	40.2
Reported 'No' to MSDs	195	59.8

Table 2 shows the prevalence of musculoskeletal disorders among the participants.

Table 3: Correlation of various factors with prevalence of MSDs

Variables	Frequency	Percentage (%)
Bag weight to body weight ratio		
<10% of body weight	60	45.8
10% - 15% of body weight	57	43.5
>15% of body weight	14	10.7
Duration of school bag carriage		
<10 min	71	54.2
>10 min	60	45.8
Method of bag carriage		
Both shoulder	97	74
One shoulder	34	26
Time taken to school		
<10 min	75	57.2
>10 min	56	42.8
Mode of transport		
Bus	81	61.8
Walk	30	22.9
others	20	15.3
Comfortable using the furniture		
Yes	79	60.3
No	52	39.7

Table 3 shows the frequency and percentage of risk factors considered and its correlation with MSDs.

Table 4: Association between discomforts using existing class room furniture among the participants with musculoskeletal disorder

Variables (n=52)	Frequency	Percentage (%)
Height of the desk	7	13.5
Height of the bench	22	42.3
Distance between desk and bench	2	3.8
All of the above	21	40.4

Table 4 shows the frequency and percentage of variables related to the discomfort using the existing classroom furniture among the participants with MSDs.

Characteristics of participants are depicted in Table 1. A total of 326 participants were included in the study out of which 142 students were girls and 184 were boys. Parameters such as age, Body Mass Index (BMI), bag weight, duration of sitting hours, mean age etc were taken into consideration. The mean age was 13.56 ± 0.17 years, mean BMI was 18.56 ± 3.53 kg/m^2, mean bag weight was 4.53 ± 0.95 kg and the mean sitting hours was 5.41 ± 0.69 min.

Table 2 shows the prevalence of musculoskeletal disorders among the participants. Table 3 shows the risk factors considered during the study and its correlation with musculoskeletal pain. Table 4 shows that 40.4% of the participants with musculoskeletal disorders had discomfort with height of desk, height of bench and the distance between desk and bench. Figure 1 depicts the descriptive statistics of pain around different body sites among the population with MSDs where the participants referred to be suffering from pain at different body sites. Around 30.5 % of the participants cited that that they had neck pain. Some participants cited pain over their shoulder out of which 4.6 % participants specified that they had shoulder pain on the left side, 2.3 % specified shoulder pain on the right side,with 6.9 % participants reporting shoulder pain on both sides. The participants also reported with pain on the elbow and wrist out of which 2.3 % participants specified that they had elbow pain on the left side, 3.1 % participants had elbow pain on the right side. 6.1 % participants specified that they had wrist pain on left side, 7.6% participants had wrist pain on right side and 1.5 % participants reported with wrist pain on both sides. The participants also refereed to other body sites which included 31.3 % with upper back pain, 18.3 % participants had lower back pain, 15.3% reported with pain on the thighs/hips. Besides

this another 35.1% of the participants with MSDs reported with pain on the knees and 26.7 % reported pain on the ankles/feet.

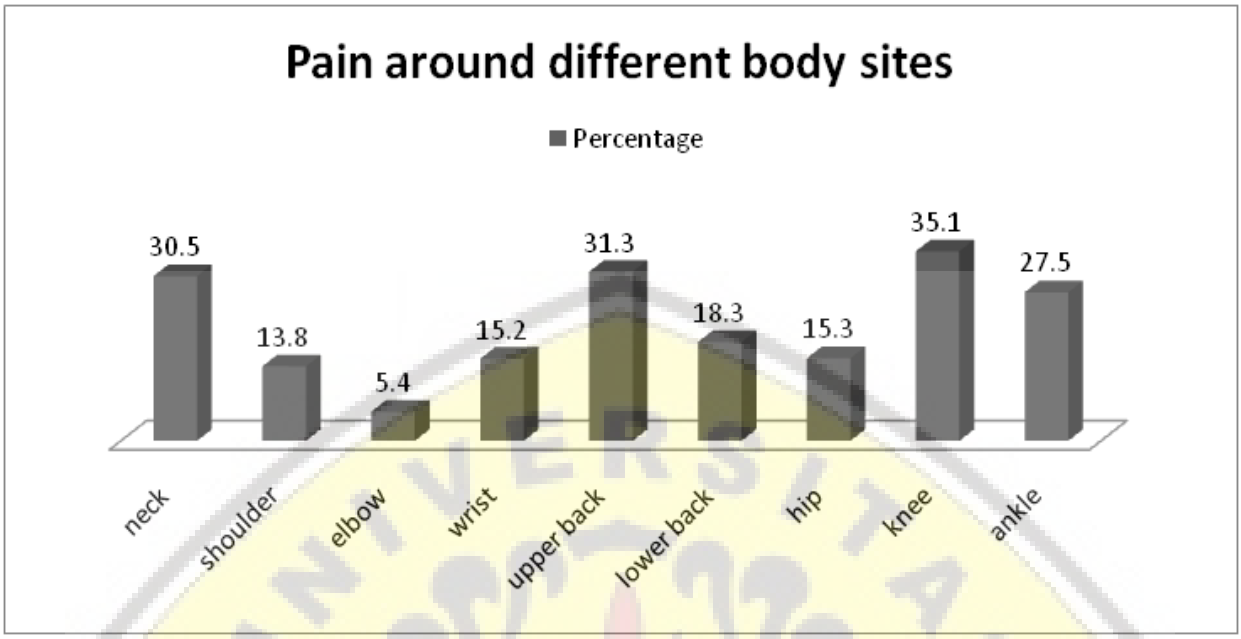

Figure 1: Descriptive statistics of pain around different body sites among the population with MSDs

Figure 1 Shows body region wise analysis of MSDs among the participants.

Conclusion

The present study was done to find the prevalence of MSDs among high schoolchildren between the age group 12 – 16 years in various schools in Mangaluru and also to find the risk factors associated with MSDs. The results showed the prevalence of MSDs among high school children as 40.2 %. The major risk factors associated were school bag weight, duration of school bag carriage, method of school bag carriage, duration of travel mode of transport, duration of sitting hours and furniture mismatch. The higher level of prevalence and association of numerous risk factors pose a need for large scale study among a larger and uniform population with different age category. The findings can be used for awareness program in state and national level, which might be the initial step in prevention of MSDs among school children. The furniture ergonomics can be corrected according to the body dimensions of the students by the help of expert engineers considering the age and the growth patterns of the children. All these initiatives and awareness programs can result in a more active and efficient study environment for students thereby increasing the productivity.

Conflict of Interest: The authors declared no potential conflicts of interest with respect to the authorship and/or publication of this article.

Source of Funding: Self

Ethical Clearance: The study was approved by Yenepoya (Deemed to be) University Ethical committee, Mangaluru, Karnataka, India.

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Effectiveness of Benson's Relaxation Therapy on Post Operative Pain among Mothers Delivered by Caesarean Section in a Selected Hospital at Mangaluru

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Abstract

Background: The effective pain relief is one of the important aspects to in treating patients undergoing caesarean section Untreated pain after surgery may lead to many complications like increased opioid use, postpartum depression and development of persistent pain. Pharmacologic and non-pharmacologic therapy helps in postoperative pain management

Objectives: The objectives of the study were to determine the postoperative pain among mothers delivered by caesarean section, to evaluate the effectiveness of Benson's relaxation therapy on postoperative pain and to associate postoperative pain scores with selected demographic variables.

Method: Quantitative research with quasi-experimental repeated measures design was used. Purposive sampling technique was adopted to select 40 mothers delivered by caesarean section to test effectiveness of Benson's relaxation therapy. The data was collected by using numerical pain rating scale.

Result: The result showed that the mean pre interventional postoperative pain scores of the mothers in the experimental group was 7.90 and in the control group was 8.00 which showed mothers had severe pain both the group. The post intervention pain scores in the experimental group showed there was significant reduction in pain ($p<0.05$) at various time interval. Whereas in the control group also there was significant reduction ($p<0.05$) at various time interval except for 2-12 hour comparison ($p=0.346$).There was no association of pretest postoperative pain scores with selected demographic variables such as age, religion, occupation, monthly income, parity, type of caesarean section and source of information on relaxation therapy in the experimental group and control group ($p>0.05$), except for religion ($p=0.032$) and source of information on relaxation therapy ($p=0.040$) in the control group

Conclusion: Benson's relaxation therapy proved to be effective in reduction of postoperative pain among mothers delivered by caesarean section in selected hospital at Mangaluru.

Keywords: *Postoperative pain;Benson's relaxation therapy; Caesarean section.*

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Introduction

Pain is one of the major symptoms in many of the medical condition; one of the most common reasons for seeking medical help.[1] All pain hurts, the resulting sensation is different for different kinds of pain. Surgical pain is the pain caused due to surgical procedure.[2] The effective pain relief is one of the important aspects in treating patients undergoing surgery. The effective pain relief measures have many physiological benefits and

reduce length of hospital stay. Various agents, routes and modes are available for the treatment of postoperative pain management.[3] Complementary and alternative medicine includes various healing approaches and therapies that originate from around the world and that are not based on conventional Western medicine.[4] Relaxation techniques in the forms of breathing exercises, yogic stretching and been used for thousands of years as a part of the ancient religions of Hinduism and Buddhism.[5] Dr. Herbert Benson coined the term 'Relaxation response'. The response is defined as personal ability to encourage the body to release chemicals and brain signals that make the muscles and organs to slow down and increase blood flow to the brain.True relaxations can be achieved by removing oneself from every day thoughts and making an effort to spend some time every day choosing a word, sound, phrase, prayer or by focusing on the breathing. It helps to create inner peace and better health.[6] Although the development of new analgesics and advances have been made in the understanding of pathophysiology of postoperative pain many patients still suffer from moderate to severe postoperative pain.[7]Untreated pain after surgery may lead to many complications like increased opioid use, postpartum depression and development of persistent pain. A pharmacologic and non-pharmacologic therapy helps in postoperative pain management.[8]

Materials and Method

The aim of the study was to assess the effectiveness of Benson's relaxation therapy on postoperative in selected hospital. Quantitative approach with quasi experimental repeated measures design was adopted for the study. Forty subjects were selected by Non-probability purposive sampling technique and were assigned equally to experimental and control group. The postoperative pain was assessed by numerical pain rating scale. Data were analyzed using descriptive and inferential statistics.

Findings: Demographic characteristics of the participants (n=20+20) showed that the majority of the mothers (70%) in the experimental group and control group (55%) belonged to 22-25 years age group. Most of the mother in the experimental group (65%) had higher secondary education whereas the mothers in the control group (50%) had primary education. Most of the mothers both in the experimental and control group (95%, 85%) were homemakers. Majority of the mothers both in the experimental and control group (60%, 55%) belonged to extended type of family. Most of the mothers in the experimental group and control group (40%, 45%) were primiparous. Most of the mothers in the experimental group and control group (70%, 60%) had elective caesarean section. All most all the mothers in the experimental and control group (90% each) had not received any source of information on relaxation therapy for pain. The mean pain score at 2 hrs after caesarean section in the experimental group was 7.90±0.640 and in control group was 8.00±0.725, which showed mothers had severe pain in both the groups (table 1).The mean post intervention pain scores gradually reduced at different time interval but the reduction of pain is apparent in experimental group than in the control group (figure 1). Wilcoxon sign rank analysis showed that there was a significant reduction in the post intervention pain score in the experimental group at various time interval ($p<0.05$). The control group also showed reduction in post intervention pain scores ($p<0.05$) at various time interval except for 2-12 hour comparison ($p=0.346$). Hence it can be concluded that Benson's relaxation therapy had an effect on the experimental group in terms of reduction in postoperative pain at various time interval. Association of the pre-test postoperative pain scores with selected demographic variables showed that there was no association of pre-test postoperative pain scores with selected demographic variables such as age, religion, occupation, monthly income, parity, type of caesarean section and source of information on relaxation therapy in the experimental group and control group, except for religion ($p=0.032$) and source of information on relaxation therapy ($p=0.040$) in the control group.

Table 1: Pre intervention postoperative pain score of the mothers in the experimental group and control group. n=20+20

Group	Min	Max	Max. possible score	Mean±SD
Experimental Group	7	9	10	7.90±0.640
Control Group	7	9	10	8.00±0.725

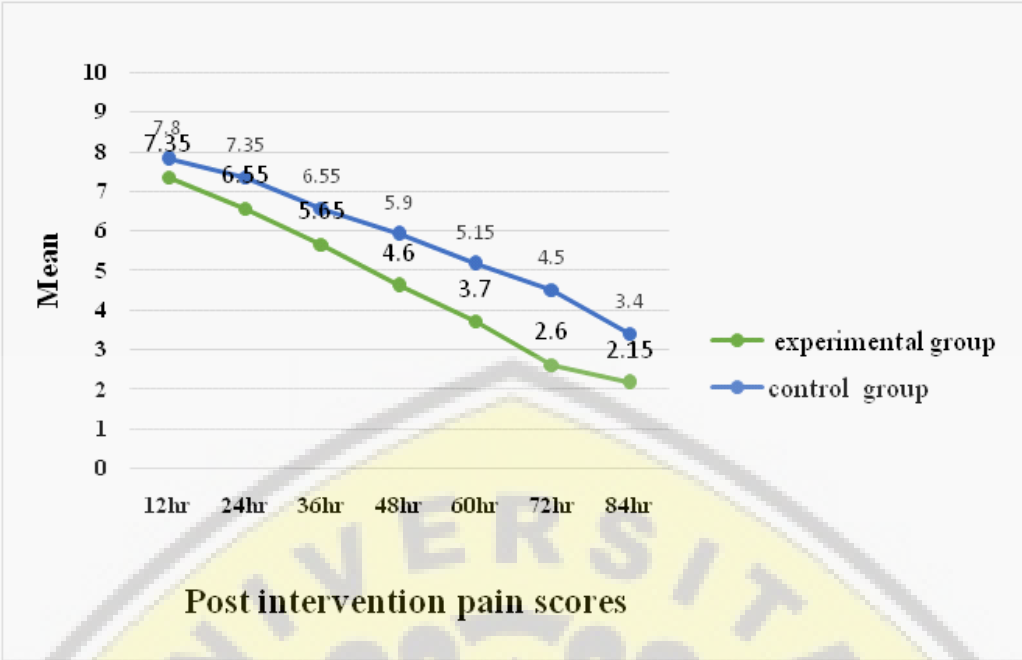

Figure 1: Line graph showing comparison of mean post intervention postoperative pain scores between the experimental group and control group.

Conclusion

The study result showed that Benson's relaxation therapy was effective in reducing the postoperative pain among mothers delivered by caesarean section and it also provided comfort to the mothers in the experimental group. Thus the researcher suggests that there is a need for non pharmacological techniques along with pharmacological method for the postoperative pain management. The researcher recommends that similar study can be done with wider duration with larger group to get a better outcome. There is a need for an extensive and intensive nursing research in the area of postoperative pain management. More researches can be conducted on Benson's relaxation therapy and effectiveness.

Ethical Clearance: Yenepoya Ethics Committee-1 (YEC) approved my study protocol number 2018/101 titled "A study to assess the effectiveness of benson's relaxation therapy on post operative pain among mothers delivered by caesarean section in a selected hospital at Mangaluru" On 11/06/2018 under the chairperson Dr. Vikram Shetty.

Source of Funding: Self

Conflict of Interest: Nil

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Factors Affecting Utilization of Services among Beneficiaries of Janani Suraksha Yojana in Haryana

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Abstract

Background: The utilization of maternal health care services is an important contributor to the health of the mother and children. Many factors prevent the women from seeking health services.

Objectives: To assess the utilization of maternal health services during antenatal and natal period among JSY beneficiaries and to study the effect of various socio-demographic variables on utilization of these services.

Materials and Method: The present study was undertaken in the rural field practice area of the department of community medicine MMIMSR, Mullana on a sample of 200 beneficiaries who had delivered a child in last one year through house to house survey. Eligible beneficiaries under JSY were interviewed on a pre-designed, pre-tested semi-structured schedule, by house to house visit.

Results: Age group, literacy and BPL card were not found to be significantly associated with more than four antenatal visits. Age group was seen to be significant associated with the place of delivery Association was found to be significant (p0.05)In present study association between place of delivery with Litercay and BPL card holders was not found to be significant ($p > 0.05$)

Conclusion: Many factors affect utilization of Maternal Health services and need to be studied.

Keywords: *Janani Suraksha Yojna,utilization, maternal health services.*

Introduction

Each year, approximately eight million women suffer pregnancy- related complications and over half a million die[1]. of all the maternal deaths 99% occur in developing countries and one third of them are occurring in South East Asian countries[2]. In April 2005, in response to the slow and varied progress in improvement of maternal and neonatal health, the Government of India launched a scheme known as Janani Suraksha Yojna (JSY)[3] under the umbrella of National Rural Health Mission (NRHM). This scheme is an intervention for safe motherhood. JSY is a 100% centrally sponsored scheme and is being implemented in all states and union territories and aimed to reduce maternal and infant mortality by promoting institutional deliveries. NRHM has categorized Haryana among the High Performing State (HPS). The utilization of maternal health care services is an important contributor to the health of the mother and children.Many factors prevent the women from seeking health services. Therefore, this study was done with the objective to assess the utilization of maternal health services during antenatal and natal period among JSY beneficiaries and to study the effect

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of various socio-demographic variables on utilization of these services.

Material and Method

A cross sectional study was conducted among beneficiaries of JSY residing in the rural area of Ambala district, Haryana, from January to December -2015

Sample Size: Sample size was calculated using the formula:

$$n = 4pq/L^2$$

where: n = required sample size, p = prevalence, q = 100-p, L = permissible error in estimate of "p"

As our main focus in Janani Suraksha Yojna is on increasing institutional deliveries, so we have used percentage of institutional deliveries for calculating sample size. The percentage of institutional deliveries in Haryana is 74%[4], so the sample size came to be 140, which was rounded of to 200.

The population of District Ambalais served by four C.H.C's. Out of these four C.H.C's one C.H.C was randomly selected. From thechosen the C.H.C, 2 P.H.C's were randomly selected. In each P.H.C., 2 Sub-Centre's were randomly selected. A list of mothers who delivered during last one year (January 2014- December 2014) was obtained from (MPHW-F) and only those entitled under JSY were included in the study. From this list first fifty females, according to date of delivery from all the four sub-centers were selected for the study. Eligible beneficiaries under JSY were interviewed on a pre-designed, pre-tested semi-structured schedule, by house to house visit. Data was entered in Microsoft Excel and analyzed using SPSS version 21. Chi-square test was usedto find the significance of association between maternal health utilization and various socio –demographic variables. Informed consent was taken from the study participants. Permission was taken from Institutional Ethics Committee before the start of the study.

Results

This study was done with the objective to assess the utilization of maternal health services during antenatal and natal period among 200 JSY beneficiaries and to study the effect of various socio-demographic variables on utilization of these services.

Table 1: Association of Antenatal visits with various factors

Age	<4 visits	>4 visits	Total	P value
<25	8 (80.00%)	139 (73.20%)	147 (100%)	0.851
25 -30	2 (20.00%)	48 (25.30%)	50 (100%)	
>30	0 (0.00%)	3 (1.6%)	3 (100%)	
Literacy				
Illiterate	1 (10%)	17 (8.9%)	18 (100%)	0.364
Primary	4 (40%)	48 (25.3%)	52 (100%)	
Secondary	2 (20%)	93 (48.9%)	95 (100%)	
Higher secondary	3 (30%)	27 (14.25%)	30 (100%)	
Graduate	0 (0%)	5 (2.6%)	5 (100%)	
BPL				
Yes	4 (40%)	58 (30.5%)	62 (100%)	0.528
No	6 (60%)	132 (69.5%)	138 (100%)	

(Table 1) shows association of antenatal visits with age group, literacy and BPL status of participating women. In the less than 4 visits category, majority (80%) were in <25 years of age group. Similarly in more than 4 visits category majority (73.2%) were in less than 25 years age group. Age group not found to be significantly associated with more than four antenatal visits In the present study in the category of less than 4 visits, less than half (40%) had education up to primary level, followed by 20% who had education up to middle class and 30% who had studied up to higher secondary. Only 10% women were illiterate in the same category. Similarly in more than 4 visits category, majority (48.9%) had education up to secondary level or middle school, followed by 25.3% who had studied up to primary level, 14.25% who had education up to higher secondary or high school, 8.9% were illiterate and only 2.6% were graduates in the same category. The association of Literacy of women with number of ANC visits was found to be insignificant ($p > 0.05$)On examining association of antenatal visits with BPL card holders it was seen in the category of >4 visits majority 69.5% did not have any card while only 30.5% had card. The association of BPL card holders with ANC visits was not found significant ($p > 0.05$)

Table 2. Association of Place of delivery with various factors.

Variable	Place of Delivery				P value
	Home N(%)	Govt. Hospital N(%)	Private N(%)	Total N(%)	
Age Group					
20-25	0(0.0%)	86(72.3%)	61(79.2%)	147(100%)	.005
25-30	4(100%)	30(25.2%)	16(20.8%)	50(100%)	
30-35	0(0.0%)	3(2.5%)	0(0.0%)	3(100%)	
Literacy of wife					
Illiterate	1(25%)	12(10.1%)	5(6.5%)	18(100%)	.538
Primary	0(0.0%)	27(22.7%)	25(32.5%)	52(100%)	
Secondary	3(75%)	58(48.7%)	34(44.2%)	95(100%)	
Higher secondary	0(0.0%)	18(15.1%)	12(15.6%)	30(100%)	
Graduate	0(0.0%)	4(3.4%)	1(1.3%)	5(100%)	
BPL					
Yes	3(75%)	39(32.8%)	20(26%)	62(100%)	.095
No	1(25%)	80(67.2%)	57(74%)	138(100%)	

(Table 2) shows association of place of delivery with age group of beneficiary. In the category of home delivery all the women were in the age group of 25-30 years where as in the category of gvernment hospital 72.3% were in the age group of 20-25 years. Similarly, in the category of private hospital 79.2% were in age group of 20-25 years. The subjects 58 (48.7%), who delivered in government hospital who had studied up to secondary school, followed by 27 (22.7%) who had studied up to primary school, 18 (15.1%) studied up to higher secondary, 4 (3.4%) were graduate and only 12 (10.1%) were illiterate. 34 (44.2%) studied up to secondary school, 25 (32.5%) studied up to primary school, 12 (15.6%) studied up to higher secondary school. 1 (1.3%) graduate and 5 (6.5%) illiterate, delivered in private hospital. While 3(75.0%) who delivered at home had studied up to secondary level and only 1 (25.0%) women who delivered at home were illiterate. In the present study in the category of home delivery majority 75%had BPL card while 25% did not have any card in the category of government hospital majority 67.2% did not have any card, In the category of private hospital majority 74% did not have any BPL card and only 26% had BPL card.

Discussion

Quality antenatal care is the key to reduce maternal deaths. JSY is a safe motherhood intervention under NRHM. Its main focus is to reduce maternal and infant mortality and morbidity by emphasizing on institutional delivery. It offers cash assistance to the eligible beneficiaries to remove financial barriers hindering access to comprehensive maternity and newborn care.

In order to decrease the information gap in the rural areas of Haryana, this modest (present) study aims to contribute to the data collection. The present study was undertaken in the rural field practice area of the department of community medicine MMIMSR, Mullana .The study population consists of beneficiaries who had delivered a child in last one year. It was conducted on a sample of 200 such females residing in this area through house to house survey during the year 2015 .

On studying association of ANC visits with age group in this study number of visits decreased with the increase of age group despite all having heard about the scheme and increased awareness of the fact that four ANC are must for having healthy mother and healthy baby in the end of pregnancy and simultaneously association was not found to be significant .This decrease may be due to over confidence or experience of the previous pregnancies, This may be young women are motivated easily and older women thinking child birth is a natural phenomenon and do not consider ANC visits

to be necessary . It may be also due to increase of house hold responsibility. However, results were not found to be significant. Similar results were found) in study of Zanib et al.(2001) in Bangladesh it was also found that the overall trend of visiting health facility decreases with the increasing age [5]. In the present study, when relating ANC visits with literacy of women, it was found that number of antenatal visits increased with the literacy of women, however this association was not found to be significant. But in the study of **Kour et al (2015)**[6]it was observed that education had a statistically significant (.006) relation with ANC visits. The positive effects on utilisation are larger for less educated and poorer women by **Jackson et al** 2015,[7] In the present study association of ANC visit with BPL card holders was not found to be significant.

The main focus of JSY Scheme is on institutional delivery. In present study majority (56%) of the deliveries took place in CHC, (38.5%) at private hospital, 2% occurred at home and 1% deliveries took place at sub centre. Whereas, National Family Health Survey-3 (NFHS-3) reported[8], overall rate of institutional delivery in Haryana as 39.4% (Urban 66.7%, Rural 30.3%). A number of national surveys and provincial data sources have demonstrated a steep increase in institutional deliveries both nationally and state-wise since the inception of the JSY program A community based cross-sectional study in Ujjain district, Madhya Pradesh, by Sidney *et al*.,[3] found that 89% of the women had an institutional delivery, out of which 70% deliveries occurred in a CHC and 26% in the district hospital. The present study results are consistent with the findings of Narayan et al.[9] where institutional delivery was found to be 88 % and home delivery 12%. As per report of NHM Haryana 2012 institutional delivery in govt facility were 43.84% and in private hospital were(35.86%). The difference in preference of institution for deliveries may be due to the 24*7 availability and difference in preference for the health institutions.[10]

Summary and Conclusion

This study was a cross-sectional study among 200 JSY beneficiaries to assess the factors affecting the utilization of health services among JSY beneficiaries the utilization of maternal health services. Age group not found to be significantly associated with more than four antenatal visits. The association of Literacy of women with number of ANC visits was found to be insignificant ($p > 0.05$)The association of BPL card holders with ANC visits was not found significant ($p > 0.05$).

Age group was seen associated with the place of delivery Association was found to be significant (p0.05) In present study association between place of delivery and BPL card holders was not found to be significant ($p > 0.05$).

The utilization of maternal and child health services is far from satisfactory in rural India. Hence, to achieve the goal of safe motherhood, future strategies must take cognizance of critical variables. In conclusion, JSY scheme led to high rate of institutional delivery but in present study it was found that people were not aware about the ANC. So as to achieve the 100% results, the motivation, information, education and communication facilities should be increased What is more important is identification of high risk pregnancy and giving them priority care as the main aim of ANC is to reduce MMR, this can be done by ASHA workers by regular visiting the pregnant women to increase the awareness.

Recommendations: JSY scheme aims to reduce the MMR in India by increasing the proportion of institutional deliveries. However, it should be remembered that increasing the institutional deliveries is not the only solution for reducing MMR. What is more important is identification of high risk pregnancy and giving them priority care increasing the proportion of deliveries with skilled birth attendants and appropriate referral facility along with accessibility to health services. It is common experience that at present rate of institutional deliveries, hospital beds have 2-3 pregnant mothers on single bed. Therefore, sufficient attention is needed to be pay to increasing the facilities at hospital, otherwise poor quality delivery care would be worse than current scenario. The JSY scheme also considers deliveries at sub centre as institutional. The deliveries at sub centre cannot be managed properly in case of complications and this would be as good as home delivery and may even worsen the already eroded faith of general population in health system. There is a strong requirement for monitoring and evaluation under JSY to ensure quality services and to prevent corruption.

Conflict of Interest: Nil

Ethical Clearance: Permission obtained from Institutional Ethics Committee.

Source of Funding: Self

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Knowledge on Practice of Self Perineal Care among Postnatal Mothers in a Selected Hospital at Mangaluru with a View to Develop Information Booklet

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Abstract

Objectives of the Study:

- To determine the existing knowledge regarding practice of self perineal care among postnatal mothers.
- To find the association between knowledge scores and selected demographic variables.
- To develop information booklet on self perineal care.

Method: A descriptive study was conducted among 100 postnatal mothers admitted at postnatal ward of selected hospital, Mangaluru. Non-probably convenient techniques was used in the study to select the sample. Structured knowledge questionnaire was used to assess the knowledge of postnatal mothers on self-perineal care.

Results: The study findings showed that majority of the postnatal mothers 55% had average knowledge on self perineal care and has no significant association between the knowledge scores and selected demographic variables.

Conclusion: The study concludes that majority of postnatal mothers has inadequate knowledge regarding self perineal care and hence there is a need to conduct health education programs to enhance the knowledge of postnatal mothers on self perineal care.

Keywords: *Knowledge, Postnatal mothers, Practice, Self perineal care.*

Introduction

Postpartum period is the period during which the woman adjusts, physically and psychologically after child birth.[1] This period is usually considered to be 6 weeks in duration. The postnatal period is a very special time where women undergo the transition into motherhood.[2] An arbitrary time frame divides the period into the immediate postpartum (first 24 hours), early postpartum (first week) and late postpartum (second to sixth weeks). The main goals in postpartum care are to assist and support the woman's recovery to the pre-pregnant state and educate the mother about her own self-care.[3]

In the developing countries the risk of maternal death is 200 times higher than the risk of woman in the developed world. In these countries 99 percent of the estimated 5, 36,000 maternal death has occurred due

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to perineal sepsis. India continues to contribute about a quarter of all worldwide maternal deaths .Maternal mortality rate in India is 230/100000 population and 99 percent are preventable.[4]

A cross sectional study conducted to assess the pattern of maternal mortality in a tertiary level government hospital of a city in north India showed that hemorrhage (37.33 %), pregnancy-induced hypertension including eclampsia (15.55 %) and sepsis (11.11%) were the commonest cause of death following delivery[5].

A study conducted to assess the knowledge and practice on prevention of puerperal sepsis among 100 postnatal mothers in selected hospital, Puducherry showed that only 51% of mothers had adequate knowledge regarding prevention of puerperal sepsis[4].

Proper perineal care is important in preventing infection of the episiotomy, bladder and uterus. Mother should be taught regarding self perineal care, so that she can practice it following discharge from hospital. This promotes healing and provides comfort to the mother. Effective education provides the women with sufficient knowledge to meet their health needs and to seek assistance if necessary. Hence the investigator felt the need to assess the existing knowledge of mothers regarding practice of self perineal care and develop the information booklet to enable the client to participate their own care or needs.

Materials and Method

The study was conducted at a selected hospital of Mangaluru and the hospital was selected based on the feasibility of conducting the study and the availability of the samples. Non-experimental descriptive survey design was adopted. A sample of 100 postnatal mothers were selected by using non-probability convenient sampling technique. A structured knowledge questionnaire regarding practice on self-perineal care was developed by the investigator and was validated by 5 experts in the field of Obstetrics & Gynecology. The tool was then administered to selected 100 postnatal mothers. Collected data was analyzed using descriptive and inferential statistics.

Result and Discussion

Part 1: Demographic characteristics of the postnatal mothers.

Description of demographic characteristics of postnatal mothers: The age distributions of majority postnatal mothers are of 22-25 years. 48% of postnatal mothers have educational status up to PUC. 83% are house wife's, 70% belongs to Muslim religion, 47% of postnatal mothers have 2 children's, 100% of mothers had normal vaginal delivery, 46% are having previous knowledge regarding self perineal care, from family members 33%, friends 2%, health workers 8%, media 3% and 54% are not having previous knowledge regarding self perineal care.

Part 2: To determine the level of knowledge of postnatal mothers regarding self perineal care

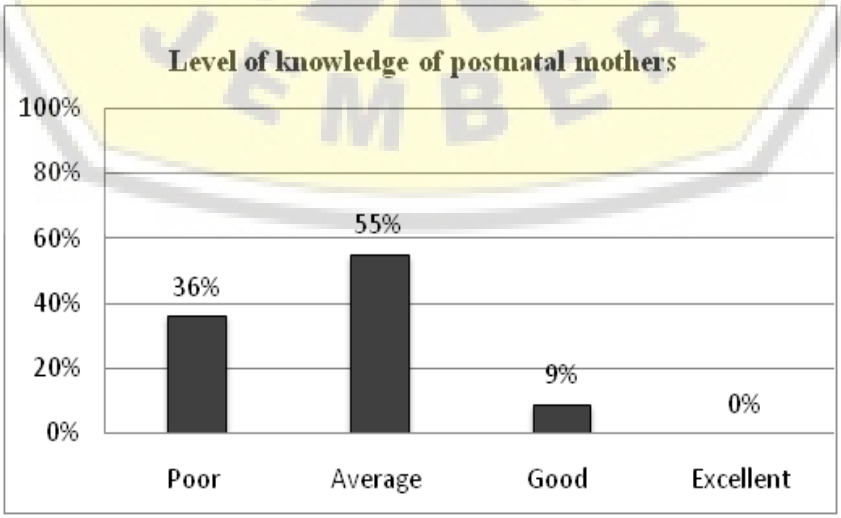

Figure 1: Level of knowledge of postnatal mothers about self perineal care.

The above bar graph shows that majority of the postnatal mothers (55%) had average knowledge on self perineal care, 9% had good knowledge, 36% had poor knowledge and no mothers have excellent knowledge.

Part 3: The above table reveals that the total knowledge score is 20, maximum score was 12 and the minimum knowledge score of postnatal mothers was 2. The mean and median knowledge score is 7.45 and 7.50 respectively with standard deviation 2.341.

Table 1: Mean, median, maximum scores and standard deviation of knowledge score of postnatal mothers regarding self perineal care. n=100

Total Score	Obtained Score				Standard Deviation
	Maximum	Minimum	Mean	Median	
20	12	2	7.45	7.50	2.341

Part 4: In order to find out association between risk scores and selected demographical variable, the following null hypothesis was stated

H_0: There will be no significant association between knowledge score and selected demographic variables.

Table 2: Association between knowledge of postnatal mothers regarding self perineal care and selected demographic variables

Demographical Variables	Chi Square Value	Df	Inference
Age 18-21 years 22-25 years 26-29 years Above 30 years	28.33	30	p=.553 NS
Educational status No formal education Primary PUC Degree & above	28.87	30	p =.524 NS
Occupation House wife Self-employee Government employee Others	18.50	20	p=.554 NS
Religion Muslim Hindu Christian Others	25.43	30	p=.704 NS
Number of children 1 2 3 More than 3	27.42	30	p=.601 NS
Mode of delivery Normal vaginal delivery Vaginal instrumental delivery	18.91	20	p=.527 NS
Previous knowledge Yes No	5.99	10	p= .816 NS
Source of information Family members Friends Health workers Media	42.89	40	p=.348 NS

Table 2 shows that there is no association between the knowledge score of postnatal mothers with the selected demographic variables. Hence the null hypothesis is accepted.

Conclusion

The present study concludes that majority of postnatal mothers has inadequate knowledge on practice of self perineal care. Thus its very important to educate mothers regarding self perineal care and its importance by conducting various health education programmes.

Ethical Clearance: Yenepoya ethics committee-1 approved our study protocol number 2018/076 titled "Knowledge on practice of self-perineal care among postnatal mothers in a selected hospital at Mangaluru with a view to develop information booklet '' on 6/06/2018 under the chairmanship of Dr. Vikram Shetty.

Source of Funding: Self

Conflict of Interest: nil

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Effectiveness of Buzz Group as a Teaching Method in Medical Education

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Abstract

Objectives: To study the effect of Buzz Group as a teaching method on academic performance of the students in the teaching in clinical postings and to compare it with the academic performance of students' taught with conventional way of teaching & to further evaluate Buzz group teaching learning method from students' perspective.

Method: An interventional crossover of teaching learning method in which one group was taught using Buzz group teaching and another with the conventional way of teaching, the study was conducted between Jan 2019 to March 2019 in 2 batches of 40 students each and the data was analyzed. The crossover was done as per ethical committee suggestions so as to avoid deprivation of the students from any of the teaching method.

Results: The t value in the Buzz group was significant i.e. 4.667 before crossover and 3.196 after crossover in one batch and 4.604 before crossover and 2.887 after crossover. The overall communication, learning, problem solving, communication and score for Buzz group teaching was compared to conventional way of teaching and the results were statistically significant. The problem solving in the Buzz group teaching shown t-value of 14.701 of significance.

Conclusion: The results suggest that Buzz group teaching is clearly better than the conventional classroom teaching and is in coherence with the MCI guideline of Competency Based Medical Education (CBME) guidelines. This method of teaching requires minimal additional efforts and its inclusion in few of the Clinical postings could prove equally effective

Keywords: *Buzz Group; Teaching Learning Method; Peer assisted Learning.*

Introduction

"*A wise man learns from experience and an even wiser man from the experience of others.*"

Medical knowledge is vast knowledge in true sense and therefore the time period for learning it is obviously meager. Both the student of the medical education as well as the teacher has to utilize the available time with their best potential for attaining maximum knowledge and skills in the available time frame[1].

It has been observed that student's attention wanders in class. It may wander from the very next minute teacher start teaching due to various reasons ranging from loss of interest in subject, feeling of being in alien world, no interaction with teachers, no immediate feedback or teacher's critical evaluation, to feeling of less knowledge and loss of confidence for active participation.[2]

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These various reasons hinder the teaching in classrooms as well as clinical postings where teacher already has to fight against time crunch for completing the teaching. These problems make a good teacher bring in some innovative ideas so that the student will always be on their toes to actively participate or listen. One of the better innovative ideas probably underutilized is Buzz group teaching.

Buzz Group is a large group divided into several small groups, consisting of 4-5 people. The place is arranged so that students can seat face to face and exchange ideas easily. The discussion can be done in the middle or at the end of the lesson with the intention of sharpening the framework of the lesson material, clarifying the lesson material, or answering questions[3]. With Buzz group of teaching each question answered by the group is by sharing and discussing their knowledge with teammate colleague which is equal to separate teaching of the student who doesn't know the answer; this ultimately saves lot of time and energy in individual teaching sessions.

According to the definition of BUZZ GROUP by UNICEF[4]: Buzz Groups are a method for quickly and efficiently gathering feedback on a topic or responding to a specific question during a plenary (a session that includes all participants of an event). Without moving from their seats, participants form mini-clusters of two or three people and engage in free discussion – or 'buzz'– for a few minutes on a given question. Buzz Groups provide a welcome change of pace for participants, helping to enliven and energize large group meetings and events.

- **First "buzz groups" was used by Dr. Donald Phillips at Michigan State University**

Variations of the Buzz Group[4,5]: There have been number of different method by which Buzz group can be used viz. Phillips 66 Method, Clark's 22 Method, Huddle Method, Circular Response Method, Progressive Buzz Sessions

Uses of buzz group[6]: Buzz group have numerous advantages as it can be used at any time throughout the program, particularly when you want trainees to become actively engaged with the issues. Even it can be used prior to a lecture to determine what is already known about a topic. It can be used to intersperse a lectureto foster comprehension and bring out questions, with this you can conclude a lecture by asking groups to integrate new information with previous learning even after a difficult session, BUZZ GROUPS could be asked to collect questions and issues that need clarification.

Advantages of buzz group[7]: It allows everyone's ideas to be expressed, Participants learn to work in real-life situations where others' opinions are considered, It sets the groundwork to get discussion started, as members actively participate its good for dealing controversial subject.

We planned the study with the following objectives.

Objectives:

1. To study the effect of Buzz Group teaching on academic performance of the students in the teaching in clinical postings.
2. To evaluate Buzz group teaching learning method from students' perspective.
3. To compare the academic performance of students' undergoing teaching with Buzz group teaching method with the academic performance of students' taught with conventional way of teaching.

Methodology

Study Design: Interventional study.

Study Subjects: 3rd year 1st term MBBS students.

Sample Size: Two Batches of 40 MBBS 3rd year 1st term MBBS students which make it 80 students in total will be included for study.

Type of Study: Crossover study.

Study Duration: 3 Months.

Ethical Committee Permission: This being an interventional study, ethical committee permission was obtained and crossover of the students so that each student will have equal exposure to both the teaching learning method was done as suggested by the committee.

Process: Each Batch of 40 students was grouped in two different group viz. Group 'A' and Group 'B'. The students in Group A were again grouped in number of 4 students in one group randomly so as to make 5 groups from 20 students. The students were now working as team instead of a single individual following the principals of Buzz group teaching. The questions asked to their team were now answered by the team, after discussion amongst themselves and

using their individual knowledge in tandem! Here each question answered is by sharing and discussing their knowledge with teammate colleague which is equal to separate teaching of the student who doesn't know the answer; this ultimately saves lot of time and energy in individual teaching sessions. The other group B of 20 students had undergone the teaching the traditional way. After 5 case discussions both the students group were subjected to OSCE with set of formulated questionnaire. The assessment was so planned so as to assess their cognitive, affective and psychomotor domain and record their overall performance. In the next second half of the posting crossover of the students group was done and Group A was undergoing the posting traditional way whereas the Group B was subjected to Buzz group of teaching. These two groups after 5 case discussions were assessed with another set of formulated questionnaire and their performance was recorded.

The students' individual perception was recorded at the end of the posting on likerts scale of 1-5 for different questions like communication, learning, expression of ideas, Problem solving and overall perception about the teaching learning method.

These both the records were analyzed using Mann- Whitney test, Paired t test. Both the groups after completion of study will be again subjected to set of self reporting questionnaire where they will be asked close ended and a few open ended questions which will assess their individual perception about the new teaching method.

Table 1: Result of Batch - 1

Group A (Buzz Group)		Groupb (Conventionalgroup)	
Roll No	**Marks**	**Roll No**	**Marks**
1	22	21	21
2	23	22	16
3	24	23	18
4	21	24	17
5	24	25	17
6	18	26	16
7	22	27	18
8	26	28	20
9	21	29	23
10	22	30	21
11	17	31	17
12	18	32	15
13	24	33	15
14	23	34	16
15	22	35	17
16	16	36	18
17	19	37	15
18	23	38	22
19	22	39	16
20	21	40	15

When two groups were compared, it is clearly seen that performance of GROUP A students was statistically extremely significant with the t value 4.667 which can be interpreted as the BUZZ GROUP of teaching has significantly shown improved students' academic performance as compared to conventional method of teaching

Table 2: Result of Batch – 1 After Crossover

Group A (Conventional Group)		Group B (Buzz Group)	
Roll No	**Marks**	**Roll No**	**Marks**
21	24	1	18
22	21	2	17
23	22	3	17
24	20	4	18
25	20	5	20
26	20	6	17
27	19	7	19
28	23	8	23
29	26	9	18
30	24	10	16
31	22	11	19
32	19	12	22
33	19	13	21
34	19	14	17
35	21	15	15
36	18	16	15
37	17	17	16
38	24	18	20
39	17	19	19
40	18	20	18

When two groups are compared, it is clearly seen that performance of GROUP A students was statistically very significant with the t value 3.196 which can be interpreted as the BUZZ GROUP of teaching has significantly shown improved students' academic performance as compared to conventional method of teaching

After the cross over when GROUP B was taught using BUZZ GROUP METHOD they have shown improved performance but the difference was slightly less than the previous group. Probably, now both the groups have gone undergone Buzz group teaching method. Therefore, Buzz group teaching method has improved the performance significantly.

The results of Batch 2 were as follows:

Table 3: Result of Batch–2

Group A (Buzz Group)		Group B (Conventional Group)	
Roll No	**Marks**	**Roll No.**	**Marks**
41	16	61	19
42	27	62	16
43	18	63	18
44	18	64	18
45	18	65	17
46	21	66	16
47	24	67	18
48	21	68	20

Group A (Buzz Group)		Group B (Conventional Group)	
Roll No	**Marks**	**Roll No.**	**Marks**
49	18	69	22
50	22	70	21
51	23	71	17
52	22	72	16
53	22	73	16
54	23	74	16
55	19	75	17
56	20	76	18
57	24	77	15
58	23	78	22
59	24	79	17
60	24	80	16

When two groups were compared, it is clearly seen that performance of GROUP A students was statistically extremely significant with the t value 4.604 which can be interpreted as the BUZZ GROUP of teaching has significantly shown improved students' academic performance as compared to conventional method of teaching.

Table 4: Result of Batch – 2 After Crossover

Group A (Conventional Group)		Group B (Buzz Group)	
Roll No	**Marks**	**Roll No.**	**Marks**
41	17	61	16
42	24	62	22
43	18	63	20
44	18	64	21
45	20	65	18
46	16	66	21
47	22	67	22
48	20	68	23
49	22	69	19
50	19	70	22
51	17	71	21
52	16	72	22
53	17	73	22
54	16	74	20
55	17	75	19
56	18	76	20
57	21	77	19
58	22	78	23
59	17	79	21
60	16	80	21

When two groups were compared, it is clearly seen that performance of GROUP A students was statistically very significant with the t value 2.887 which can be interpreted as the BUZZ GROUP of teaching has significantly shown improved students' academic performance as compared to conventional method of teaching.

After the cross over when GROUP B was taught using BUZZ GROUP METHOD they have shown improved performance but the difference was slightly less than the previous group. Probably, now both the groups have gone undergone Buzz group teaching method. Therefore, Buzz group teaching method has improved the performance significantly.

Student's perception about BUZZ group vs CONVENTIONAL group of teaching: The following questions were asked to the students who underwent the study. They were asked to rate the study on the basis of these 5 criteria. The criteria are as follows:

A= COMMUNICATION IN GROUP
B= LEARNING
C= EXPRESSION OF IDEAS
D= PROBLEM SOLVING
E= OVERALL SCORE

The feedback of the same is represented in a table form given below.

Table 5: The comparison ratings as per OVERALL SCORING IN GROUP between buzz group method and conventional study method for Batch 1 (Roll no 1-40) is given below.

	Buzz Group	Conventional Group
Mean	4.55	3.35
Minimum Value	3.0	3.0
Maximum Value	5.0	4.0
t-value	9.883	

Table findings suggest that the mean value of the buzz group is 4.55 & the mean value of conventional teaching is 3.35. The buzz group ratings are higher than that of conventional group. Thus, comparing the t-value= 9.883 between them shows SIGNIFICANT variation.

The analysis of Table 5 clearly supports that Buzz group is better than Conventional group. The author Tagor Pangaribuan[8] published in research gate and**Muntaha Muntaha**[9] in his studyfound that Buzz group technique is effective for students having low self-esteem. The **author Yuni Indah Novita Sari** in their study at Kediri University **Project**[10] published in Artikel Skripsi found that the Project Based Learning gave significant effect to the students' writing ability, The authors Elisabeth Milaningrum in**Smpn 1 Jaten Karnganyar Project**[11] & Inoue Tetsuro in their study **Testuro Inoue Project.**[12]respectively published in Information Centre Jurnal Sains Terapan & Education Research found that the introduction of Buzz Learning techniques at the junior high school level has resulted in dramatically improved reading ability, an augmented ability to learn by themselves, fewer students with inferiority complexes and students learning out of curiosity rather than just obligation. Teaching, reading using Buzz Group method to the students of SMPN1 Jaten Karanganyar is more effective than one of those having direct instruction method.

Table 6: The comparison ratings as per OVERALL SCORING IN GROUP between buzz group method and conventional study method for Batch 2 (Roll no 41-80) is given below.

	Buzz Group	Conventional Group
Mean	4.55	3.325
Minimum Value	3.0	3.0
Maximum Value	5.0	4.0
t-value	10.161	

Shows that the mean value of the buzz group is 4.55 & the mean value of conventional teaching is 3.325. The buzz group ratings are higher than that of conventional group. Thus, comparing the t-value= 10.161 between them shows SIGNIFICANT variation.

The findings of the second batch of the students is comparably similar indicating that the Buzz group of teaching is better than the conventional way of teaching!

Conclusion

- From the above obtained results, it is clear that BUZZ group method of teaching is preferred by the students over the CONVENTIONAL method using the peer learning (BUZZ group) method.
- There are certain constraints of Buzz group teaching like the facilitator needs to actively tackle buzzing in group but this type of teaching, certainly, can be equally effective if used in some of the case discussions, if not possible in all.

- MCI is now proposing CBME (Competency Based Medical Education) and this type of teaching would be a method of choice for better implementation of CBME in clinical postings.

Implication: The study findings can help formulate the teaching time table with inclusion of Buzz group teaching in few clinical posting time tables since it will improve students' performance and it is in coherence with the MCI recommendations of CBME.

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Conflict of Interest: None

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Assessment of Diabetes Risk and the Factors Associated in Adult Population Using Indian Diabetes Risk Score: A Community Based Study in Coastal Andhra Pradesh

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Abstract

Introduction: Diabetes is the chronic metabolic disease with rising prevalence in low and middle income countries. According to WHO diabetes is the seventh leading cause of death in 2016 and is major cause for complications like cardiovascular diseases and stroke. Hence, early identification of people at risk of diabetes is required to reduce the disease burden.

Objectives: To assess the diabetes risk among the adult population using Indian Diabetes Risk Score. To identify the factors associated with the diabetes risk score.

Materials and Method: A community based cross sectional study was done in an urban resettlement colony to identify the people at risk of developing type 2 diabetes .Indian Diabetes Risk Score was used to identify at risk individuals. The study subjects were categorized into low, medium, high risk groups based on IDRS scores .Random blood sugar levels of subjects were obtained at time of data collection after taking informed consent. The data was entered in Microsoft Excel and analyzed by using SPSS version 21. Chisquare test was used to find any significant association between socio-demographic profile, RBS values and risk categories.

Results: In the study among 129 subjects,64.3 % were males, 35.7% were females. IDRS scores indicate 12(9.3%) were in the low risk, 53(41%) were in medium risk and 64 (49.7%) were in high risk category. About 21.7% had Random blood sugar values ≥200mg/dl at the time of study. There was significant association between RBS values and IDRS.

Conclusion: The present study showed that majority of subjects were in medium and high risk categories. Hence, the study recommended life style modification and further monitoring of blood glucose levels to prevent the risk of development of diabetes.

Keywords: *adult population, community, diabetes risk, Indian Diabetes risk score, Coastal Andhra Pradesh.*

Introduction

Non-communicable diseases (NCDs), including heart disease, stroke, cancer, diabetes and chronic lung disease, are collectively responsible for almost 70% of all deaths worldwide. Almost three quarters of all NCD deaths and 82% of the 16 million people who died prematurely, or before reaching 70 years of age, occur in low- and middle-income countries.[1] The rise of NCDs has been driven by non- modifiable risk factors like age, gender, family history and modifiable risk factors tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets. Thus for NCD principles of primordial, primary prevention have to be applied for early detection of risk factors. These lead to identification

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of "Risk Scores or Tests". Several diabetic risk scores have been devised for the last decade for prevention programs in the USA, Scandinavia and U.K.[2,3] All these scores are useful mass screening tools which are based on population based criteria from the respective countries. Mohan et al group from the Chennai Urban Rural Epidemiology Study (CURES) have attempted to develop a simple user friendly Indian Diabetes Risk Score.[4]

India currently represents 49% of the world's diabetes burden, with an estimated 72 million cases in 2017, a figure expected to almost double to 134 million by 2025. Diabetes prevalence has increased by 64% across India.[5,6] Up to 2 % of women aged 15-19 years and 2.6 % aged 20-25 years had high or very high blood glucose levels. In men, this rose to 2.9 % and 3.7 %, respectively (NFHS 2015-16). Currently, 1 in 4 under age 25 years has adult-onset diabetes.[7,8] Challenges like early-onset diabetes, genetically predisposition, poverty, illiteracy, non-adherence to diabetic management etc indicate that diabetes must be carefully screened and monitored regardless of patient age within India.[9,10] About 66% of Indian Diabetics are not diagnosed as compared to 50% in Europe and 33% in USA. There is a need to unmask hidden burden of the disease. The IDRS has a sensitivity of 72.5% and specificity of 60.1% and is derived based on the largest population based study on diabetes in India CURES.[11,12] IDRS uses two modifiable risk factors (waist circumference and physical inactivity) and two non-modifiable risk factors (age and family history of diabetes), providing a clear message that if modifiable risk factors are altered, the risk score can be considerably reduced. This score may be incorporated into the proposed Indian National Diabetes Program and surveillance studies on NCD by WHO and ICMR.[13]. Hence the present study was conducted to assess risk for diabetes among adult population using IDRS.

Objectives:

1. To assess the diabetes risk among the adult population using Indian Diabetes Risk Score.
2. To identify the factors associated with the diabetes risk score.

Materials and Method

Study design: A Community based cross-sectional study.

Study setting: Urban resettlement colony in the urban field practice area of GITAM Institute of Medical Sciences and Research, Visakhapatnam, Coastal Andhra Pradesh.

Study period: January-February 2019

Sample size: 129

Sampling method: Purposive sampling

Procedure of data collection: An urban resettlement colony was selected for the study in the urban filed practice area of GITAM Institute of Medical Sciences and Research, Visakhapatnam. A regular free medical camp was conducted in the area in the month of January 2019. The study participants were selected from the population attending the camp based on inclusion and exclusion criteria. Data was collected using a Questionnaire including variables related to Socio-demographic profile and Indian Diabetes Risk Score(IDRS). The IDRS was based on four simple parameters namely age, abdominal obesity, family history of diabetes and physical activity. The information for these risk factors was obtained based on four simple questions and one anthropometric measurement namely waist circumference .Subjects with an IDRSvalue of ≥60 was categorized as high risk, 30-50 moderate and,<30 as low risk.The purpose of the study was explained andinformed consent was taken from the subjects. Socio-economic status was assessed by using Modified kuppuswamy scale for 2019.The height, waist and hip circumference of the study subjects were measured in centimeters by using a non- stretchable measuring tape following WHO STEPS protocol.[14] The weight was measured in kilograms with the help of standardized weighing scale. BMI, WHR were calculated. The blood pressure of the participants was measured using a standardized sphygmomanometer in mmHg and BP ≥140/90 is considered as hypertensive according toJNC VII classification.[15] The levels of the Random blood sugar (RBS) of the participants were detected at the time of data collection by using standard glucometer.

Inclusion Criteria:

1. All persons attending camp with age>18 years.
2. Those who are not clinically diagnosed as having diabetes.
3. Those who are willing to participate in the study.

Exclusion Criteria:

1. Those who are already diagnosed to have diabetes.

2. Pregnant women, chronically ill patients.
3. Those who are not willing to participate in the study.

Statistical method: Data was entered in Microsoft Excel and analyzed by using SPSS software version 21. Chi-square test was used to test the association between categorical variables and $p<0.05$ was taken significant.

Results

About 129 subjects participated in the present study. **Table no 1** represents the socio-demographic profile of the participants. The study subjects were in the age group of 22 to 65 years of age with mean age 39.71 years and SD= 12.211. Among the study participants 64.3 % were males, 35.7% were females. The distribution of participants based on education, occupation, socio-economic status is shown in **Table no 2**.

The distribution of the subjects based on WHO cut off values (Asian standards) for BMI and anthropometry for men and women is represented in the **Table no 3.** Among males (n=83), 62.66% had waist circumference ≥90 cm and 55.4% had waist hip ratio >0.9. Among females (n=46),82.6% had waist circumference ≥80 cm and 43.48% had waist hip ratio >0.85. Among the participants 42.6% were obese based on BMI.

About 14.7% of the men were current smokers and 10.1% were current alcoholics. In the study participants 10.1 % were known hypertensive. About 14% of the individuals had blood pressure ≥140/90 and 21.7% had Random blood sugar values ≥200mg/dl at the time of study as shown in **Table no 4**.

The distribution of the study subjects into low, medium, high risk groups based on their IDRS scores is shown in **Figure no. 1.** Out of 129, 12(9.3%) were in the low risk, 53(41%) were in medium risk and 64 (49.7%) were in high risk category.

The study showed no significant association between socio-demographic variables and IDRS categories. The study participants were categorized into two categories based on their RBS values as individuals with RBS ≥200mg/dl and others with ≤200mg/dl. Chi-square test was done to find any significant association between RBS values and IDRS.The study showed a significant association between RBS values and IDRS as shown in Table no. 5.

Table no 1: Socio-demographic profile of participants (N=129)

Socio-Demographic Variable	Frequency	Percentage
Age		
<35yrs	40	31%
35-49	62	48%
>50	27	21%
Gender		
Female	46	35.7%
Male	83	64.3%
Religion		
Christian	4	3.1%
Hindu	119	92.2%
Muslim	6	4.7%

Table no 2: Socioeconomic status of participants (N=129)

Variable	Frequency	Percentage
Education		
Graduate	65	50.4%
High	7	5.4%
Inter	14	10.9%
Post graduate	41	31.8%
Secondary	2	1.6%
Occupation		
Clerk	1	0.8%
Home maker	6	4.7%
Legislator	1	0.8%
Manager	1	0.8%
Professionals	50	38.8%
Shop keeper	1	0.8%
Skilled	15	11.6%
Technician	18	14.0%
Unemployed	36	27.9%
Socioeconomic status		
Lower middle	1	0.8%
Middle	19	14.7%
Upper middle	16	12.4%
Upper	93	72.1%

Table no 3: Anthropometry of participants (N=129)

Variable	Frequency	Percentage
Waist Circumference		
Male (n=83)		
<90cm	31	37.34%
>90cm	52	62.66%

Variable	Frequency	Percentage
Females (n=46)		
<80cm	8	17.4%
>80cm	38	82.6%
Waist Hip Ratio		
Male (n=83)		
<0.9	37	44.6%
>0.9	46	55.4%
Females (n=46)		
<0.85	26	56.52%
>0.85	20	43.48%
BMI (N=129)		
<18.5	1	0.8%
18.5-22.9	18	14%
23-27.5	55	42.6%
>27.5	55	42.6%
Total	129	100%

Table no 4: Life style and Biochemical risk factors among participants (N=129)

Risk Factors	Frequency	Percentage
Current smoker	19	14.7%
Current alcoholic	13	10.1%
Known history of hypertension		
No	116	89.9
Yes	13	10.1
Blood pressure (mmHg)		
≥140/90	18	14%
<140/90	111	86%
Random blood sugar (mg/dl)		
≥200	28	21.7%
<200	101	78.3%

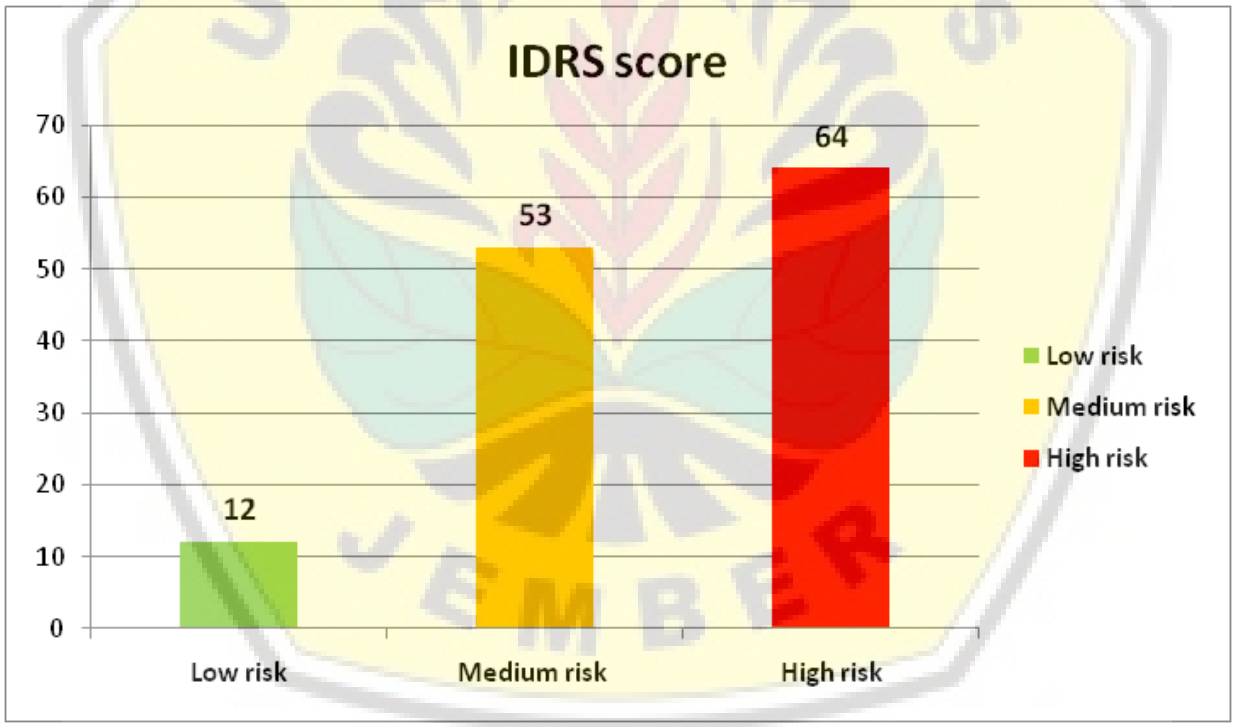

Figure No. 1: Distribution of risk categories based on IDRS score among participants.

Table no. 5: Association between RBS and IDRS among participants.

RBS	IDRS Score			Total
	Low Risk	Medium Risk	High Risk	
≥200	2	6	20	28 (21.7%)
<200	10	47	44	101 (78.3%)
	12	53	64	129 (100%)

*Chi-square=6.97,df=2, p value=0.03

Discussion

The present study was done among 129 subjects to identify the risk of development of diabetes by using IDRS. Although various risk factor scoring systems (Ramachandran et al)[16] were developed previously, IDRS developed by Mohan *et al*[4] is considered simple, fast, inexpensive, non-invasive and reliable tool toidentify individuals at high risk of type 2 diabetes which has been previously validated by other researchers in India. The IDRS scoring system clearly indicates that the risk of development of diabetes can be minimized by modifying the modifiable risk factors. In the study,out of 129, 12(9.3%) were in the low risk, 53(41%) were in medium risk and 64 (49.7%) were in high risk category. Similarly in the studies done by Mohan V et al[4] in Chennai city, Gupta et al [17] in urban Pondicherry, Nagalingam S[18] et al in semi urban area of Tamil Nadu the study subjects in high risk group were 43%,31%,37% respectively. In the studies done by Randip C et al[19] in rural West Bengal and Brinda P et al[20] in rural Karnataka the population in the high risk category were 31.5% and 25.7% respectively. The differences in the risk score among different studies might be due to differences in socio demographic profiles.

In the study, subjects were tested for RBS levels as it is the most convenient method and can be done in large scale at any time of the day depending on availability of the person and does not need venipuncture. In the present study 31.25% of the subjects in high risk group were having RBS ≥200 .Similarly in the studies done by Sumana M et al [21] andArun A et al[22] 35 % and 47% of the high risk group were having RBS ≥200 respectively .Thus validating IDRS .Various other studies were done (Vardhan A et al, Stanley JML et al, Adhikari P et al)[23-25] validating the IDRS score. Hence IDRS tool is cost effective in screening risk of type 2 diabetes in a developing country like India with rising burden of diabetes and where most of the people are unaware of their diabetes status.

Conclusion

In the present study majority of the participants were in medium and high risk categories based on IDRS scores. The study showed significant association between RBS values and the IDRS. Hence the study showed that IDRS is a cost effective mass screening tool for early identification of people at the risk of developing diabetes.

Recommendations: All the subjects with RBS value more than the cut-off were advised to undergo further confirmatory test and follow up for diabetes. Those who belonged to IDRS moderate and high risk categories were advised lifestyle modifications and dietary changes. Those who were in the low risk category were advised health promotion activities.

Conflict of Interest: None

Source of Funding: Self

Ethical Clearance: Taken from Institutional Ethical Committee.

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Evaluation of Proportion of Children (0-18 Yrs) Identified and Underwent Surgery for Congenital Heart Diseases Under the Rashtriya Bal Swasthya Karyakram (RBSK), Program in District Thane, Maharashtra State

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Abstract

Under National Rural Health Mission, significant progress has been made in reducing mortality in children over the last fourteen years (2005-19). Whereas there is an advance in reducing child mortality there is a dire need to improving survival outcome. This would be reached by early detection and management of conditions that were not addressed comprehensively in the past.

Rashtriya Bal Swasthya Karyakram (RBSK) is an important initiative aiming at early identification and early intervention for children from birth to 18 years to cover 4 'D's viz.

Defects at birth, Deficiencies, Diseases, Development delays including disability.

The services aim to cover children of 0-6 years of age in rural areas and urban slums in addition to children enrolled in classes 1st to 12th in Government and Government aided Schools.

Child screening under RBSK is at two levels community level and facility level. While facility based new born screening at public health facilities like PHCs/CHCs/DH, will be by existing health manpower like Medical Officers, Staff Nurses & ANMs, the community level screening will be conducted by the Mobile health teams at AnganwadiCentres and Government and Government aided Schools.

Keywords: *Rashtriya Bal Swasthya Karyakram (RBSK), Heart Surgeries, Thane District.*

Introduction

The Ministry of Health & Family Welfare, Government of India, under the National Health Mission, NHM launched the Rashtriya Bal Swasthya Karyakram (RBSK), that executes 'Child Health Screening' and 'Early Intervention Services', a systemic approach of early identification and link to care, support and treatment[(1)]. It started health screening of school children in the age group of 6-18 years through the 'School Health Program' SHP in 2008[(1)]. The RBSK aids early detection and management of defects at birth, diseases in children, deficiency conditions and developmental delays including disabilities prevalent in children[(2)]. It was initiated in 2013 and has been implemented in 33 districts of Maharashtra[(3)]. A team comprising 2 medical officer (one male & one female), one ANM and one Pharmacist is deputed under the supervision of medical superintendent in each district for the said purpose[(3)]. The team screens children from anganwadicenters and schools. After screening, children identified with

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defects, deficiencies, diseases and developmental delays are referred to the Rural Hospital/Sub District Hospital/ District Hospital or the specified referral center for further treatment[3].

The initiative is estimated to benefit 270 million children attending anganwadi centres and schools in a phased manner[1]. An effective health intervention will reduce both direct costs and out-of-pocket expenditure[4]. Child Health Screening and Early Intervention Services also aims at reducing the extent of disability, at improving the quality of life and enabling all persons to achieve their full potential[5].

After screening the next vital step is confirmation of preliminary findings, referral support and management and follow ups. Under RBSK, these activities viz. confirmation, management, referral, tracking & follow-up, needs to be planned according to the age group of the child[1].

The burden of pediatric heart disease in India is largest as compared to other countries because the population of children is highest in the world[6]. Two recent studies at birth have given estimation of congenital heart disease (CHD) in India. Approximately 100,000 babies are born each year with "major" and "critical" CHD[4]. These CHDs include a list of conditions that need to be addressed early, mostly within the 1st year of life. Such cases do not receive timely treatment, because of which the morbidity and mortality burden is high.

It is essential that the cases are identified early so that they could be referred and treated promptly. So, a research study was planned with an objective to find out number of children identified with heart diseases and operated for heart surgeries, through the RBSK initiative in the district of Thane in the rural, municipal council and nagarpalika area during the year 2018-2019. The study would be helpful in understanding the proportion percentage of children receiving treatment after identification of CHD and the reasons for not undergoing the treatment.

Method

Data of all the children screened under RBSK screening programme was collected from district early intervention centre of Anganwadi Centres (AWC), School Health Program (SHP). The data is from three regions of Thane District. Secondary data of the year 2018-2019 was obtained with due approval from the concerned authority. The data was analysed using excel spread sheets. It was on number of cases identified, cases operated and the different reasons for non- conduct of the heart surgeries.

Population Setting: Thane is one of the largest and advanced districts in the state of Maharashtra. It lies on the North of Konkan division. According to census 2011, it is third in the state in terms of population. The industrial areas developed in Thane, Kalyan, Ulhasnagar, Ambernath, Bhiwandi talukas of the district are close to Mumbai. Marine fishing, groundwater fishing is done as well. In terms of industrial development Thane district is third in the state. Industrialization has brought economic and social development of the district. Maharashtra Industrial Development Corporation has developed 8 industrial estates. Access to the ports at Mumbai, international market, development in communications and the facilities provided by the government has made the district prosperous. Especially in the southern and western parts of the district, there is a centralization of industries[7].

Results

Table 1: Proportionate distribution of identified and conducted heart surgeries through RBSK in the year 2018-2019 in Thane district

	AWC/School	Identified	% to Total Cases	Conducted	Not done	% to Total not done
Rural	AWC	53		49 (92.45%)	4 (7.55%)	26.66%
	SHP	23		17 (73.91%)	6 (26.07%)	40.00%
	Total	76	58.46%	66 (57.39%)	10	66.66%
MNC	AWC	33		33 (100%)	0(0%)	0%
	SHP	17		14 (82.35%)	3 (17.64%)	20.00%
	Total	50	38.46%	47(40.86%)	3	

	AWC/School	Identified	% to Total Cases	Conducted	Not done	% to Total not done
NP	AWC	2		2 (100%)	0(0%)	0%
	SHP	2		0 (0%)	2 (100%)	13.33%
	Total	4	3.07%	2 (1.73%)	2	
Total	AWC	88		84	4	
	SHP	42		31	11	
Grand Total		130		115(88.46%)	15(11.54%)	

*AWC- Anganwadi Center *SHP-School Health Program * MNP- MahaNagarPalika, NP- NagarPalika,

Table 1 reflects that out of the total 130 cases identified majority (n=76, 58.46%) were from rural area as compared to MNC (38.46%) and NP (3.07%) area.

Similarly, highest number of heart surgeries (n=66, 57.39%) were conducted in the same group as compared to MNC (40.86%) and NP (1.73%) area.

As such, the contribution of total number of identified cases and operated cases from NP area is significantly low.

Out of the Total 130 cases identified for Heart surgery, in 115 cases (88.46%) surgery was performed and in 15 cases (11.54%) surgery could not be performed due to various reasons.

On further analysis it is revealed that out of 15 cases in which the surgery could not be performed, the cases from Rural Area were 10 (66.66%), the cases from MNP and NP area being 20.00% and 13.33% respectively. The analysis also reveals that out of these 10 cases, 4 cases (40%) are on follow up for Surgery and 6 (60%) are put on medicines only. The proportion of cases from Rural Area in whom surgery has not been performed poses a great public health concern.

Discussion

With a child population of over 400 million, India has the largest number of children between the ages of 0-18 years globally. The indicators are a cause of concern, as India contributes 20% to global child deaths [8]. The birth defects prevalence varies from 61 to 69.9 per 1000 live births [9]. To address child health including birth defects and developmental delays, the RBSK provide targeted, comprehensive care to children aged 0–18 years. It takes care of screening, early intervention, management and treatment, including surgeries for the required health conditions, free of cost[1]. A formative research study carried out in eight districts across 5 states found that 25% of the children were screened to have a Congenital Heart Disease (CHD). They received treatment with private health providers and/or support from non-profits and philanthropic institutions. The highlighted barriers reports of non-availability of facilities for diagnostics and tertiary care services[8].

Even in states such as Maharashtra, there is a reliance on diagnostic camps such as 2D Echo camps for confirming the congenital heart diseases leading to sometimes, 2-3 months waiting period for diagnosis and confirmation[8]. These results clearly suggest that universal coverage for pediatric heart care needs to be supported by public insurance schemes. Private institutions will need to partner with the government in providing for UHC in a manner quite similar to the Aarogyasrimodel[4]. The total costs for pediatric heart care will be substantial and the government has to generate the necessary resources. It is not entirely clear what the annual fund requirement will have to be. The program needs to be sustainable. In regions where there are serious deficiencies in basic maternal and child health services, substantial resource allocation for expensive heart surgery needs to be justified[8,10].

Conclusion and Recommendations

RBSK program should ensure 100% coverage. Inclusive of all AWCs as well as all schools from Government and Private sector. 100 % coverage of Rural area must be ensured with well-planned provision of Adequate budget and manpower. A robust mechanism must exist for early detection of the problems, follow up, free referral systems, prompt diagnostic mechanism, well supported treatment facilities as well as motivational counselling systems to support the health education and awareness amongst the community.

Conflict of Interest: The Authors declare no conflict of interest

Source of Funding: This activity was not funded by any funding agency and was self-funded.

Ethical Considerations: The data used are reports which do not include any individual level datasets. Hence, no separate ethical approval was required.

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Correlation between Food and Nutrition Security and Chronic Energy Deficiency among Indian Rural Women

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Abstract

Background: Malnutrition is one of the worst problems globally and is inseparably interconnected with poverty. Under nutrition during intra-uterine and early childhood periods causes risk of frequent infections subsequent increase in maternal and child morbidity and mortality. The aim of present study was to find out the association between food and nutrition security and chronic energy deficiency in women of reproductive age group of rural India.

Material and Method: This study was conducted among 448 rural women of reproductive age group (15-49 years) in rural Varanasi using face to face interview for assessing the food and nutrition security and nutritional status. The required sample size was selected by adopting multi-stage random sampling procedure. Interview schedule contained information regarding food security, 24 hour dietary intake, body mass index and socio-demographic variables. Collected data was analysed with the help of SPSS software, version 22nd.

Results: It was observed that out of 119 high and marginally food secured subjects, 34.45%subjects were chronic energy deficient whereas 65.55%had normal body mass index. There existed significant association between nutritional status of study subjects and food security at household level ($p<0.05$). Statistically significant difference was found when carbohydrate, protein, fat and energy content were compared according to the BMI and food security categories. Socio economic class gradient also prevailed in the occurrence of chronic energy deficiency in the study subjects (<0.001).

Conclusion: It is evident from the results that there is a strong significant correlation between food and nutrition security and prevalence of chronic energy deficiency among subjects.

Keywords: *Chronic energy deficiency, food and nutrition security, reproductive age group, rural women.*

Introduction

In India, women comprised nearly 50%of the population and 1/3rd of labour force. Nearly 70 % of Indian population resides in rural areas[1] and rural women of reproductive age group (15–49 years) are at the utmost risk of malnutrition, anaemia and ill health and these are worsened by pregnancy and hard physical labour[2].

Under nutrition which is a form of malnutrition is one of the worst problems globally and is inseparably interconnected with poverty. Under nutrition can be divided into protein-energy malnutrition and micronutrient deficiencies.[3] Global hunger had affected 815 million people in 2016, or 11% of the worldwide population.[4] Maternal and child undernutrition lead to at least 3.5 million deaths each year and 11% of the total global disease burden. Current literature from developing countries shows that undernourished women with a body mass index (BMI) below 18.5 demonstrate a progressive upsurge in mortality and morbidity[5].

Undernutrition during the period of foetus development and early childhood agesresults in low

birth weight baby who is prone to frequent infections and causes increased risk of morbidity and mortality in mother and child both[6]. Hence, the main aim of present study was to find out the correlation between food and nutrition security and chronic energy deficiency in women of reproductive age in rural Varanasi. With this background following specific objectives were decided:

1. To find out the association between chronic energy deficiency (CED) among study subjects with their socio-demographic variables.
2. To observe the association between CED and food security.
3. To investigate the correlation between nutrient intake and CED.

Material and Method: Present study was conducted among rural women of reproductive age group (15-49 years) in Varanasi district of Uttar Pradesh state in India. This required a scale based in-depth interview for assessing the Food and Nutrition Security and application of indirect method of nutritional assessment. However, role of socio-demographic variables in these areas cannot be underestimated. The study was conducted in Chiraigaon Community Development (CD) Block of Varanasi district, which was selected out of 8 community development blocks by simple random sampling method. Women of reproductive age group, who were pregnant at the time of study, overweight/ obese and seriously ill were excludedfrom the study.

Study design: A community based cross sectional design was adopted for this study.

Sample size: Sample size was fixed on the basis of prevalence of CED among women of reproductive age group. As per literature search prevalence of CED in rural women of reproductive age group is 38.8%.[7] Based on this value, the sample size for this study was calculated using the formula i.e. $n=Z^2 pq/L^2$

Where: z= 1.96, n= Sample size, p= Estimated prevalence of CED (40 %), q= 100-p, L= permissible level of error is taken as 10% of the prevalence rate

The required sample size was calculated to be 576.24. Taking an additional sample of 5% for drop outs required sample size became 605.04 which were rounded to 610. Later on 162 overweight and obese subjects were excluded from the estimated sample size to make the present study more focused on CED. Hence the total sample size was fixed upto 448.

Sampling Methodology: The required sample size was selected by adopting multi-stage random sampling procedure. In the first stage, one Commisionary of Uttar Pradesh state (comprising of 7 districts) was selected randomly. Then one Community Development Block (i.e. Chiraigaon) was selected out of eight Community Development Blocks of Varanasi district by simple random sampling. In 3rd stage, 5 villages (i.e. Narayanpur, Dubkiyan, Umrahan, Tilmapur and Bariyasanpur)out of 84 revenue villages were selected by systematic random sampling. In stage 4, the required study subjects were selected adopting probability proportion to size (PPS) sampling technique and in order to get required no. of study subjects, every seventh household was selected by systemic random sampling. In the last stage one study subject was selected from each household by lottery method.

Tools & Technique of the study: The present investigation is a field survey based study in which primary tool used was a pre designed and pre-tested interview schedule for recording of information pertaining to the subjects considered for the study. The Interview Schedule comprised of following sections:

A. General information: This section contained information pertaining to socio-demographic factors i.e. religion, caste, occupation, marital status, type of family, education and socio-economic status.
B. Information regarding Food and Nutrition Security: A modified 6-item US household food security survey module[8] was used to score regarding food security in the household. The questionnaire was first tested for validity in Indian rural areas. After some modifications questions were modified in interview schedule. Present study is based on 3 point scale of this module. This section also incorporated information pertaining to dietary intake by 24 hours oral questionnaire method. Standardized utensil such as bowls, spoons were used to measure food items during diet survey. The schedule was pre-designed and pre-tested through a pilot study on 30 rural women of non study area.
C. Nutritional status: Nutritional status of study subjects was assessed by BMI. Anthropometric measurements viz. weight, height were recorded with the help of anthropometric rod and weighing machine (Libra) following standard technique. BMI

of each study subject was computed by using the formula weight (kg)/ height (m^2). Nutritional status of study subjects were graded according to proposed criteria of BMI for Asiansby WHO.[9]

Data collection: Dietary assessment of study subjects was done by using 24 hour dietary recall oral questionnaire method. Standard utensils (e.g. bowls for measuring cooked rice, dal, curd, vegetables, milk etc.; spoon for measuring oil, sugar etc.) were used for measuring the approximate intake of different food items. Dilution factor of liquid food such as dal was also noted. Diet survey was not conducted on the day after any festival or any other special occasion.

Socioeconomic Status: For monthly income of the family statements were recorded from the study subjects and confirmed from head or responsible members of the family. The social class of the subject was determined by modified BG Prasad classification (2018)[10].

Statistical analysis: Data thus generated were analysed with the help of Microsoft excel 2007 and SPSS version 22nd software. US household food security module was used to categorize level of food security in household. Intake in terms of energy, protein, fat, vitamin A, C and iron were computed as per Nutritive Value of Indian Foods.[11] Appropriate statistical tools were applied to draw relevant influences. In order to identify contribution of influencing factors, statistics incorporated in this study included χ^2 and unpaired t test.

Results

Association of CED among study subjects with their socio-demographic characteristics demonstrated the extent of CED maximum (30.6%), in the age group of 15-24 years. Corresponding value was 24.46% in 25 to 34 years age group, 24% in 35-44 years and 21.74% in ≥45 years of age group. There was significant ($p<0.001$) inversely correlation between nutritional status and age group of study subjects. CED was found significantly ($p<0.05$) more in Muslim (41.18%) than in Hindu subjects (25.60%). Maximum no. ofthe subjects belonging to joint family (32.04%)had CED. Corresponding value was significantly ($p<0.05$) lower in subjects belonging to nuclear (24.59%) and three generation (8.69%) families. Majority of subjects(34.04%) who were unmarried and 24.16% married subjects were victims of CED significantly ($p<0.001$),whereas none of the widow or subjects separated from spouse belonged to this category.

Although educational status and socio-economic status (SES) of study subjects were significantly ($p<0.001$) associated with nutritional status, there was no discernible trend. Maximum no. of subjects under category of CED had their education upto high school (31.43%) and middle school level (31.34%). There existed no significant association between nutritional status of the study subjects and occupation.

There existed significant association between nutritional status of study subjects and food security at household level ($p<0.05$) as shown in table 1. It was observed that out of 119 subjects having food security at high and marginal level,65.55%had normal BMI (18.5-22.9 kg/m2) whereas 34.45%were the victims ofCED. Corresponding value for subjects belonging to low and very low food secure households were, 26.47% and 23.37% respectively.

In current study, all nutrients i.e. carbohydrate, protein, fat, calcium, phosphorous, iron and calories were reported least among subjects with CED. Statistically significant ($p<0.05$) correlation was found when these nutrients were compared with BMI categories (table 2).

Table 1: Association of food security statuswith chronic energy deficiency among subjects.

Variables	Food Security Category						Total	
	High/Marginal Food Security		Low Food Security		Very Low Food Security			
	N	%	N	%	N	%	N	%
Nutritional Status								
CED	41	34.45	18	26.47	61	23.37	120	26.79
Normal	78	65.55	50	73.53	200	76.63	328	73.21
Total	119	100	68	100	261	100	448	100.00
Chi square	16.43							
p value	0.002*							

*: statistically significant

Table 2: Association between nutrient intake and chronic energy deficiency of study subjects

Nutrient Intake	Nutritional Status				t test	p value
	CED		Normal			
	Mean	SD	Mean	SD		
Calories (Kcal)	1171.74	233.89	1329.09	236.58	7.03	0.02*
Carbohydrate (gm)	214.66	52.17	225.42	39.17	5.78	0.03*
Protein (gm)	41.96	8.59	45.12	10.66	5.09	0.04*
Fat (gm)	32.66	8.31	37.82	12.62	5.13	0.04*
Calcium (mg)	753.86	598.85	764.93	645.71	0.07	0.94
Phosphorous (mg)	1039.89	440.45	1086.99	504.75	0.89	0.41
Iron (mg)	14.42	6.87	14.79	7.72	0.59	0.56

*: statistically significant

Discussion

Satisfactory nutrition is essential for accomplishing ideal health,quality of life and efficiency of nation. Adequate and proper nutrition can be achieved more rapidly through the continuous availability, accessibility and affordability of safe and nutritious and hygienic food to all people at all time.

In this study out of 448 subjects 41.52%, 31.03% and 22.32% subjects belonged to the age groups of 15-24 yrs, 25-34 yrs and 35-44 years, respectively. Women of younger age group (15-34 years) are more likely to be victims of under nutrition. According to Hazarika et al, in Indian context under nutrition is more in younger women 15-19 years and older ones (40-49 years),[12]this study also support the findings of present investigation. Majority (414) of them was from Hindu religion and rests (N=34) were Muslims.In present study less CED was observed in Hindu. Whereas, in other study Ramachandran et al.[13] pointed that religion does not seem to have major difference in current or future BMI status among women as those belonging to Hindu religion are only having marginally less rates of CED and vulnerability than those belonging to other religions. As much as 149 (33.26%) and 213 (47.54%) subjects were from SC/ST and other backward castes (OBC) respectively. In comparison to present study, higher representation (64.6%) of OBC was found in the study of Srivastava et al.[14] Caste exerted significant influence; SC/ST households had larger proportion of CED in findings of Hazarika et al.[12] Similar findings have also been reported from a study conducted on women of reproductive age group in Azamgarhdistrict.[15] Muslims, SC/ST and OBC are more likely to suffer from chronic under nutrition than subjects belonging to other caste category. In the current research, 54.46% and 5.13% subjects were from nuclear and 3 generation family respectively. In the study of Rao et al.[2], proportion of nuclear families was higher (63.5%) than present study.

Data of existing study confirm that, 66.52% subjects were married which is in agreement with the figures reported by NFHS-3.[7] Two third of the study subjects were literate. The female literacy rate of the country and the state are 65.46% and 59.26%, respectively.[1] The literacy level of subjects in the present study was much more than the extent of illiteracy (55%) reported by Barker et al.[6] and in study of Srivastava et al[14] percentage was 87. Bharti et al[16] also reported that under nutrition declined with increasing level of education in both rural and urban areas. In the present analysis although there is not any discernible trend between education and CED among subjects yet the lowest proportion of CED was found among subjects with highest category of education i.e. graduation and above. As observed in another study, the women educated upto high school or above are predicted to have a high BMI than one who is not. Similar to the fact of highly educated women suffer less from CED[16]. Contrary to this finding, in present study subjects who were educated up to high school were the highest victim suffering from CED. Contrary to this another study reported under nutrition more in illiterates.[12]

The occupation of the subjects was not significantly associated with nutritional status in this study. A study from Java[17] identified middle age and involvement in agriculture and domestic work as risk for CED, whereas present study demonstrates the higher prevalence of

CED among skilled workers (39.13%). The proportion of students to be victim of CED was also on higher side.

It is obvious through this study that 65.83% subjects belonging to low and very low food secure households were suffering from CED. Although there were 34.45% subjects also who belonged to high or marginally food secure households under CED category. This could possibly be due to inappropriate intra household food distribution among women.

In present study energy, carbohydrate, protein and fat content was in deficit among the subjects belonging to CED Similar to this finding another study conducted on women of reproductive age group,the extent of chronic energy deficiency was more in those groups where energy deficit was additionally of higher extent.[15] Women who were taking inadequate nutrients were more likely to be undernourished as compared to those who were taking adequate nutrients. The same result was found in studies performed in rural Kenya and Burkina Faso among women of reproductive age group[18].

Conclusion

It is obvious from the outcomes that chronic energy deficiency is higher among rural women of reproductive age particularly when paired with low food security of the household. Therefore, interventions like nutritional rehabilitation, health education regarding micro nutrient intake, continuous nutritional assessment and screening is needed. For ensuring food security and good nutritional status drafted policies need to be enhanced by targeting towards the food and nutrition security, particularly in food-insecure households as to increase their agricultural productivity,strengthen their income and empower women.

Ethical Clearance: The study had prior approval of the academic bodies of Banaras Hindu University, Varanasi and prior consent was taken from the study subjects for participation in this study.

Source of Funding: Self

Conflict of Interest: Nil.

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Effect of Leg Crossing and Muscle Tensing Technique on Pain among Children Undergoing Venipuncture

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Abstract

Background: Procedures that require a needle prick are among the most common procedures for pediatric patients in the health care setting and are a source of pain. Pediatric patients experiencing acute behavioral distress while undergoing routine venipuncture has been reported to range from 28% to 83% .[5]

Objectives: The objective of the study is to assess the effect of leg crossing and muscle tensing technique on pain among children undergoing venipuncture.

Materials and Method: An evaluative study with true experimental posttest only control group design used to assess the effect of leg crossing and muscle tensing technique on pain among children undergoing venipuncture; 60 samples were taken using Non-Probability Purposive Sampling Technique from selected hospital, of which 30 were control group and 30 were experimental group. The data was collected using self-structured demographic data and Wong's bakers faces pain scale.

Results: The analysis was done by using descriptive and inferential statistics. Researcher applied unpaired t test to compare pain during venipuncture among children and fishers exact test for association of level of pain with selected demographical variables. When the samples were assessed 40% of children in experimental group and in control group 63.33% of children had severe pain during venipuncture which shows that leg crossing and muscle tensing technique is found to be effective among children undergoing venipuncture. T-value was found to be -2.247 and corresponding p-value was 0.014 which is small (less than 0.05). Findings related to association of level of pain with selected demographical variables was assessed by using fishers exact test. Since the p-values are small (less than 0.05) the null hypothesis is rejected. Age in experimental group and age and education in control group are the demographical variables which was found to have significant association with level of pain. After comparing between experimental and control group level of pain, it was proven that there was decrease in pain level.

Conclusion: Pain management is an essential component of nursing care and one of the main responsibilities of pediatric nurses. Unmanaged pain could result in short- and long-term physiological, psychological, and emotional consequences. So, when performing procedures like venipuncture, concern should be to minimize discomfort and pain for children.

Keyword: *Assess, Effect, Leg crossing and muscle tensing technique, Pain, Children, Venipuncture, Wong's bakers faces pain scale.*

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Introduction

Needle-related procedures (venipuncture, IV access, SC, IM) are the most important sources of pain and distress in children in hospital setting. A study shows that only 31% of children benefit from procedural pain management during the insertion of an IV access and

less than 1% during a venipuncture.[4] Even the pain killer injection needs a needle prick. The pain that accompanies procedures may induce anxiety in both pediatric and adult patients, with significant consequences. Needle phobia is estimated to affect approximately 10%–20% of the population.[2]

Relief of pain is a basic need and right of all children. Pain can be reduced with leg crossing and muscle tensing technique and this does not mean that you will ignore the pain completely and suffer in silence. It just means that you can divert your mind from pain. This allows your body and mind to be stronger and avoid the sense of pain. It will hurt if you think about it, so why not just let go and focus more on the task at hand. Do not do work which will focus on the part of the body which is aching human beings.[8]

Distraction can be used as one of the strategies to gain co-operation of the child. Non-pharmacological method are distractions which is a proven effective psychological intervention that the ability to focus attention on something other than pain and does not mean that the pain is gone.[13]

It is reported that anxiety in children can increase their subjective perception of pain, but it can be reduced if their attention is focused on a pleasant activity. [14]

The Investigator's clinical experience found that less or no interventions were done in reducing the pain among children during painful invasive procedures in hospitals. In addition, it was seen that pain can have long term consequences on children. Considering all the above-mentioned facts, the Researcher found it very essential to conduct the study that the leg crossing and muscle tensing technique reduce the pain felt by children undergoing needle-related procedures. Teaching pediatric patients to use the leg crossing and muscle tensing procedure is an easy, low cost, and low risk technique for clinicians to use during venipuncture.

Materials and Method

Study Objectives: To determine effect of leg crossing and muscle tensing technique on pain among children undergoing venipuncture

To find an association of pain with selected demographic variables

Study Design: The study used evaluative approach with true experimental posttest only control group design was used to assess the effect of leg crossing and muscle tensing technique on pain among children undergoing venipuncture. 60 samples were taken from selected hospitals,30 of which in control group and 30 samples used leg crossing and muscle tensing technique. The settings of the study are at Dr D. Y. Patil Hospital and Research Centre, Pimpri, Pune. The data was collected using self-structured questionnaires for demographic data and Wong's bakers faces pain scale.

Findings:

Section I: Description of samples according to their demographic variables in frequency and percentages.

Majority of the children 28(47%) belong to the age group of 10-12 years. Most of the children 41(68%) were females. Maximum samples 26(43%) belong to std 7th std-9th. About 45(75%) of the samples were medical cases. Above half frequency 52(87%) had history of previous experience of venipuncture. Most of the children 27(45%) had 3-4 times of previous experience of venipuncture. Majority of the children 34(57%) had undergone venipuncture for withdrawing blood.

Section II: Analysis of data to determine the level of pain among children undergoing venipuncture in experimental group.

Figure 1: Pie diagram shows description of level of pain response in children undergoing venipuncture in the experimental group.

In experimental group, majority of 40% (12) of the children undergoing venipuncture had severe and moderate pain 20 % (6) of them had mild pain and none of them had experienced no pain.

Section III: Analysis of data to determine the level of pain among children undergoing venipuncture in control group.

Figure 2: Pie diagram shows description of level of pain response in children undergoing venipuncture in the control group.

In control group, majority of 63 % (19) of the children undergoing venipuncture had severe pain,30% (9) of them had moderate pain,7% (2) had mild pain and none of them experienced pain.

Section IV: Analysis of data related to the comparison of the effect of leg crossing and muscle tensing technique on pain among children undergoing venepuncture in experimental group and control group.

Table 1: Description on the Comparison of the level of pain among children undergoing venipuncture in experimental and control group n=60

Sr.No.	Level of Pain	Mean	Mean Difference	Standard Deviation (s)	Unpaired t Test	p-value
1	Experimental group	5.966	1.067	1.95	-2.247	0.014
2	Control group	7.033		1.711		

Among children, the mean experimental group score was 5.966 and the mean control group score was 7.033 with standard deviation experimental group score was 1.95 and the standard deviation control group score was 1.711. The calculated mean difference was 1.067 and the obtained 't' value -2.247 was significant at $p<0.05$. Hence the null hypothesis was rejected. It was inferred that there is a significant difference between mean post-test levels of pain associated with venipuncture among children in experimental and control group.

Section V: Analysis of data related to association of levels of pain with selected demographic variables in experimental group and control group.

Demographic variables age found to have significant association with level of pain in experimental group and age and education in control group.

Discussion

Present study was done on 60 children who underwent venipuncture, to assess the effect of leg crossing and muscle tensing technique. The samples were divided into two groups, 30 patients using control group with no intervention and 30 patients using leg crossing and muscle tensing technique.

When the samples were assessed 40% of children in experimental group and in control group 63.33% of children had severe pain. In experimental group unpaired t test was applied to compare pain during venipuncture among children and the t-value was found to be -2.247 and corresponding p-value was 0.014 which is small (less than 0.05). Findings related to association of level of pain with selected demographical variables was assessed by using fishers exact test. Since the p-values

are small (less than 0.05), null hypothesis was rejected. After comparing between experimental and control group level of pain, it was observed that leg crossing and muscle tensing technique is effective in reducing pain among children undergoing venipuncture

Conclusion

The purpose of the present study was to assess the effect of leg crossing and muscle tensing technique on pain among children undergoing venipuncture. The overall experience of conducting this study was satisfying and was a new learning experience for the researcher. In this study since the ($p < 0.05$) H0 (null hypothesis) was rejected. It is evident that the leg crossing and muscle tensing technique is effective in reducing pain among children undergoing venipuncture. The nursing profession could pay an important role in encouraging children to adopt leg crossing and muscle tensing technique while undergoing venipuncture.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Taken from Ethical committee of Dr. D. Y. Patil University.

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Risk Factors and Triggers of Cardiovascular Events

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Abstract

Introduction: Cardiovascular events are the leading cause of mortality and disability globally. Risk factors for cardiovascular events are well established, but the factors that may precipitate the acute event are not much clear.

Aims and Objective: To identify risk factors and triggers linked to the onset of cardiovascular events.

Materials and Method: A descriptive cross sectional design was adopted for assessing the risk factors and triggers of cardiovascular events amongst patients admitted in MMIMS & R Mullana, Ambala, and Haryana. Fifty patients with cardiovascular events were interviewed using a validated interview schedule.

Results: Smoking (64%), hypertension (58%), anemia (30%), diabetes (24%), alcohol consumption (22%), overweight (16%), hypercholestremia (10%) were the most common risk factor reported by the study subjects. Unusual mental stress, Heavy physical activity within a 24 hrs prior to the onset of cardiovascular events, physical injury/Illness in last week, heavy meal consumption, sudden change in temperature were the common triggering factors identified.

Conclusion: Cardiovascular events can be prevented through refraining from risk factors and triggers by adopting lifestyle modifications.

Keywords: *Risk factors, Triggers, Cardiovascular events*

Introduction

Ischemic heart disease and stroke are the major killer diseases and accounted for 15.2 million deaths in 2016 and have been the leading causes of death worldwide in the last fifteen years.[1]

Heart attacks and strokes are typically sudden events mainly caused by atherosclerotic blockage in the coronary and cerebral blood vessels respectively. Strokes can also be caused by rupture of cerebral vasculature resulting in intracranial haemorrhage.[2] Stroke is not only the leading cause of death globally but also one of the principal causes of disabilities in adults. The incidence of stroke has increased over time in certain countries.[3] Despite advancements in diagnosis and management over years, cardiovascular events tend to be a major public health problem.

Risk factors for Stroke and Myocardial Infarction are known, but there is less known about factors surrounding the acute event. Established risk factors for heart attacks and stroke can only partially tell the individual risk and do not foresee the timing and day of the acute event. Identification of patients with controllable risk factors is imperative and the avoidance of probable triggers

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amongst them can be very helpful in prevention of onset of cardiovascular events.

Methodology

A descriptive research design was used to ascertain the risk factors and triggers of cardiovascular events amongst fifty conscious patients admitted in MMIMS & R hospital, Mullana, Ambala, Haryana. Ethical permission was obtained from Institutional Ethical Committee [IEC-961].

The adult patients oriented to time, place and person were interviewed for collecting data regarding Sample Characteristics, Risk Factors, and Triggers using a Structured Interview Schedule within 24 hours of admission. In case, patient was not able to recall in between, help of relatives/witness was sought. The time taken to collect the data from each patient varied from 15-20 minutes.

Structured Interview Schedule developed by the researcher was used and had four sections. Section 1 & 2 comprised of demographic and clinical variables respectively. Section 3 & 4 had questions pertaining to risk factors and triggers related to onset of cardiovascular event respectively.

Risk factors included history of previous cardiovascular events, family history of cardiovascular events, history of hypertension, history of diabetes, hypercholestremia, anemia, smoking, tobacco chewing, alcohol intake. The triggers included time of onset of cardiovascular event, position, activity, smoking 2 hours before the onset of cardiovascular events, drinking 2hrs prior to occurrence of cardiovascular events, physical injury/illness within a week, faced unusual events within a month, heavy meal consumption within 24 hrs prior to onset.

The content validity of the tool was ascertained through seven experts from medical and nursing field. Content validity index (ICVI) of risk assessment sheet varied from 0.75-1 and overall content validity index (SCVI) was 0.87. Content validity index of triggers assessment sheet ranged from 0.75-1 and scale content validity index (SCVI) was 0.89. Reliability of tool was calculated by test retest method (r=.804).

Statistical Analysis: SPSS version 20 was employed to analyse the data. Data analysis was done by using descriptive and inferential statistics i.e frequency percentage and chi-square test. For the present study, the level of significance was $p \leq 0.05$.

Result

Sample Characteristics: Majority of the patients (64%) were more than 50 years of age; 36% in the age group of 35-50 years. Most (66%) of patients were male. Majority (82%) of patients was Hindu and 16% were Muslim and only 2% were Sikh. Most (64%) of patients were vegetarian. Nearly half (46%) of patients were non-literate. About 38% were employed, 32% were housewives, 22% were retired, 4% were farmer and 4% were labourer. All the patients were married. Majority (80%) of the patients belonged to middle/lower middle socio-economic status and lived in rural areas. Most (62%) of the patients were living in nuclear family.

Clinical Parameters: More than half of the patients (54%) had myocardial infarction whereas 46% of the patients had stroke. Ischemic stroke patients (91%) outnumbered the hemorrhagic stroke patients (9%). Nearly 58% of the patients were overweight and obese. Most (70%) had normal Hb followed by 30% of patients had low Hb.

Prevalence of Known Risk Factors: About 24% of patients reported prior history of stroke or myocardial infarction and majority (83.3%) of them had history within one month. Family history of stroke or myocardial infarction was reported by only 3 patients.

More than half i.e 29/50patients (58%) had history of hypertension; nearly 50% were diagnosed within a year and regular intake of antihypertensive drugs was reported by only 17 out of 29 hypertensive patients. One fourth of the patients (24%) had history of Type 2 Diabetes Mellitus; 50% were diagnosed within a year only; majorities (11/12) were complaint to the treatment. About 10% of the patients had history of hypercholestremia. None of the female patients had any history of intake of birth control pills. More than half ie 32/50 (64%) had history of smoking; 23/32 (72%) were current smokers and had been smoking more than 20 years and 11/23 current smokers used to smoke more than 15 cigarettes per day. Four out of fifty patients had history of chewing tobacco.

About 22% patients (11/50) had history of drinking alcohol; 07 were current alcoholics with duration of alcoholism more than 10 years. And more than half (57.1%) of the current alcoholics had binge drinking

occasionally. None of patients were currently taking any illicit drug.

Potential Triggers Related to Onset of Cardiovascular events: One third (34%) of patients had cardiovascular event between 6am-11:59am; 22% patients had event in each of the remaining 6 hours time period. Thirty one percent of patients were in sitting position, 26% were sleeping/just awakened and 26% were lying, 8% were defecating/urinating, 6% were in standing position, one patient was busy in farming and other was climbing stairs before the occurrence of cardiovascular event. Most common posture in which cardiovascular events occurred was supine (46%), sitting (30%), squatting (12%) and standing position (12%). About one fourth (24%) of patients smoked 2 hours prior to onset of cardiovascular events and majority (83.3%) of them smoked 4-6 cigarettes. Only one of the patients consumed alcohol 2 hours prior to onset of cardiovascular events and had 2-4 pegs of alcohol. About 26% had physical injury or infection 1 week before the onset of cardiovascular event; 11 patients had fever and two had fracture. One third (34%) had taken some medicine 02 hrs prior onset of cardiovascular events; 12 reported intake of over the counter and 05 had taken prescribed medicines. Six patients (12%) had consumed heavy meal within 24 hours before the onset of cardiovascular event.

Nine patients faced unusual event in the last 24 hrs of onset of stroke; heavy physical activity(4), death in family (03), violent quarrel (02). About 11 (22%) patients were under unusual mental stress within a month prior to onset of cardiovascular events.

A significant association of smoking in 2hrs before the onset of cardiovascular event was seen with type of cardiovascular event, history of diabetes mellitus, anemia. 37% of patients with myocardial infarction had history of smoking 2hrs prior to onset of cardiovascular events as compared to 8.7% of patients with stroke (x^2=5.73; p=0.01). 31.6% of non-diabetic patients had smoked 2hrs prior to onset of cardiovascular events as compared to none of diabetic patients(x^2=4.98, p=0.02). 24% of Non-anemic patients had smoked 2 hrs prior the onset of cardiovascular events as compared to none of anemic patients (x^2=3.94; p= 0.04).

Discussion

In the study, there was one peak timing for the occurrence of stroke. In 34 % of the subjects, peak was between 6.00-11.59 a.m. Chakrabarti et al. found 52% of strokes among Indians occurred between 5-9 am.[4] Vinay et al reported two peak timings for stroke occurrence i.e 5am-9:59am (27.9%) and 3pm-7:59pm (25%). Increase in morning blood pressure[5], aggregability of platelets, blood viscosity and haematocrit may be considered as a causative factor for peak occurrence of cardiovascular events in morning.[6,7]

About one fourth (24%) of patients smoked 2 hours prior to onset of cardiovascular events and majority (83.3%) of them smoked 4-6 cigarettes. 37% of patients with myocardial infarction had history of smoking 2hrs prior to onset of cardiovascular events as compared to 8.7% of patients with stroke (x^2=5.73; p=0.01). 31.6% of non-diabetic patients had smoked 2hrs prior to onset of cardiovascular events as compared to none of diabetic patients (x^2=4.98, p=0.02). 24% of Non-anemic patients had smoked 2 hrs prior the onset of cardiovascular events as compared to none of anemic patients (x^2=3.94; p=0.04). Smoking bans are related with a rapid decline in the incidences of acute myocardial infarction pointing that cigarette smoking is an avertable precipitator of MI.[8] The risk of acute cardiovascular events is higher in the presence of risk factors like smoking, high blood pressure, high cholesterol levels, diabetes or the presence of cardiovascular disease.[9]

About 26% had physical injury/infection 1 week before the onset of cardiovascular event; 11 patients had fever and two had fracture. A Study supports that recent respiratory symptoms are linked with higher risk of Myocardial Infarction in 1–2 weeks[10] and influenza triggers cardiovascular events.[11]

Nine patients faced unusual event in the last 24 hrs of onset of stroke; heavy physical activity (4), death in family (03), violent quarrel (02). The chances of MI were 5.9 times more (95% CI 4.6–7.7) within one hour of heavy physical work in comparison to periods of lower levels of activity/rest.[12] A case-crossover study on ischemic stroke found an association with anger in the two hours preceding symptoms and also exposure to negative emotions during the hazard period was associated with a high odds ratio for ischemic stroke.[13]

About 11(22%) patients were under mental stress within a month prior to onset of cardiovascular events. In another study, 31.4 % of the subjects reported experience of some extraordinary/unusual event within 24 hours prior to the onset of stroke and unusual mental

stress was the most common unusual event reported by majority (65.9 %) of them.[14]

Six patients (12%) had consumed heavy meal within 24 hours before the onset of cardiovascular event. The relative risk of an acute cardiovascular event in the first hour after intake of heavy meals was seven times higher than the comparable hours on the previous day and four times more than estimated based on the usual frequency of heavy meal intake in the last year.[15]

The findings of the present study suggest that unusual mental stress, Heavy physical activity time of the day, injury/illness within a week prior to the occurrence of stroke, smoking among diabetes may lead to the onset of cardiovascular events. These events can be prevented through modification in life style (refraining from triggers), compliance to treatment and regular follow up.

The study has potential sources of biases which may limit the generalization of findings. The sample size was only fifty and taken through convenience sampling technique. Moreover, the data collection was limited to conscious patients only and collected through self report technique only which may introduce reporting and recall biases. Lack of control group also limits the confidence in the study findings.

Case control studies or case crossover can be undertaken on larger sample for identification of triggering factors related to onset of cardiovascular events.

Nurses have an important role in raising awareness regarding prevention of cardiovascular events and to motivate people at risk to adopt lifestyle modifications. Knowledge of the risk factors and the triggering factors related to cardiovascular events is imperative for the nurses. People having cardiovascular risk factors must be identified and educated about triggering factors.

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Passive Smoking and its Effects on the Development of a Child

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Abstract

Passive smoking is the inhalation of the tobacco smoke of another individual or the exhale of a smoker. There is no safe level of second- hand tobacco smoke exposure. This review article delves into the consequences of passive smoking on the physical, cognitive development, and the circulatory system of the child. Nicotine exposure increases the oxidative stress of the body, while decreasing the antioxidant capacity. It transiently increases the systolic blood pressure and decreases the arterial compliance, thereby increasing the susceptibility to hypertension.

Exposure to tobacco smoke delays the dental development amongst children and displays a negative association in the linear growth of the child. It also increases the risk of dental caries and behavioural problems.

Keywords: *Passive Smoking, Cognitive, Circulatory System, Physical Development, Dental caries*

Introduction

Smoking can be defined as the inhalation of the burning tobacco smoke encased in cigarettes, pipes and cigars.(1) Passive smoking (PS) is the inhalation of tobacco smoke of another individual or the exhale of a smoker.(1)

According to the World Health Organization, out of the 8 million people who die globally due to tobacco use, 1.2 million are passive smokers.(1) There are more than 7000 chemicals in tobacco smoke, out of which at least 250 are proven to be harmful and 69 are carcinogenic.(1) Unfortunately, there is no safe level of exposure to second-hand tobacco smoke.(1)

The developing foetuses suffer greatly from the chemicals present in the smoke as they have a reduced nicotine detoxification capacity.(2) Similarly, children are more sensitive to the smoke as they have a greater Alveolar Ventilation to Perfusion ratio, with the added disadvantage of underdeveloped lungs.(3)

The present article describes the consequences of passive smoking and its effects on the physical development, circulatory system and cognitive development.(1)

Circulatory System: The circulatory system is very vulnerable to the effects of passive smoking. Exposure to PS elevates the blood pressure for a small-time frame. This transient rise can be attributed to several sequential biological effects such as vasoconstriction, capillary endothelial dysfunction, and decreased nitric oxide production.(4) The impairment of endothelial function can be due to the conversion of Acetylcholine-induced coronary artery relaxation into vasoconstriction.(5) Nicotine being an adrenergic agonist, induces the release of local and systemic

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catecholamines at the neuroeffector junction.[6] Thus, the vasoconstriction caused by nicotine coupled with the antagonist action of acetylcholine causes a transient rise in the blood pressure. Oxygen free radicals present within the cigarette smoke cause the muscular arteries to contract, decreasing their elasticity and compliance and thereby increasing the blood pressure.[5,7] Due to the sustained oxidative stress, smokers are also more susceptible to oxygen free radicals (Superoxide anions, hydrogen peroxides).[7] This subsequently increases the blood pressure of an individual. A meta-analysis conducted in 2019, concluded that the foetuses, and children subjected to passive smoking had a higher level of Systolic blood pressure.[8] No association, however, was drawn between hypertension and second-hand smoking (SHS). As smoking has cumulative effects, the duration of exposure would be an influential factor in determining the prevalence of hypertension in the children.[8]

There is no conclusive data, regarding the effects of cigarette smoke (CS) on the blood cells of the body. [9]According to Mahassni et al, smokers have a significantly higher mean lymphocytic count and CD4+/CD8+ ratio compared to PS. But they demonstrate lower mean IgA, basophilic and NK cell counts. Hence, first-hand smokers have an increased susceptibility to upper respiratory tract infections, while the passive smokers are more prone to hypersensitivity reactions.[9]

Thus, exposure to nicotine results in the reduction of the compliance and elasticity of the blood vessels.[5,7] This, coupled with vasoconstriction induces a transient rise in the systolic blood pressure.[5-7] Therefore, repeated exposure to nicotine, is considered the prime cause for hypertension amongst passive smokers. Smokers also have a significantly higher mean cotinine level, lymphocytic count, and CD4+/CD8+ ratio. Passive smokers demonstrate a greater mean IgA concentration, basophilic and NK cell percentage.[9,10] Nicotine promotes oxidative stress and endothelial dysfunction.[9,10]

Physical and Dental Development: Studies have shown that a dose-response relationship exists between maternal smoking during pregnancy and the linear growth restriction in children.[11,12] Kawakita et al, demonstrated that nicotine caused a decrease in the matrix synthesis and suppressed the hypertrophic differentiation of the cartilaginous tissue, thereby delaying skeletal growth in lab rats.[12] Berlanga et al and Gigante et al also, documented a negative correlation between the cotinine levels and the height of an individual.[11,13] Exposure to smoke has contrary effects on different parts of the body. Chronic hypoxia can cause greater growth of the upper body in the early gestation period, such as head dimensions, upper limb length, and abdominal circumference. At the same time, it results in a selective decrease in biparietal head dimensions, distal limb length and abdominal diameter.[14] In a similar research conducted by Koziel et al, PS resulted in dolichocephaly amongst 7-9 year old boys. This further proved the positive association between hypoxia caused due to placental insufficiency and SHS.[15]

Disturbances in odontogenesis are affected by various factors such as: Diseases, smoking, chemotherapy etc. If the teeth are exposed at any phase prior to mineralization, it can lead to delayed development. [11] This data was in tandem with a research conducted by Dong et al where-in they noticed a delay in the mineralization and total crown formation amongst the study group (nicotine exposed). [16]In yet another study, done by Heikkinen et al in 1994, he stated that the overall size of the primary molars and canines were 2-3% smaller amongst the children born to smoking mothers. It was also noticed that this variation in size differed with race and gender. [17] Subsequently, Avsar et al, found a positive co-relation between the extent of nicotine exposure and the delay in dental development, by evaluating the plasma cotinine levels.[18] Similarly, Kieser et al., noticed that the maximum differences between chronological and dental ages were found amongst the children subjected to cigarette smoke from both parents.[19]

Dental Caries: Numerous studies point towards a positive association between SHS and dental caries.[20-24] In smokers (active and passive), there is a decrease in the salivary buffering capacity, and an increase in the lactobacilli and *S. mutans* count.[20] Literature states that nicotine not only enhances the S. mutans biofilm formation and metabolic activity, but it also increases the extracellular polysaccharides. This further attracts other microorganisms, such as Candida albicans, onto the dental plaque.[20] Bernabé et al, in the year 2017 proved a steeper incidence of caries amongst low birth-weight children and maternal smokers.[21] This was further proved by Tanaka et al, where-in there was a significant increase in the incidence of dental caries amongst those children whose mothers smoked during the first trimester of their pregnancy.[22,23]

The ramifications that exposure to tobacco smoke has, on the physical and dental development of children goes beyond just the foetal development. Nicotine instigates, chronic hypoxia due to placental insufficiency, resulting in altered body proportions and head dimensions.[11-15] Further, it has been proven that passive smokers have a delayed dental development and an increased risk of dental caries as compared to non-smokers.[20-23]

Cognitive Development, behaviour and Motor Skills of the Child: The results from various studies pertaining to the cognitive development of children, following tobacco smoke exposure (TSE) is controversial and inconclusive. Most of the authors believe that foetal hypoxia impairs brain development. [24] A study done by Slotkin et al, on rats, proved that various environmental agents that encourage cholinergic activity in target cells cause neurodevelopmental damage, due to the inappropriate timing and/or intensity of the stimulation. The overstimulation of cholinergic receptors resulted in the excessive expression of genes, that promote apoptosis and delayed cell loss. Exposure to second-hand smoke also causes an impairment in the Acetyl choline (reduced HC3/ChAT ratio) and 5HT presynaptic activity.[25]

Slotkin et al in 2016 focused on the importance of a "critical period" for the development of adverse effects of TSE.[26] They observed that during the early exposure to the toxin, the neurons that have been lost can be replaced due to the plasticity of the neuronal cell replication. Hence, the massive initial disruption of the brain up to stage of the neural tube development can be repaired and a near normal morphology obtained. Contrary to this, the late gestational phase (third trimester of human development) comprises of terminal neurodifferentiation and the assembly of higher-order brain structures- stages that, if interrupted, are not easily reversible.[26] This was further proved by Eskenazi et al, where in they observed that the cognitive development of the 5-year olds exposed to prenatal tobacco smoke was not negatively affected. However, the development of children exposed to cigarette smoke postnatally was much poorer.[27]

Behavioural problems are seen early in the child's life; new-borns exposed to PS in-utero have a heightened startle response, tremors, hypertonicity.[28] They cry more easily and are fussier. They also react more severely to bowel movement and diapering. By around 2 years of age, these same children start to show signs of increased externalizing behaviours like defiance and inability to pay attention.[28] During the pre-school years, the most common problems encountered amongst these children include demanding attention, mood swings, emotional instability, arguing, aggression and destructive behaviour.[28] This behaviour usually continues into adolescence and adulthood, and these people are more likely to break rules or display aggression.[28]

According to Braun et al, the chances of Attention Deficit Hyperactivity Disorder (ADHD) when associated with lead and tobacco exposure are 4.1 and 2.5 times greater respectively.[29] Becker et al, noticed that the children with the DAT1440 allele or DRD47 repeat-allele were 1.8 - 2.1 times more likely to be diagnosed with ADHD. [30]Also, the children with prenatal tobacco smoke exposure along with one or both of the above-mentioned alleles were 3-9 times more likely to have ADHD.[30]

Multiple studies have been conducted to assess the correlation between motor skills (fine/gross) and tobacco smoke exposure. [31, 32] Trasti et al, observed that 5-year-old children who were exposed to tobacco smoke in-utero, had a delayed motor development.[31] In yet another study done by Yeramaneni et al, it was noticed that children (7-9years) exposed to passive smoking displayed a decrease in the fine motor integration, manual dexterity, balance, and strength. [32]

The exposure to tobacco smoke prenatally and during post-natal development can cause subtle changes in the neurodevelopment, behaviour and neuromotor function in children.[24-32] However, due to the difficulty in isolating the various confounding factors, concrete evidence has not yet been obtained.[24] It has been observed that SHS exposures cause developmental disruption that range from cell loss to specific changes in the neural activity and incorrect programming of receptor signalling mechanisms. It was also noted that these children, who were exposed to PS had had a decreased level of manual dexterity and fine motor skills.[32, 33]

Conclusion

It has been proven time and again, that passive smoking has a detrimental effect on the human body. Nicotine exposure increases the oxidative stress of the body, while decreasing the antioxidant capacity. It transiently increases the systolic blood pressure of the

body and decreases the arterial compliance, increasing the susceptibility to hypertension.

Tobacco Smoke exposure also delays the dental development amongst children and displays a negative role in the linear growth of the child. It also increases the risk of caries and behavioural problems.

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Pattern and Convergence in Access to Individual Household Latrine Facility in Indian States and the Impact of Swachh Bharat Intervention

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Abstract

Backgorund: Access to improved sanitation facility for all is an essential to maintain good health and well- being. However in India,millions of peoplesuffer from diseases and infections due to lack of adequate sanitation. Realising the importance of sanitation and hygiene, Government of India announced the flagship programme Swachh Bharat Mission (SBM) in 2014. One of the important features of SBM is to provide financial assistance to construct individual household latrine facility. It is important to understand the impact of SBMon pattern and access of households to latrine facility in Indian states.

Objective: This paper tries to examine the pattern and trends in access to individual household latrine facility from an inter-state perspective and convergencein access to latrine facility among the states after the implementation of SBM.

Method: Data have been obtained from Census, reports from Ministry of Drinking Water and Sanitation, GOI and Swachh Bharat Mission Gramin website for the period 2011 to 2018. Sigma and beta convergence techniques have been employed to analyse the convergence in access to toilet facility and percent and ratios are employed to analyse the pattern.

Results: The findings of the study confirmed the positive impact of SBM in increasing the access to toilet facility in rural India and convergence in access to toilet facility among Indian states in post SBM implementation. During the period 2014-2018, ie, after implementation of SBM, the increase in sanitation coverage at national level is four times higher than the progress made during the decade of 2001 to 2011. Many of the States have reported 100 percent open defection free Villages in the year 2018. So Implementation of SBM not only improves the share of households having latrine facility, but it has widely reduced the gap between high and low income states in access to the sanitation facility.

Keywords: *Rural sanitation, Swachh Bharat Mission, SBM, Access to Toilet facility, Convergence, Rural House hold Infrastructure, Impact of SBM.*

Introduction

Access to safe water, improved sanitation along with good hygiene is of paramount importance because of their implication on people's health and socio-economic development. Lack of access to improved sanitation is one of the main reasons for the existing disease burden in the form of diarrhoeal diseases, undernourishment, other infections and tropical diseases. The cost of poor sanitation is often measured

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in economic terms as the direct cost associated with the treatment of diseases related with poor sanitation, but loss of income, productivity and loss of work hours due to distant and inadequate sanitation facility also have severe implications. Considerable improvement in all of these factors can reduce mortality rates, morbidity and improve quality of life of people, especially infants and children in developing countries. Hence, water and sanitation remain the fundamental requirement of human beings.

Open defecation is the main challenge for healthy hygiene and sanitation. One of the main reasons for open defection is lack of adequate and proper sanitation infrastructure like individual household toilet facility. Globally, 2.3 billion people lack basic sanitation facilities, 892 million practice open defecation; and nearly 80% of the people residing in rural India lack improved sanitation facilities [(1)]. Over the past few years, countries have made commendable progress in sanitation facilities but the benefits are not evenly spread. It is observed in several studies that, there exists inequality between rural- urban, rich- poor, educated-uneducated, and men-women [(2-3)]. Most developing countries, including India, have excessive pressure on infrastructure facilities that is required to meet the "healthy living needs" of growing population. The challenge to provide sanitation facilities to people in the rural areas, as well as, urban areas are aggravated by rapid urbanisation and dwindling social sector investments [(4)], with millions of people falling in short of basic facilities.

Despite the staggering figures, continuous efforts are being made by the Government of India (GOI)to effectively address the problem of sanitation and water. In 1980's, GOI introduced Central Rural Sanitation Programme (CRSP), with focus on rural sanitation. The survey on drinking water, sanitation and hygiene carried out by National Sample Survey Organisation in 1998 and a similar report by Central Bureau of Health Intelligence in 1998-99, revealed shocking disparities across people living in rural and urban areas. Total Sanitation campaign (TSC) was introduced in 1999 as a restructure to existing programme, i.e, CRSP, to curtail the widening gap and worsening situation of sanitation, water and hygiene in rural India. Later in 2012, TSC was renamed as Nirmal Bharat Abhiyan and subsequently, in 2014,it was relaunched as Swachh Bharat Mission. The mission is aimed to fulfil universal coverage and to bring about a change in perception and attitude towards use of latrines, thereby, translating into use of the facilities.

In Indian context in spite of many initiatives by the government, people lack basic facilities like toilet at home. This is the basic requirement and first step towards checking open defecation and improved sanitation, though change in behaviour in adopting the use of toilet is also important. Findings from different studies show that unavailability and lack of facilities are the reasons for open defecation in India.[(5)]Also, functioning toilets[(6)], electricity facility, proximity and in- house water connections[(7)] can affect the effective and persistent use of latrine among members of household. Therefore, creation of toilet facility is definitely the first step coupled with complementary facilities (like electricity, availability of water, proper drainage etc.) will reduce open defecation.

Studies pertaining to analysis of sanitation facilities are usually at household levels. In literature many studies have tried to identify the important determinants that affect sanitation facilities of households. A study conducted in Ghana revealed that, economically active people are more likely to afford the facility.[(8)] There is prevalence of deplorable sanitation conditions of labourers in textile firms.[(9)] A study highlights uneven progress of sanitation in India.[(10)] Studies acknowledge a positive relation with the sanitary facility and wealth.[(8)] It is suggested to increase share of health spending as per cent of state GDP in the states for better health indicators.[(11)] Similarly a study observes that health is not luxury in Indian context as income elasticity of public health expenditure is less than unit.[(12)]

Even with access to latrine facility open defecation is still rampant in different parts of the country.[(2)] It is observe from a study that latrine access doesn't not always result in use of the facility.[(13)] Poor governance and lack of appropriate spending and on other side traditional practices and cultural factors influence health outcomes in India.[(14)]

There have been very limited studies in regard to analysis of the pattern of sanitation coverage, and convergence at state level in India. Besides it is important to observe the influence of Swachh Bharat Mission on increasing pattern of access to sanitation and convergence across states. In this paper we have confined our analysis to access to individual household toilets in Indian states from a macro perspective. The main objectives of the paper are (i) to analyse the level of infrastructure facility like households having individual toilets from an interstate perspective; (ii) to examine

the convergence or divergence in access to household toilet in Indian states and (iii) to verify the impact of SBM on increasing access to household toilets and on convergence across states. Rest of the paper is structured with the following sections: data and methodology, empirical results and discussion and conclusion.

Data and Methodology

Data: The data pertaining to sanitation coverage have been obtained from Census 2001 and 2011. Sanitation coverage data for 2014-2018 have been obtained from Ministry of drinking water and sanitation, Government of India. The criteria used in Census for sanitation coverage is "Availability of latrine facility within household premises". The data for the same have been taken from Swachh Survekshan conducted by Ministry of Drinking Water and Sanitation (GOI) under SBM. As the nature and pattern of resource generating financial development activities are different for special category states (SCS) than the same in general category states (GCS), we have separately analysed SCS and GCS.

Our findings reported in this paper are observed on the basis of data provided by SBM through Swachh Sarvekshan. So findings are subject to the limitation of data reported in these Swachh Sarvekshan.

Methodology: The data has been analysed using percentage – ratio method. Sigma and beta convergence tools have been employed to understand the convergence or divergence among states. For convergence, log linear trend growth rate of households having latrine has been computed by using the following regression equation:-

$$\ln(Y) = \alpha + \beta t + e$$

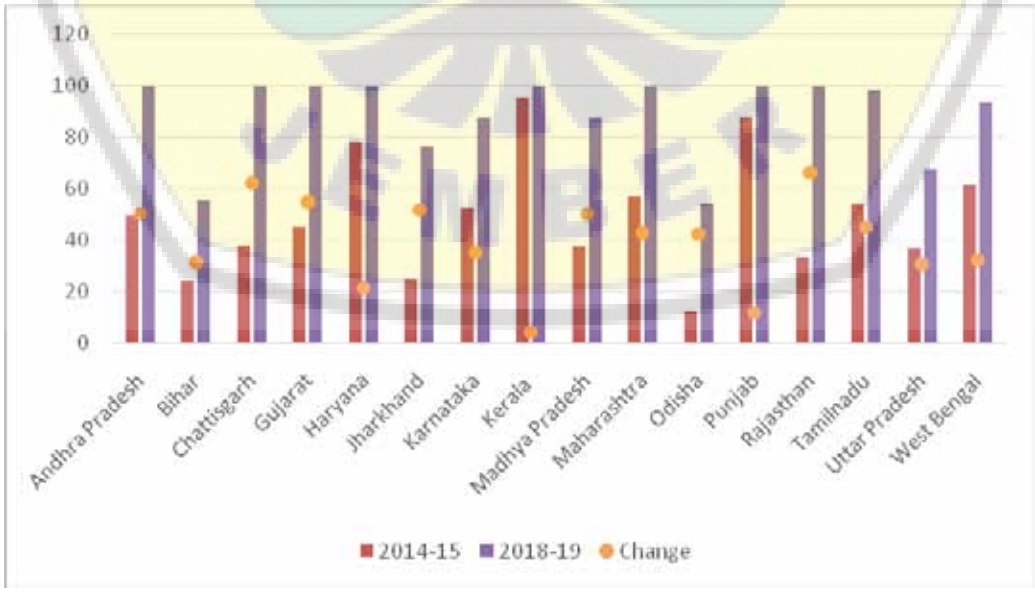
Where Y is the share of households having individual latrine;

The estimated value of β is regressed on initial level of share of households having latrine facility to find the convergence.

Empirical Results and Discussion

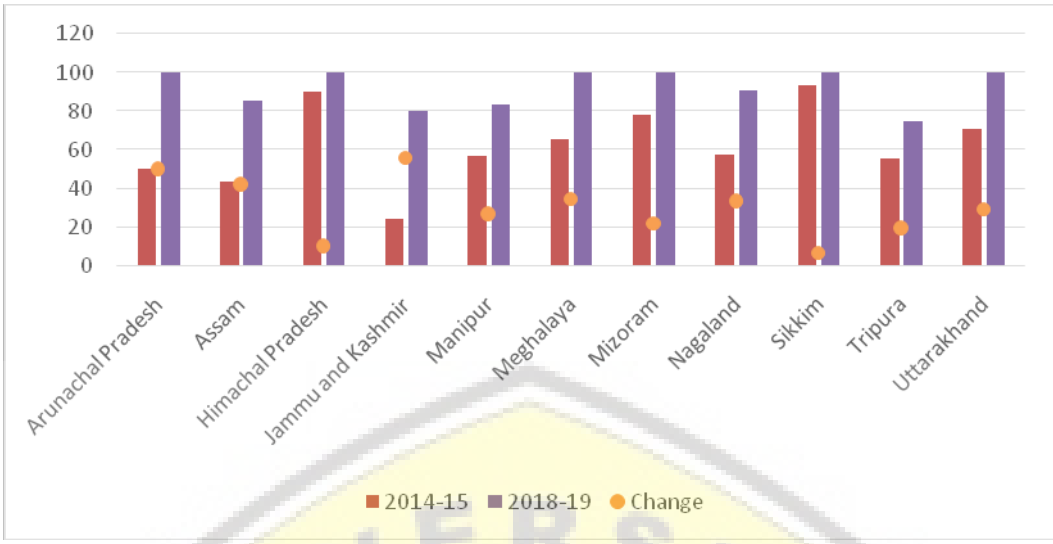
This section provides findings of the study.

Patterns and trends of sanitation coverage: The figure -1shows the change in sanitation coverage, i.e, share of households having latrines for 2014 and 2018 for the major states of India. Overall, there has been an improvement in the coverage for all major states over the span of four years. States like Andhra Pradesh, Chhattisgarh, Gujarat, Haryana, Kerala, Maharashtra, Punjab, Rajasthan, and Tamil Nadu, have reported 100% coverage in 2018. Rajasthan, Gujarat, Andhra Pradesh and Chhattisgarh have shown significant progress with an increase in coverage of more than a half, while Bihar, Odisha and Uttar Pradesh are stilllagging behind.



Source: Authors compilation from SBM data

Figure 1: Sanitation coverage for major states in India



Source: Authors Compilation from SBM data.

Figure 2: Sanitation coverage among the Special Category states in India

The figure 2 shows the sanitation coverage among the special category states for 2014-15 and 2018-19. Six out of the 11 states have attained 100% sanitation coverage in 2018-19. A similar trend of improved sanitation coverage can be observed for the special category states. States of Jammu Kashmir, Assam, and Arunachal Pradesh have made marking difference in sanitation coverage. Tripura is the only state which is has coverage share less than 80% in 2018.

Table 1: Percentage Change in Sanitation Coverage

	2014	2018	% Change	2001	2011	% Change
India	42.56	83.71	41.15	36.40	46.90	10.50
Major States	49.71	88.82	39.11	35.43	47.05	11.63
Special category states	62.55	92.16	29.61	62.75	73.35	10.60

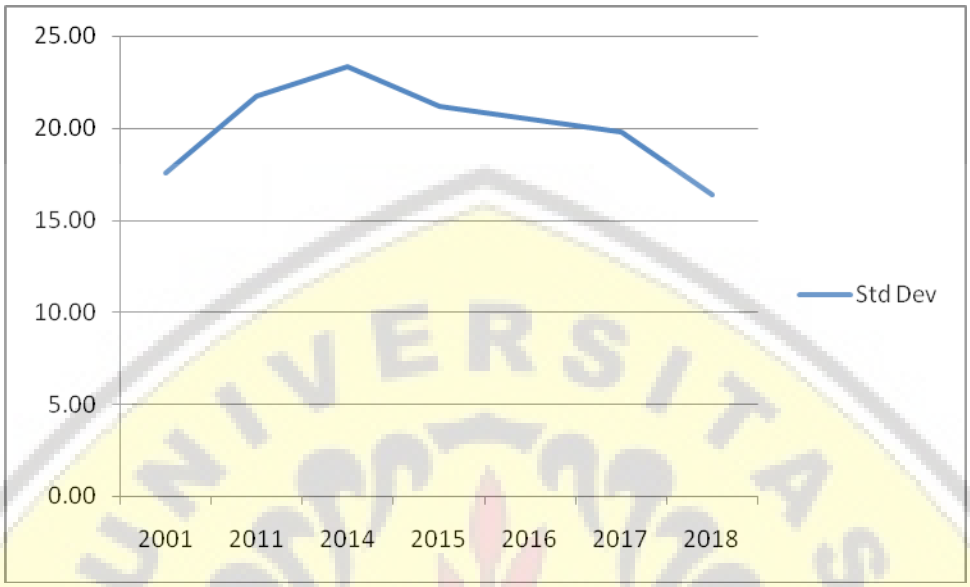
Source: Authors compilation from Census and SBM data

The table 1 shows the percentage of change in share of households having latrine facility in 2018 over 2014, and between 2001 and 2011. It is quite interesting to note the progress made in the past 4 years compared to past 10 years. During the period 2014-2018, the increase in sanitation coverage at national level is 4 times the progress made in previous decade. A striking similar trend can observed for major states and special category states. The whopping increase could be attributed to the implementation of Swachh Bharat Mission.

Convergence of sanitation facilities in Major States: Individual household latrine facility and its coverage are important for states irrespective of their income status. If the growth in the share in access to toilet facility among the deficient states can grow at faster rate than the states where majority of households have access to toilet, then convergence in access to toilet facility across Indian states will be achieved. So a larger intervention is required through policy for low income states or sanitation deficient states in order to improve their sanitation facility to converge them with high income states. So it is important to analyse how SBM has helped in converging the access to toilet facility in Indian states.

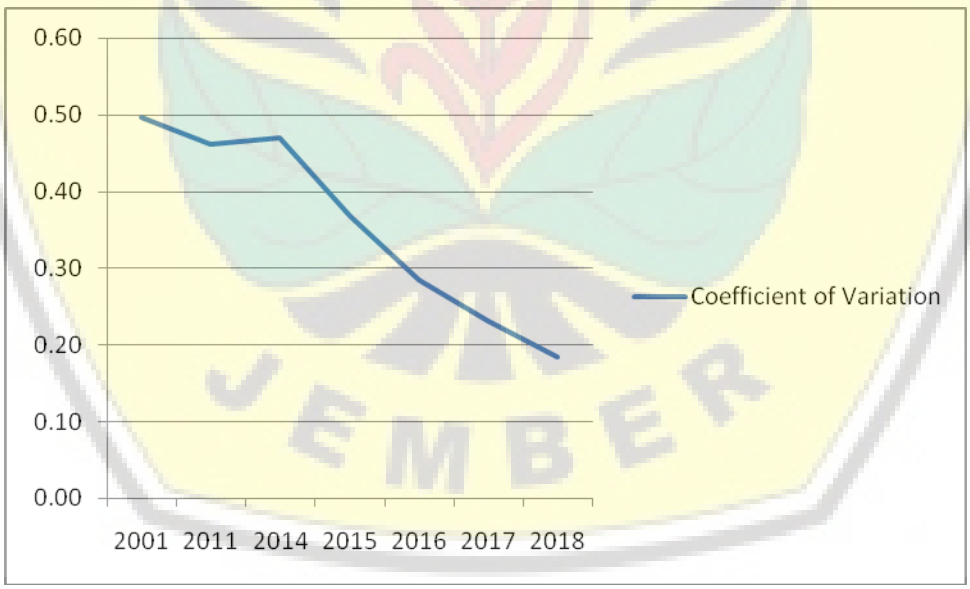
The figure-3 shows the pattern of convergence or divergence of states in coverage of individual household latrine facilities. It has been observed that the in the initial years, there is divergence among states until

2014. But after 2014, there is steady decline in standard deviation of states of sanitation coverage across states, indicating convergence of major states. The figure 4 below also depicts a similar trend and establishes that the states converge with the high performance states in due course of time.



Source: Authors calculations based on Census and SBM data

Figure 3: Pattern of convergence across states.



Source: Authors calculation based on data from Census and SBM

Figure 4: Coefficient of variation in Access to toilet facility among Indian states during 2001 to 2018

From the table-2, it's observed that the beta convergence coefficient is significant and negative for all three cases, i.e, major states, special states category and the all states taken together. Comparing years of implementation of SBM, i.e, 2014 to the current year 2018, there is convergence to access to individual household latrine facility. This suggests that the implementation of SBM not only help to improve

percentage of people having toilets but it has widely reduced the gap between low and high income states. Low income states have constructed the toilets at a faster rate to achieve the convergence with the higher income states.

Table 2: β-Convergence coefficient for Indian States

	Major States	Special Category States	Combined
b	-3.25**	-4.20*	-0.83*
	(-2.95)	(-4.79)	(-5.80)
Constant	83.49	95.48	59.24
	(-6.7)	(12.33)	(10.02)
R^2	0.42	0.72	0.59
F	8.71	22.95	33.63
	(0.01)	(0.00)	(0.00)
N	14	11	25

Note: ** indicates significant at 5% and * indicate significant at 1%., **Source:** Authors calculations based on data from Census and SBM

Conclusion

The paper is an attempt to look into the pattern and trends of sanitation facilities at state level, to understand the convergence or divergence over the years after the implementation of SBM. Indeed, the country has made striding progress in the years after the implementation of SBM. Our findings also suggest that the poor performing states in terms of facilities, are catching up with the well-off states, as well as, this progress is taking place at a faster pace. There is convergence in access to individual household latrine facility across India states after implementation of SBM. So implementation of SBM helps in improving the share of households having toilet facility in Indian states and it also widely reduces the gap in the same between high and low income sates.

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Ethical Clearance: Not applicable

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Conflict of Interest: Nil

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Risk Factors and Triggers of Cardiovascular Events

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Abstract

Introduction: Cardiovascular events are the leading cause of mortality and disability globally. Risk factors for cardiovascular events are well established, but the factors that may precipitate the acute event are not much clear.

Aims and Objective: To identify risk factors and triggers linked to the onset of cardiovascular events.

Materials and Method A descriptive cross sectional design was adopted for assessing the risk factors and triggers of cardiovascular events amongst patients admitted in MMIMS & R Mullana, Ambala, and Haryana. Fifty patients with cardiovascular events were interviewed using a validated interview schedule.

Result: Smoking (64%), hypertension (58%), anemia (30%), diabetes (24%), alcohol consumption (22%), overweight (16%), hypercholestremia (10%) were the most common risk factor reported by the study subjects. Unusual mental stress, Heavy physical activity within a 24 hrs prior to the onset of cardiovascular events, physical injury/ Illness in last week, heavy meal consumption, sudden change in temperature were the common triggering factors identified.

Conclusion: Cardiovascular events can be prevented through refraining from risk factors and triggers by adopting lifestyle modifications.

Keywords: *Risk factors, Triggers, Cardiovascular events.*

Introduction

Ischemic heart disease and stroke are the major killer diseases and accounted for 15.2 million deaths in 2016 and have been the leading causes of death worldwide in the last fifteen years.[1]

Heart attacks and strokes are typically sudden events mainly caused by atherosclerotic blockage in the coronary and cerebral blood vessels respectively. Strokes can also be caused by rupture of cerebral vasculature resulting in intracranial haemorrhage.[2] Stroke is not only the leading cause of death globally but also one of the principal causes of disabilities in adults. The incidence of stroke has increased over time in certain countries.[3] Despite advancements in diagnosis and management over years, cardiovascular events tend to be a major public health problem.

Risk factors for Stroke and Myocardial Infarction are known, but there is less known about factors surrounding the acute event. Established risk factors for heart attacks and stroke can only partially tell the individual risk and do not foresee the timing and day of the acute event. Identification of patients with controllable risk factors

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is imperative and the avoidance of probable triggers amongst them can be very helpful in prevention of onset of cardiovascular events.

Methodology

A descriptive research design was used to ascertain the risk factors and triggers of cardiovascular events amongst fifty conscious patients admitted in MMIMS & R hospital, Mullana, Ambala, Haryana. Ethical permission was obtained from Institutional Ethical Committee [IEC-961].

The adult patients oriented to time, place and person were interviewed for collecting data regarding Sample Characteristics, Risk Factors, and Triggers using a Structured Interview Schedule within 24 hours of admission. In case, patient was not able to recall in between, help of relatives/ witness was sought. The time taken to collect the data from each patient varied from 15-20 minutes. Structured Interview Schedule developed by the researcher was used and had four sections. Section 1 & 2 comprised of demographic and clinical variables respectively. Section 3 & 4 had questions pertaining to risk factors and triggers related to onset of cardiovascular event respectively.

Risk factors included history of previous cardiovascular events, family history of cardiovascular events, history of hypertension, history of diabetes, hypercholestremia, anemia, smoking, tobacco chewing, alcohol intake. The triggers included time of onset of cardiovascular event, position, activity, smoking 2 hours before the onset of cardiovascular events, drinking 2hrs prior to occurrence of cardiovascular events, physical injury/illness within a week, faced unusual events within a month, heavy meal consumption within 24 hrs prior to onset.

The content validity of the tool was ascertained through seven experts from medical and nursing field. Content validity index (ICVI) of risk assessment sheet varied from 0.75-1 and overall content validity index (SCVI) was 0.87. Content validity index of triggers assessment sheet ranged from 0.75-1 and scale content validity index (SCVI) was 0.89. Reliability of tool was calculated by test retest method (r=.804).

Statistical Analysis: SPSS version 20 was employed to analyses the data. Data analysis was done by using descriptive and inferential statistics i.e frequency percentage and chi-square test. For the present study, the level of significance was $p \leq 0.05$.

Result

Sample Characteristics: Majority of the patients (64%) were more than 50 years of age; 36% in the age group of 35-50 years. Most (66%) of patients were male. Majority (82%) of patients was Hindu and 16% were Muslim and only 2% were Sikh. Most (64%) of patients were vegetarian. Nearly half (46%) of patients were non-literate. About 38% were employed, 32% were housewives, 22% were retired, 4% were farmer and 4% were labourer. All the patients were married. Majority (80%) of the patients belonged to middle/lower middle socio-economic status and lived in rural areas. Most (62%) of the patients were living in nuclear family.

Clinical Parameters: More than half of the patients (54%) had myocardial infarction whereas 46% of the patients had stroke. Ischemic stroke patients (91%) outnumbered the hemorrhagic stroke patients (9%). Nearly 58% of the patients were overweight and obese. Most (70%) had normal Hb followed by 30% of patients had low Hb.

Prevalence of Known Risk Factors: About 24% of patients reported prior history of stroke or myocardial infarction and majority (83.3%) of them had history within one month. Family history of stroke or myocardial infarction was reported by only 3 patients.

More than half i.e 29/50patients (58%) had history of hypertension; nearly 50% were diagnosed within a year and regular intake of antihypertensive drugs was reported by only 17 out of 29 hypertensive patients. One fourth of the patients (24%) had history of Type 2 Diabetes Mellitus; 50% were diagnosed within a year only; majorities (11/12) were complaint to the treatment. About 10% of the patients had history of hypercholestremia. None of the female patients had any history of intake of birth control pills. More than half ie 32/50 (64%) had history of smoking; 23/32 (72%) were current smokers and had been smoking more than 20 years and 11/23 current smokers used to smoke more than 15 cigarettes per day. Four out of fifty patients had history of chewing tobacco.

About 22% patients (11/50) had history of drinking alcohol; 07 were current alcoholics with duration of alcoholism more than 10 years. And more than half (57.1%) of the current alcoholics had binge drinking occasionally. None of patients were currently taking any illicit drug.

Potential Triggers Related To Onset of Cardiovascular events: One third (34%) of patients had cardiovascular event between 6am-11:59am; 22% patients had event in each of the remaining 6 hours time period. Thirty one percent of patients were in sitting position, 26% were sleeping/just awakened and 26% were lying, 8% were defecating/urinating, 6% were in standing position, one patient was busy in farming and other was climbing stairs before the occurrence of cardiovascular event. Most common posture in which cardiovascular events occurred was supine (46%), sitting (30%), squatting (12%) and standing position (12%). About one fourth (24%) of patients smoked 2 hours prior to onset of cardiovascular events and majority (83.3%) of them smoked 4-6 cigarettes. Only one of the patients consumed alcohol 2 hours prior to onset of cardiovascular events and had 2-4 pegs of alcohol. About 26% had physical injury or infection 1 week before the onset of cardiovascular event; 11 patients had fever and two had fracture. One third (34%) had taken some medicine 02 hrs prior onset of cardiovascular events; 12 reported intake of over the counter and 05 had taken prescribed medicines. Six patients (12%) had consumed heavy meal within 24 hours before the onset of cardiovascular event.

Nine patients faced unusual event in the last 24 hrs of onset of stroke; heavy physical activity(4), death in family (03), violent quarrel (02). About 11 (22%) patients were under unusual mental stress within a month prior to onset of cardiovascular events.

A significant association of smoking in 2hrs before the onset of cardiovascular event was seen with type of cardiovascular event, history of diabetes mellitus, anemia. 37% of patients with myocardial infarction had history of smoking 2hrs prior to onset of cardiovascular events as compared to 8.7% of patients with stroke (x^2=5.73; p=0.01). 31.6% of non-diabetic patients had smoked 2hrs prior to onset of cardiovascular events as compared to none of diabetic patients(x^2=4.98, p=0.02). 24% of Non-anemic patients had smoked 2 hrs prior the onset of cardiovascular events as compared to none of anemic patients (x^2=3.94; p= 0.04).

Discussion

In the study, there was one peak timing for the occurrence of stroke. In 34 % of the subjects, peak was between 6.00-11.59 a.m. Chakrabarti et al. found 52% of strokes among Indians occurred between 5-9 am.[4] Vinay et al reported two peak timings for stroke occurrence i.e 5am-9:59am (27.9%) and 3pm-7:59pm (25%). Increase in morning blood pressure[5], aggregability of platelets, blood viscosity and haematocrit may be considered as a causative factor for peak occurrence of cardiovascular events in morning.[6,7]

About one fourth (24%) of patients smoked 2 hours prior to onset of cardiovascular events and majority (83.3%) of them smoked 4-6 cigarettes. 37% of patients with myocardial infarction had history of smoking 2hrs prior to onset of cardiovascular events as compared to 8.7% of patients with stroke (x^2=5.73; p=0.01). 31.6% of non-diabetic patients had smoked 2hrs prior to onset of cardiovascular events as compared to none of diabetic patients (x^2=4.98, p=0.02). 24% of Non-anemic patients had smoked 2 hrs prior the onset of cardiovascular events as compared to none of anemic patients (x^2=3.94; p=0.04). Smoking bans are related with a rapid decline in the incidences of acute myocardial infarction pointing that cigarette smoking is an avertable precipitator of MI.[8] The risk of acute cardiovascular events is higher in the presence of risk factors like smoking, high blood pressure, high cholesterol levels, diabetes or the presence of cardiovascular disease.[9]

About 26% had physical injury/ infection 1 week before the onset of cardiovascular event; 11 patients had fever and two had fracture. A Study supports that recent respiratory symptoms are linked with higher risk of Myocardial Infarction in 1–2 weeks[10] and influenza triggers cardiovascular events.[11]

Nine patients faced unusual event in the last 24 hrs of onset of stroke; heavy physical activity (4), death in family (03), violent quarrel (02). The chances of MI were 5.9 times more (95% CI 4.6–7.7) within one hour of heavy physical work in comparison to periods of lower levels of

activity/ rest.[12] A case-crossover study on ischemic stroke found an association with anger in the two hours preceding symptoms and also exposure to negative emotions during the hazard period was associated with a high odds ratio for ischemic stroke.[13]

About 11(22%) patients were under mental stress within a month prior to onset of cardiovascular events. In another study, 31.4 % of the subjects reported experience of some extraordinary/ unusual event within 24 hours prior to the onset of stroke and unusual mental

stress was the most common unusual event reported by majority (65.9 %) of them.[14]

Six patients (12%) had consumed heavy meal within 24 hours before the onset of cardiovascular event. The relative risk of an acute cardiovascular event in the first hour after intake of heavy meals was seven times higher than the comparable hours on the previous day and four times more than estimated based on the usual frequency of heavy meal intake in the last year.[15]

The findings of the present study suggest that unusual mental stress, Heavy physical activity time of the day, injury/illness within a week prior to the occurrence of stroke, smoking among diabetes may lead to the onset of cardiovascular events. These events can be prevented through modification in life style (refraining from triggers), compliance to treatment and regular follow up.

The study has potential sources of biases which may limit the generalization of findings. The sample size was only fifty and taken through convenience sampling technique. Moreover, the data collection was limited to conscious patients only and collected through self report technique only which may introduce reporting and recall biases. Lack of control group also limits the confidence in the study findings.

Case control studies or case crossover can be undertaken on larger sample for identification of triggering factors related to onset of cardiovascular events.

Nurses have an important role in raising awareness regarding prevention of cardiovascular events and to motivate people at risk to adopt lifestyle modifications. Knowledge of the risk factors and the triggering factors related to cardiovascular events is imperative for the nurses. People having cardiovascular risk factors must be identified and educated about triggering factors.

Conclusion

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Targeting Molecular Signals of Cell Cycle and Apoptosis in Anticancer Therapy-Brief Review

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Abstract

Cancer is a disease that severely affects the human population. The metastasis process of cancer possesses interrelated rate-limiting steps. This paper aimed to provide a brief review on targeting molecular signals of cell cycles and apoptosis which is essence of anticancer therapy. Tumour growth requires a new blood vessel induced by VEGF factor. Loss of heterozygosis occurs frequently at various chromosomal loci in a variety of human cancers. It also discusses the cyclin dependent kinase(CDK)-RB-E2F axis forms the core transcriptional machinery driving cell cycle progressing dictating the timing and fidelity of genome replication and ensuring genetic material is perfectly passed throughout each cell division. Apoptosis involves the activation of caspases which is a group of cysteine proteases and an intricate cascade of process that connect the initiating stimuli to the last termination of the cell. From the review, it was inferred that to target the molecular signals of cell cycle and apoptosis. It might be therapeutic approach for anti-cancer therapy.

Keywords: *VEGF factor, Cyclin dependent kinase,anti-cancer therapy.*

Introduction

Human cancers occur globally. In 2012, 14.1 million cases of cancer were diagnosed worldwide. Among them lung cancer is most common approximately 13% of total new cases diagnosed, while second most common is breast cancer[1]; Cancer is a complicated and multiplying disease include sustaining proliferative signaling[2]. It is difficult to classify because it relies on specific biological insight instead of on methodical broad global and unbiased technique of identifying tumour subtypes[3]. A tumour is an abnormal growth of cells that serves no reason. They can create in any one of the trillions of cells in our bodies. Tumours raise and act differently, depending on whether they are cancerous (malignant), non-cancerous (benign) or precancerous[4].

Characteristics of benign and malignant neoplasm: Usually rapid growth signifies malignancy but many malignant tumours develop gradually. So that growth rate of tumour is not a reliable discriminator between good and bad actor[5]. In most of instances determination of the benign versus malignant is with remarkable accuracy by long-established clinical and anatomical criteria[6]. Differentiation refers to the extent to which neoplasms look like their parenchymal cells of origin, both morphologically and functionally[4]. Malignant neoplasm's exhibit a wide range of parenchymal cell differentiation, most of them exhibit morphologic alterations. Tumourscomposed of undifferentiated cells are called anaplastic, it is a reliable feature of malignancy. Anaplastic cell shows some morphologic feature like-Pleomorphism, hyperchromatism (dark-staining), difference in nuclear size and shapeor unusually prominent single or multiple nucleoli[7].

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Local Invasion: The growth of cancers is accompanied by progressive infiltration, invasion, and devastation of adjoining tissues, whereas most benign tumours raise as cohesive expensive masses that stay to their sites of origin[8]. There is a lack of demarcation in benign vascular neoplasm such as hemangiomas, few benign tumoursare neither encapsulated and nor discretely defined· The most reliable distinction between malignant and benign is the development of metastases and invasiveness[7].

Metastasis: Metastasis is defined by the spread of a tumour to sites that are physically irregular with the primary tumour and clearly marks as a malignant tumor[9]. Invasive property allows them to penetrate into blood vessels, lymphatic and body cavities providing opportunities for spread. There are three pathways of malignant neoplasm spread: (1) seeding within body cavities, (2) lymphatic spread, or (3) hematogenous spread[10]. Carcinomas preferred lymphatic spread, while hematogenous spread is preferred by sarcomas[11].

Precancerous Conditions: Abnormal cells without treatment may develop into cancer; these types of abnormal cells are precancerous cells. Some of these cells have mild changes that may vanish without any treatment.The precancerous condition takes long time to develop into cancer. On the basis of mild and severe changes precancerous changes can be described[12].

Hyperplasia means that in comparison to normal cells, abnormal cells are dividing and increasing rapidly[13].

Atypia means that cells are slightly atypical. Occasionally atypia may be caused by healing and inflammation but some types of atypia are precancerous[4].

Metaplasia means, Cells seem normal but they aren't the kind of cells that are usually found in that tissue or area. Metaplasia is associated with cancer so that metaplastic change is often viewed as a premalignant condition that necessitates immediate intervention. Some types of metaplasia are precancerous but not all[14].

Dysplasia is a precancerous condition. Under microscope cell appear to be abnormal in the case of dysplasia. Epithelial dysplasia of cervix (cervical intraepithelial neoplasia) consisting of an increased population of immature cells that are restricted to the mucosal surface has not invaded through the basement membrane to the deeper soft tissues[15].

Genomic Involvement: If normal genes promoting cellular growth through mutation, and are unregulated, hence they termed oncogenes. Multiple oncogenes, along with mutated genes or tumour suppressor gene will all act in concert to root cancer[16]. Proto-oncogene is a normal gene that could turn into an oncogene and involved in signal transduction and execution of mitotic signals, usually through their protein products activates mutation and it becomes a tumor-inducing agent. Proto-oncogenes are RAS, WNT,MYC,ERK and, TRK. The MYC genes codes for extensively used transcription factors[17]. Bcr-Abl genes are example of an oncogene that found on the Philadelphia chromosome. A piece of genetic material seen in chronic myelogenous Leukemia caused by the translocation of pieces of chromosome 9 and 22[18]. Bcr-Abl codes for a tyrosine kinase which is constitutively active leading to uncontrolled cell proliferation. Mutation within a proto-oncogene or within a regulatory region can cause alteration in the protein structure. That will cause an increase in protein activity and a loss of regulation[17].

Tumour growth requires the formation of new blood vessels: Newly formed blood vessels invade the tumour and nourish it. This process is called angiogenesis. Unbalanced and local over expression of small numbers of growth factors particularly VEGF-A helps in tumour vasculature induction[19]. Tumours generate six different types of a new blood vessel, that are different from the normal vasculature, organization, structure and, function[20]. Current anti-VEGF/VEGFR approaches more likely to target only a subset of angiogenic tumour blood vessels, that is, MV and GMP,that is dependent on exogenous VEGF-A[21]. Basic fibroblast growth factor(bFGF) transforming growth factor α (TGFα) and vascular endothelial growth factor (VEGF) which are secreted by many tumours, all have angiogenic properties[20]One of the mysterious aspects of angiogenesis is that a primary tumour will often secrete a substance that inhibits angiogenesis around secondary metastasis. In this case, surgical removal of the primary tumour may stimulate the growth of its metastatic second tumors[22].

Cell cycle and its checkpoints: The cell cycle is a series of events in which cellular components are doubled then cell divides and become two identical daughter cells. The cell cycle involves regulated cell growth replication and division[23]. The cell cycle encompasses four distinct phases G1(gap phase 1) S(DNA synthesis) G2(gap phase 2) and M(mitosis). Cell

cycle regulation both activation and inhibition rely on specific cell cycle checkpoints[24]. The cell cycle checkpoints controlled by the complex interplay of cyclin dependent kinase(CDK-1, -2, -4, -6,-8,-12)and cyclins (cyclin-A, -B,-D,-E). Checkpoints include the G1/S checkpoints and the G2/M checkpoint of particular significance. $P^{21}$and P^{27}functions as a regulator of the G1/S checkpoints[24]. These checkpoints are significant in the setting of DNA damage. DNA damage activates these checkpoints that force the cell to start programmed cell death, and certain the genomic integrity by repairing damaged DNA[25].

Apoptosis: Apoptosis is a distinctive and important mode of "programmed" cell death, which involves the genetically determined elimination of cells. Apoptosis is a homeostatic process occurs normally during development and aging to maintain cell population in tissues[26]. Apoptosis also occurs as in immune reaction or when cells damaged due to disease or lethal agents as a defence mechanism. Both physiological and pathological there isa wide variety of stimuli and conditions that can trigger apoptosis but not all cells will necessarily die in the response of the same stimulus[27]. Irradiation or chemotherapy results in DNA damage in a cell that can promote apoptotic death through a p53-dependent pathway. Hormones like corticosteroid may lead to apoptotic death in some cells (e.g. thymocytes)[28]. There is also the issue of distinguishing apoptosis from necrosis, two processes that can occur independently, sequentially, as well as simultaneously[25].Apoptosis is a coordinated and often energy-dependent process that involves the activation of a group of cysteine proteases called "caspases"[29].

Apoptotic Pathway: Apoptosis can be triggered by numerous types of signals and factors. These are Fas ligand tumour necrosis factor, growth factor withdrawal, viral or bacterial infection, oncogene irradiation, ceramide and,a chemotherapeutic drug. Often these signals are cell type-specific, even if these signals vary from cell to cell.The morphological changes characteristic of the apoptotic process is primarily due to the family of cysteine proteases[30] e.g. caspases that act as effectors of the cell death pathway. Their activation leads to the cleavage of specific proteins that comprise lamins, topoisomerases, DNA dependent protein kinase (DNA P/K), poly(ADP ribose) polymerase(PARP) and a little cell cycle regulators[31]. Mycs function in cell proliferation and apoptosis has been studied extensively. It was proposed that myc directly activates genes involved in proliferation and apoptosis[30]. Mitogens stimulate mycs proliferation pathway, while anti-apoptotic factors such as Bcl-2 shut down Mycs apoptotic pathway when other signals inactivate these anti-apoptotic factors Myc induces cell death[32].

Role of caspase in the regulation of apoptosis: Human caspases are divided into two groups. group I possess caspase-1, -4 & -5, that are involved in cytokine mutation,while group II caspases are involved in the regulation of apoptosis. Group II caspases can be divided into two classes: initiator and effector caspases[31]. Initiator caspases are caspase-2, -8, -9 and -10. Effector caspases are caspase-3,-6 and -7. Effector caspases are produced as dimer in cells.Initiator caspases are produced as monomeric zymogens.The Formation of multi-component complexes triggers initiator caspase dimerization enough for their activation. The death-inducing signaling complex (DISC), the apoptosome and the p53-induced protein with a death domain (PIDD) are protein assemblage platforms that can employ caspase-8/-10, -9 and -2, respectively[33]. There are two apoptotic pathways, the extrinsic receptor-mediated and intrinsic mitochondrial pathway. In the former, extracellular ligands excite receptor oligomerization and DISC gathering whereas, in the latter, proteins from the Bcl-2 family control the release of factors occupied in apoptosome formation through preservation or disruption of mitochondrial integrity. Inhibitor of apoptosis proteins repress the proteolytic activity of caspase-9 and -3[34].

CDKs in anti cancer therapy: Targeting CDKs is a major concern for anticancer therapy.Because of the frequent perturbations in human malignancy and the observation that cell cycle arrest by CDK inhibition could induce apoptosis[35].

Interphase CDKs: Interphase CDKs (mostly CDK 4 and CDK 6) and their regulators have often been found to be mutated in human cancers[35]. The causal role of alteration in tumor development is still hard to access, even though we are well aware of the over expression of these CDKs in different malignancies[34]. CDK4 and CDK6 are over expressed in several malignancies like sarcoma, glioma, breast tumors, lymphoma and, melanoma[36].

P53: One of the most important tumour suppressor protein is P53.TP53 is the most frequently mutated gene in human cancer. These mutant P53s have both lost

wild-type P53 tumoursuppressor activity and gained functions that lead to malignant progression[37]. Frame shift or nonsense mutations are responsible for the loss of P53 protein expression. However, more frequently, the tumour-associated alterations in p53 consequence in missense mutations, leading to the substitution of a single amino acid in the p53 protein that can be firmly expressed in the tumour cell[38]. These substitutions happen throughout the p53 protein, but most frequently cluster within the DNA binding region of p53, with six "hotspot" amino acids that are most frequently substituted. These mutations generally lead to diminution of the wild-type activity of p53.It becomes clear that at least some of these mutant p53 proteins originate to a more aggressive tumour profile, signifying that they have acquired a novel role in promoting malignancies[37].

Conclusion

In this review article regarding precancerous condition, metastasis, role of CDKs in cancer apoptotic pathway, Cell cycle and its checkpoints discussed in detail. The focal point in this review is to trace out the root cause of cancer and trace the effective bimolecular target as therapeutic approach for cancer. Using different prospect it is concluded that cancer is basically the abnormal uncontrolled cell growth. There are different cell check points that control cell cycle at different phases of cell cycle(G1,S, G2,M), like cycline dependent kinase(CDK-1,-2,-4,-6,-8,-12). G1 and S checkpoints are regulated by P^{21} and P^{27} function. These checkpoints are significant in setting DNA damage. DNA damaging is an important key factor for regulating cell cycle by cell checkpoints. There are deferent pathways for apoptosis like P53 dependent pathway, Fas or TNF dependent pathway, caspase and BCL-2 regulating apoptotic pathway. Caspase activity is essential for tumor suppressor functions, with the exception of caspase-8. The combined apoptotic effect is result of all caspases rather than the single-member for the prevention of tumour-genesis.

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Visual Outcome After Cataract Surgery: A Review of Literature

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Abstract

In the developed world expectations about the quality of postoperative unaided vision are high. However, the refractive outcome is not always as predicted (so called refractive surprise), and patients who had not previously required glasses for distance vision but who require them after surgery can be extremely disappointed. Procedures to deal with this eventuality are available (such as exchanging the intraocular lens or adding another one and refractive laser surgery), and these may be appropriate depending on individual circumstances. In the developing world, the impact of rapid visual rehabilitation compensates for the extra cost of the intraocular lens used in the procedure. Worldwide, cataract is the single most important cause of blindness, and the second most common cause of moderate and severe vision impairment (MSVI) according to the Global Burden of Disease, Injuries and Risk Factors Study. Cataract contributed to a worldwide 33.4% of all blindness and 18.4% of all MSVI[3]. These figures were lower in the high income countries (<15%) as compared to South and Southeast Asia (>40%)[3]. Since 1990 to 2010, the number of blind and visually impaired people due to cataract decreased by 11.4% and 20.2%, respectively, and the age consistent global prevalence of cataract related blindness and MSVI reduced by 46% and 50%, respectively[3]. During the same period, the total number of cataract surgeries more than tripled in the world and the Cataract Surgical Rate (CSR) increased in all regions, particularly in Asia, with improvement of surgical techniques and a lower rate of complications[4,5].

Keywords: *Cataract, Surgery, Outcome, Visual Acuity, Impairments, Phacoemulsification, Extra Capsular, Intra Capsular, Right, Sight, Comprehensive.*

Introduction

In 1999 "VISION 2020: The Right to Sight" is a collaborative global initiative by the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB) with the twin aims of eliminating avoidable blindness by the year 2020 and preventing the projected doubling of avoidable visual impairment[1]. The WHO GAP adopted proven measures for cataract surgical service delivery are cataract surgical rate (CSR – number of cataract surgeries performed per year per one million population) and cataract surgical coverage (proportion of people with bilateral cataract eligible for cataract surgery who have received cataract surgery in one or both eyes at 3/60 and 6/18 visual acuity level).[2]

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In India, it has also reported cataract has been reported to be responsible for 50-80% of bilateral blindness.[3,4] While cataract surgical rate (CSR) is one of the major WHO indicators (WHO recommends an ideal CSR range of 3000-5000 per year per million population to meet the need), cataract surgical coverage (CSC) measures the proportion of individuals (or eyes) with operable cataract (defined at different presenting visual acuity (VA) cut-offs <3/60, <6/60 and <6/18) who had cataract surgery.[5,6] Globally, Cataract surgery is one of the most commonly performed ophthalmic surgical procedures.[7,8] Recent decades have witnessed technological advances in cataract surgery and transition from intra capsular cataract extraction with aphakic spectacle correction to phacoemulsification and small incision cataract surgery with Intra Ocular Lens (IOL) implantation, and more recently, femtosecond laser assisted cataract surgery. However, despite all these, globally, in most developing countries, there are issues with outcomes of cataract surgeries with poor outcomes ranging from as low as 11.4% to as high as 44%. [9-24] Most of these study setting was rural, [11-13,16,17,19,23] or mix of urban and rural population, [14,15,18,20–22,24] and very few were urban.[9,10] Risk factors identified in some of these studies included increasing age, [12,15] female gender,[9,24] having no education, [15,19,18] rural residence, [14,15,17,18], operated in government sector, [15,17] having free surgery, [12,17] and presence of aphakia.[9,17,18] In India the 'camp based surgeries' gave way to 'hospital based surgeries' which resulted in better outcomes after cataract surgery, over time.[12,14] In India over 6.3 million cataract surgeries were performed during 2013–2014.[25] Being the most commonly performed surgical procedure that impacts blindness prevention strategies; several researchers have highlighted the importance of monitoring cataract outcomes [26,27]. India, owing to the large size of the country, with huge regional variations in terms of coverage and outcomes,[9,12,14,17,18,28,29] regional surveys are required for local planning of eye care services.[26] In the year 2011–12, we undertook large population based cross sectional studies using rapid assessment (RA) methodology in one urban (Vijayawada in Krishna district) and two rural locations (Khammam and Warangal district), in the south Indian state of Andhra Pradesh, among those aged 40 years and older.[41] In this review we report visual outcomes, causes of VI and risk factors for poor outcome following cataract surgery in this population. Though different outcome based studies in India had both urban and rural population,[14] only Chennai Glaucoma Study (CGS)[18] reported the urban and rural differences in outcomes. The overall prevalence was 11.8% and was comparable with some of the studies done in India[9,12,14,17,18,29] but higher than those reported from neighboring countries such as Nepal, Bangladesh and China.[10,11,16,35] Unlike, CGS, there was no difference in the prevalence of cataract surgery in urban and rural areas (11.9% versus 11.5%; p = 0.56), suggesting an increase in uptake of surgeries in rural areas too. In India, 56.3% of surgeries were done in female patients. [12,14,15,17,18,29] With increasing age was a risk factor for poor outcome and it is likely that with increasing age,[9,12,14,17,18,28,29] there are other co-existing morbidities, which could affect outcomes. The major cause of MVI in urban and rural areas was refractive error followed by posterior segment disorder in urban areas and surgery related complications in rural areas. The major cause of blindness in both urban and rural areas was posterior segment disorder uncorrected aphakia and surgery related complications.[24,29,17,18,28,29,36]

Visual Outcome in Different Studies: A study done by Harpreet Kapoor *et al.* in 1999 and 6383 eyes operated in camp. At discharge with standard aphakic spectacles, poor visual outcome (less than 6/60) was seen in 11.2% of eyes after ICCE, 11.8% of eyes after ECCE without IOL, and 5.7% of eyes after ECCE with IOL, while good vision (6/18 or better) was found in 44.5% of the eyes which underwent ECCE with IOL, 29.4% having ECCE without IOL and 21.6% having ICCE with aphakic spherical glasses.[37]

One more study done by R Anand *et al.* in 2000 in rural Punjab. Of the 428 operated eyes 45.3% gained good vision, 37.85% had low vision and 16.82% were blind. Without sufficient refractive correction only 32.7% of the operated eyes had visual acuity of 6/18 or better. Refractive correction with aphakic glasses and pinhole enabled 45.3% of the operated eyes to see 6/18 or better.[38]

Similar study done in Pakistan by A R Malik in 2003, 181 patients. The type of cataract operations they had had were ECCE in 50%, phacoemulsification in 11%, ECCE with intraocular lens (IOL) in 17% and phacoimulsification with IOL in 22%. At presentation, 49.7% had poor functional vision; after refraction 68% had a good visual outcome.[39]

In 2011, study done in Ibadan by O.O. Olawoye at. el , A total of 184 patients were enrolled for the study. 17.4% had severe visual impairment (VA <6/60 – 3/60)

while 7.1% had borderline vision (VA< 6/18 – 6/60). 1.1% presented with VA 6/18.[40]

In 2016, study done in LVPEI, Hyderabad, and 2049 were randomly selected using. The most common procedure was SICS with PCIOL (Posterior Chamber Intra Ocular Lens) 91.8%. 61.8% had good outcome and based on Based Corrected Visual Acuity (BCVA), 91.7% had good outcome. Based on Presenting Visual Acuity (PVA) and BCVA, those with less than 6/60 were only 2.9% and 1.6% respectively.[41]

As per Mohammed Seid Hussen et al.(2017), 223 cases were evaluated. Nearly, 99% of cataract-operated eyes had poor vision preoperatively (<6/60). 26.6% achieved good visual acuity (≥6/18), 28.9% of them had borderline acuity (<6/18–6/60), and the remaining of 44.5% were remained as poor visual acuity (<6/60).[42]

A study done in Ghana in 2018 by E Kobia-Acquah et al. and total 100 patients were operated. After 1 month, 21.69% had visual acuity of 6/18 or better, 48.19% had a visual acuity of 6/60 - 6/24 and 30.12% had a visual acuity worse than 6/60. Further, 22.89% had visual acuity of 6/18 or better, 48.19% had a visual acuity of 6/60 - 6/24 and 28.92% had a visual acuity worse than 6/60 after three months.[43]

Conclusion

In the developed world expectations about the quality of postoperative unaided vision are high. However, the refractive outcome is not always as predicted (so called refractive surprise), and patients who had not previously required glasses for distance vision but who require them after surgery can be extremely disappointed. Procedures to deal with this eventuality are available (such as exchanging the intraocular lens or adding another one and refractive laser surgery), and these may be appropriate depending on individual circumstances. In the developing world, the impact of rapid visual rehabilitation compensates for the extra cost of the intraocular lens used in the procedure.

Ethical Clearance: Taken from Era University Ethical research committee

Source of Funding: Self

Conflict of Interest: Nil

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New Born Care Practices in a Resettlement Colony of Delhi

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Abstract

Background: Newborn death accounts for 40% of all deaths among the under five children. Most of the newborns are born and die at home in developing country. Newborn health intervention trials at the home and community is identified as one of the key strategy to prevent most newborn death.

Objectives: The study was conducted to assess the newborn care practices and the associated factors among the mothers of resettlement colony in Delhi.

Method: Cross sectional study was conducted among mothers of newborn in an urban slum of East Delhi. Systematic random sampling method was adopted to interview 360 mothers who had live newborns under 28 days old. The data was collected using a pretested, validated and semi structured questionnaire .Appropriate statistical tests were applied.

Results: Among 360 study participants, 206(57.2%) preferred home delivery and 154(42.7%) of deliveries was conducted by skilled birth attendant. 31.1% of newborns were dried immediately. The cord was cut after the delivery of placenta among 189(52.5%) of the newborns. 85.3% of mothers something applied on the cord. 18.1% of mothers discarded colostrum. 81.9% of newborns were given prelacteal feeding. Mothers literacy, birth order, no of antenatal visits, place of delivery were significantly associated with the newborn care practices.

Conclusion: It is observed that detrimental newborn care practices were more common than the beneficial practices in the study. Understanding newborn care practices at home and community level is essential to improve existing intervention to reduce neonatal mortality.

Keywords: *Newborn care practices, neonatal mortality, thermal care, cord care, breast feeding, behavior change strategy.*

Introduction

The newborn period is defined as the first 28 days of life which is exceptionally characterized by transition from intrauterine to extrauterine life. This phase of life has the highest risk of morbidity and mortality [1] Newborn care immediately after birth is of immense importance for the proper growth and development of the baby[2]. It is reported that nearly 3 million babies die within 28 days of life [3] and a further 2.6 million stillbirths each year [4]. India contribution to the global burden of newborn deaths is higher when compared to that of maternal and under-5 deaths. India contributes 16% of global maternal death and 21% of under-5 deaths in which newborn mortality contributes to 27%. The inadequate newborn care practices immediately after the

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delivery contribute to the important cause of morbidity and mortality among the newborns[5, 6-8]. Lack of quality antenatal care, unskilled attendant during labor, inadequate thermal and cord care, colostrum avoidance, delayed initiation of breastfeeding poses the main threat to newborn survival in India. Maternal literacy, socio-economic aspects of poverty, the health status of the mother, lack of decision making, self-autonomy, no or less antenatal and postnatal visits, the poor linkage between health centers and community were found to be an unforeseen cause of both maternal and neonatal mortality [1]. The most effective measure in saving newborn especially in developing countries is focusing on household and community level where most newborn death occurs[9]

Essential newborn care (ENC) is a set of measures every newborn baby requires regardless of where it is born or its size. It is designed to protect the newborn in adverse environmental condition and is a framework that should be applied immediately after birth, continued at least for the first seven days[5]. Components of ENC and neonatal resuscitation are proven interventions for reducing neonatal mortality rate and stillbirth rate[10-12] ENC begins during pregnancy- provision of iron/ folate supplements, tetanus toxoid immunization, early identification and management of high-risk pregnancy and maternal infection which has an influence on newborn health and survival. The important strategies of ENC comprises of (a) Basic preventive newborn care such as clean delivery practices, prevention of hypothermia, eye and cord care, early initiation and exclusive breastfeeding on demand (b) Early detection of problems or danger signs (with priority for sepsis and birth asphyxia) and appropriate referral and care seeking and (c) Treatment of key problems such as sepsis and birth asphyxia [10]

Since many births and neonatal deaths take place at home, away from the reach of skilled providers, innovative community-based approaches are instantly needed to bring substantial improvement in newborn survival in India. Hence it is not possible to sustain the whole ENC strategies at the community level but feasible interventions like tetanus toxoid immunization, skilled birth attendant, warming baby, clean cord care and breastfeeding have been identified as proven interventions to save newborn lives [8].Understanding these practices at the domiciliary level can help in designing and improvising existing interventions to reduce neonatal morbidity and mortality [13]. Hence this study was carried out to assess the newborn care practices and the associated factors among the mothers of resettlement colony in Delhi.

Material and Method

A cross-sectional study was carried out among mothers of newborns residing at an urban slum of Delhi of East Delhi. Mothers who had live babies under 28 days old were included and babies with congenital malformation was excluded. Using the prevalence of early initiation of breastfeeding as 36.6% from a previous community-based study [6] conducted, the sample size was calculated to be 356. A total of 360 mothers were recruited for this study. The urban slum chosen was the field practice area of a tertiary care teaching hospital of Delhi. HMIS system has an updated list of newborns. The total population of the slum was 70501 and eligible couples comprised approximately 17.88% of the total population (i.e. n=12605). Systematic random sampling was done with every 5th house chosen and mothers with newborns were covered till sample size of 360 was arrived. As the births and deaths were regularly updated, there was no delay in carrying out the interviews.

A pretested, validated, semi-structured questionnaire in local language i.e. Hindi was used for data collection. The tool has four sections- sociodemographic details, antenatal care and delivery related services cum practices, newborn care practices, and feeding practices. The study tool was pretested with 40 mothers of neonates in a rural area and required changes had been incorporated.

The mothers recruited in the study were explained about the purpose of the study and were given a participant information sheet. The participants were interviewed at their doorsteps with the study tool.

Data entry and data analysis was done in Statistical Package for Social Sciences (SPSS IBM) version 21.0. Data validation checks were done for the data entered. Proportions and mean with standard deviation were calculated. Chi-square test was used to find a difference in proportions. A p value of <0.05 is considered significant. The study was approved by the institutional ethical committee. Confidentiality was secured at all phases of the study.

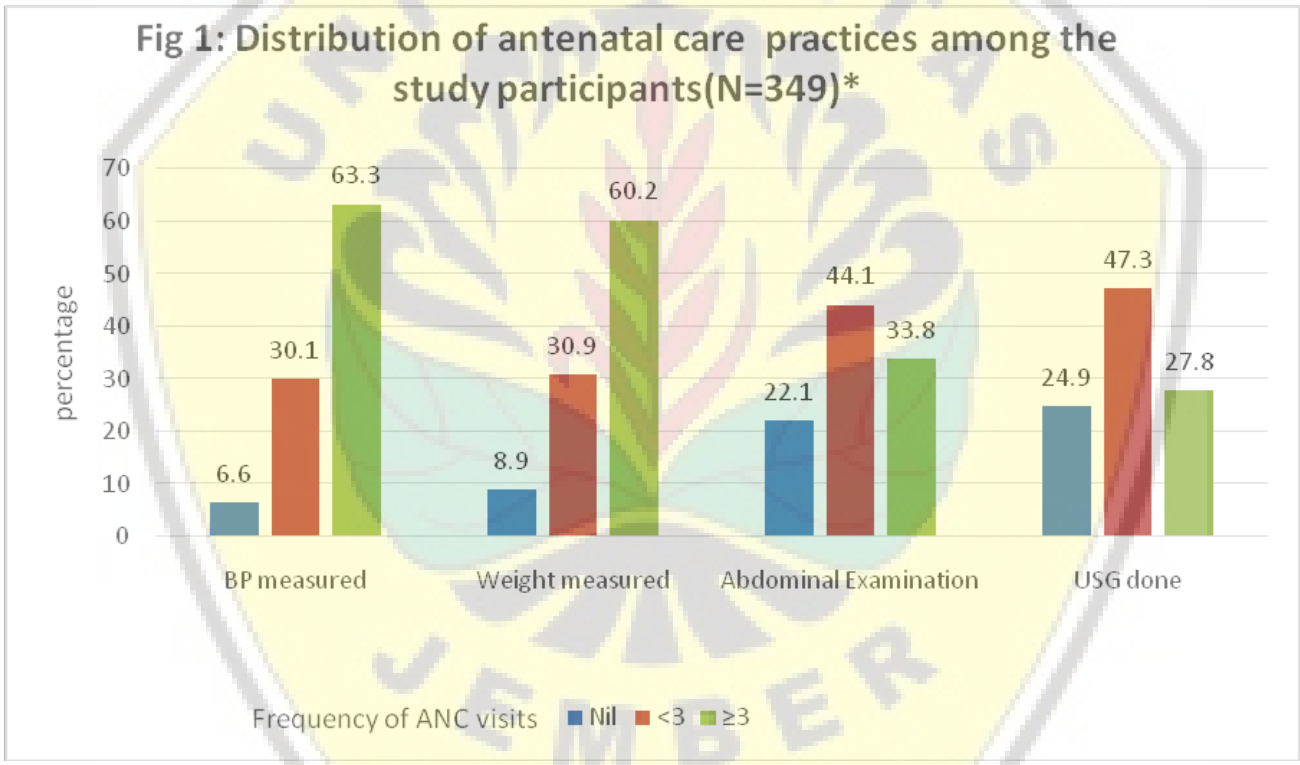
Results

The mean age of the mothers were 24.04 ± 3.69 years. Majority of the mothers were in the age group of

21-30 years. All the study participants delivered a single live baby. Among these 26.4% had given birth to first child whereas 11.7% mothers who had given birth to 5th or more child. The study included 220(61.1%) male and 140(38.9%), female babies. The sex ratio was calculated to be 637 girls born for every 1000 male babies.

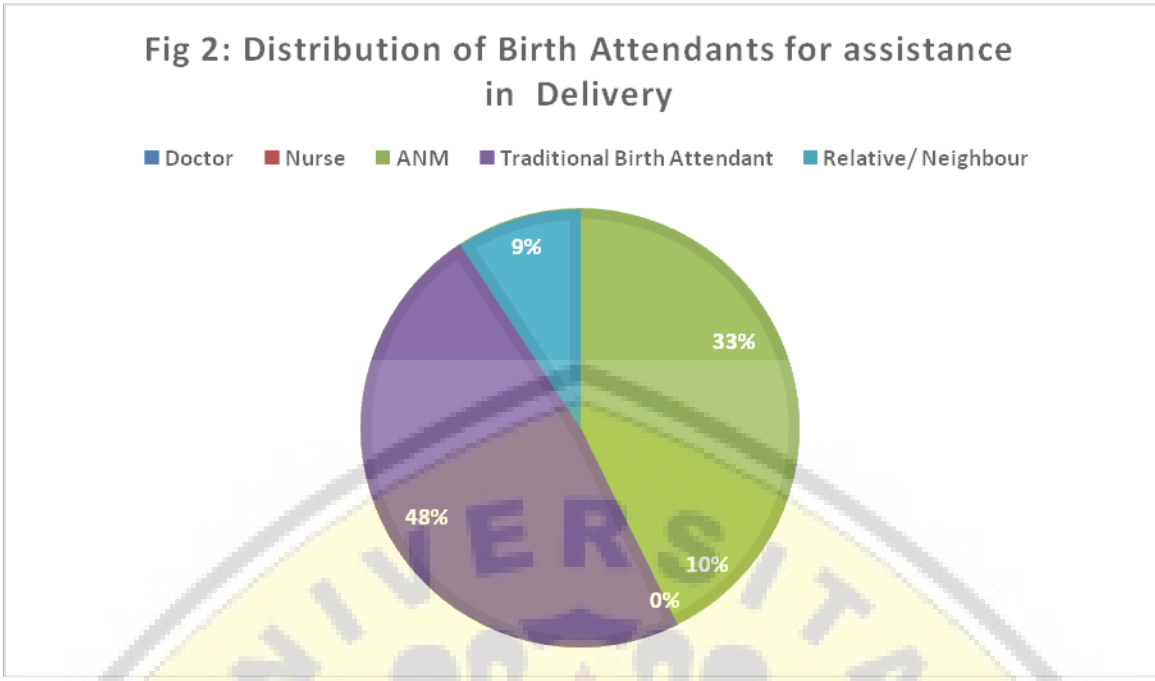
Among the study participants, 113(31.4%) women were illiterate whereas 96(26.7%) women had primary level education followed 151(20.2%) women had the education of middle school and higher level. 73.1% of the participants were of the upper lower class. 54.7% of these belonged to the nuclear family. 52.8% belong to the Muslim religion and 44.2% to Hindu religion.

Out of 360 participants 11(3.05%) did not utilize antenatal services, 61(16.9%) had <3 ANC visits and 288(80%) had ≥ 3 ANC visits.(Fig 1)197(56.44%) women consumed IFA tablets for ≥100 days while 17(4.9%) women did not receive it during their antenatal visits. Two doses of tetanus toxoid (TT) was given to 200(57.3%) women of which 54% were primigravida, 31% was the second gravida and 15% were the third gravida. On the other hand, 145(41.5%) mothers received a single dose of TT of which 68% were of ≥ 3 parity, 29% were of second parity and 3% were primigravidae. Mean estimated gestational age of the newborns was 37± 1.3 weeks.



*The eleven (11) mothers who did not have any ANC visit were excluded

Among the study participants, 206(57.2%) deliveries were conducted in the home. Only 154(42.7%) deliveries were conducted by the skilled birth attendant (doctor, nurse or Auxiliary Nurse Midwife (ANM)) and 206(57.3%) deliveries were conducted by an unskilled birth attendant (untrained traditional birth attendants (dais), family members or neighbors). (Fig. 2) Birth weight was recorded for 252(70%) newborns of which 18.5% of newborns were below 2500gms and 81.5% were above 2500gms.



The mothers were questioned regarding the time of drying of the baby after birth, out of which 190(52.8%) baby was dried after delivery of the placenta and 112(31.1%) was immediately after birth and 47(13.1%) did not know when the baby was dried. 48(13.3%) baby was kept skin to skin contact with the mother after the delivery. All the newborns, except one, were covered immediately after birth. Among 359(99.7%) of the newborns wrapped,93.1 % were wrapped in clean cloth.

The cord was cut and clamped after two minutes of birth among 8(2.2%) newborns. The cord was cut using a new shaving blade among 147(40.8%) newborns followed by scissors 98(27.2%). The most common substances applied on the cord was antibiotic powder in 141(45.9%) followed by oil in 129(42.0%) and haldi in 91(29.6%) of newborns .

Among the study participants, 140(38.9%) mothers initiated breastfeeding within one hour after the birth of the newborn. 65 (18.1%) of mothers discarded colostrum of which 50.8% of mothers considered that giving colostrum is unsafe to the baby. Majority of the mothers (81.9%) has given pre-lacteal feeding within the first three days after the birth. And the most common substances given as pre-lacteals were Janam Ghutti (60.9%), tea (9%) honey (10%), unboiled plain water (10.0%). Other substances are given as pre-lacteals included cow's milk (13.5%) and powder milk (7.0%). Janam Ghutti is an herbal preparation that is given as a bowel cleaner and during bouts of abdominal colic. Only 52(14.4%) of newborns were exclusively breastfed.

In table 1, Univariate analysis was applied on appropriate newborn care practices and antenatal and sociodemographic variables. There was a significant association between mother's literacy, birth order, number of antenatal visits and place of delivery and newborn care practices.

Table 1: Association between newborn care practices and sociodemographic & antenatal factors

S.No.	Variables	Frequency (%)	P value	χ^2
1.	Applying Nothing on the cord (N=53)			
a)	Birth order			
	>=3	35 (20)	0.005	7.56
	<3	18 (9.7)		

S.No.	Variables	Frequency (%)	P value	χ^2
b)	Mothers education			
	Middle school & above	151(25.2)		
	Primary school & Illiterate	15(7.2)	0.000	22.59
c)	Place of Delivery			
	Institutional	47(30.5)	0.000	53.49
	Home	6(2.9)		
2)	Bathing The Baby After Three Days Of Birth(N=95)			
a)	Place of Delivery			
	Institutional	81 (52.6)	0.03	4.37
	Home	14 (6.8)		
b)	ANC visits			
	>=3	85(29.5)	0.03	4.37
	<3	10(16.4)		
3)	Exclusive Breastfeeding During The Neonatal Period (N=52)			
a)	Birth Order			
	>=3	40(21.6)	0.000	15.86
	<3	12(6.9)		
b)	Place of delivery			
	Institutional	42(27.3)	0.000	35.84
	Home	10(85)		
4)	Skilled birth attendant(N=154)			
a)	Mothers education			
	Middle and above	130,(86.1)	0.000	199.35
	Primary and illiterate	24,(11.5)		
b)	ANC visits			
	>=3	140,(48.6)	0.0002	13.44
	<3	14,(22.9)		

Chi-square applied, p>0.05 is considered significant

Discussion

The present study was carried out with the objectives to determine the existing newborn care practices in a resettlement colony in East Delhi and to identify critical behaviors and barriers that influence the survival of newborns.

The study included 360 participants from resettlement colony among which 349(97%) had only one antenatal visit. This finding is consistent with Nimbalkar et al in which 94.4% of antenatal women had only one antenatal visits in the rural area and 79.9% in urban slums of Gujarat [14]. Among the study participants, 349(96.9%) women who utilized antenatal care on ≥3 occasions, the abdominal examination was done only in 33.8% of participants and ultrasound examination in 27.8% which shows that antenatal care provided was not adequate. 197(56.4%) consumed Iron and folic acid tablets for ≥100 days and 17(4.9%) women did not consume during their pregnancy. According to the National Family Health survey-4 (NFHS-4) 53.8% women in Delhi consumed iron and folic acid for 100 days which is consistent with the present study [15]. 206(57.2%) study participants preferred home delivery and 154(42.8%) institutional delivery, similar findings were reported by Rahi et al in an urban slum of Delhi (43.9%) and Meerut by Ahmad et al in urban slums of Mumbai(16.08%)[16,17]

In 73.6% of the deliveries clean instrument was used to cut the cord which is similar with findings of Baqui et al, where a clean instrument was used to cut the cord in 72.7% deliveries in rural areas of Lucknow[13]. In 115(31.9%) the cord was cut immediately after birth and

189 (52.5%) was cut after the delivery of the placenta. This is similar to the results of Kesterton et al in their study in rural Karnataka where the cord was immediately cut after the delivery [18]. The time of cutting the cord varied with the type of birth attendant at the time of delivery. The cord was cut immediately after birth in 101(65.58%) newborns delivered by skilled attendants (doctor, nurse, ANM) whereas, in the majority of deliveries conducted by unskilled personnel, the cord was cut after delivery of the placenta. Similar results were reported by Kesterton et al from rural Karnataka.[18]

A clean material was used to tie the cord in 301(86.1%) of the deliveries which are higher than the findings of the study done in urban slums of Indore by Agarwal et al [19, 20]. Among the women who were delivered by unskilled birth attendants majority used unsterile material to tie the cord compared to those delivered by skilled personnel. This is consistent with the findings of the study by Rahi et al in urban slums of Delhi where the cord was tied using a clip in all institutional deliveries and sterile thread or a clip (available in delivery kits) was used only in 28.3% home deliveries.[16]

307(85.3%) mothers applied something on the cord. This is similar to the findings of the study by Verma et al in districts of Uttar Pradesh where 83 percent of women reported applying something on the cord stump [21]. 156(50.8%) of study participants used oil/ghee in the cord stump of the newborns. Iyengar et al reported a similar finding of use of ghee or powders and ointments on the cord in a slum and urban area of Chandigarh [19,22]. Majority of study participants(30.5%)delivered by skilled attendant applied nothing on the cord stump as compared to those delivered by unskilled personnel (2.9%). This is consistent with the finding of the study by Rahi et al in urban slums of Delhi where nothing was applied to the cord in newborns born in the institution (86.1%) than those born at home (63%) [16]. The study also showed that education of the mother and delivery by the skilled birth attendant was significantly associated with cord care practices. This finding was similar to that of the study by Baqui et al in rural Lucknow where clean cord care was associated with a maternal education level of secondary school or higher and skilled birth attendance [13].

In this study almost all the newborns were dried after birth to prevent hypothermia among which 112(31.1%) of them were dried immediately after birth and 190(52.8%) of them were dried after delivery of the placenta. Baqui et al reported that in rural Uttar Pradesh 34.8% of the newborns were dried immediately after birth and before the delivery of the placenta. [13, 23]48(13.3%) practiced skin to skin contact with the newborns. A study by Waiswa et al reported that only 2% of mothers practiced skin to skin contact in a rural area [13].Delaying bath helps in preventing hypothermia and infection. In this study 100(27.8%) of newborns was bathed immediately after birth which is lower compared to Rahi et al where 82.6% of newborns were bathed immediately after birth[24] In rural Uttar Pradesh, 26% of newborns were bathed immediately after birth and 56.8% within 6 hours of birth.[13]

Initiation of breastfeeding within one hour of birth was reported by 140(38.9%) mothers and 270(75%) newborns were initiated on breastfeeding within 6 hours of birth. Similarly, early initiation of breastfeeding is reported in urban slums of Lucknow (36.6%), Unnao (5%) and Barabanki districts of Uttar Pradesh (19%) [13, 25, 26].Baqui et al reported from rural areas of Unnao and Barabanki districts a high prevalence of pre-lacteal feeding (95.8%) which is similar to the current study(81.9%)[13,26].

In this study, 18.1% of mothers avoided colostrum. The main reason for avoiding colostrum was that the mothers considered colostrum as stagnant breast milk which had accumulated during the entire period of gestation and so, according to them it could be harmful if given to the newborn. This is similar to the findings in the study by Kesterton et al in rural Karnataka,Gupta et al in urban slums of Lucknow and Mrisho et al in rural Tanzania. [18,25,27].Colostrum avoidance is higher in those mothers delivered by unskilled personnel along with a high prevalence of giving top feed when compared with the delivery conducted by skilled attendants. Differences in colostrum feeding based on the place of delivery i.e. home vs. institution had been documented by Varma et al in Uttar Pradesh where a higher percentage (79%) of women who delivered in an institution fed colostrum as compared to those delivered at home (59%) and this difference was statistically significant ($p< 0.01$).[21]

The prevalence of Exclusive breastfeeding was 14.4% subjects among the study participants which is lower than slums in Indore where Agarwal et al reported the prevalence of exclusive breastfeeding as 44.6%[20]. Early initiation of breastfeeding was more in those newborns who were delivered by skilled personnel

compared to those delivered by unskilled care providers. The differences reflect the gap in knowledge regarding correct newborn care provided by the skilled and unskilled personnel and it further stresses upon the need to involve unskilled care providers in the health system and educate them in context of essential newborn care practices

Recommendations:

1. Increasing awareness and utilization of antenatal care to form an essential component in each pregnant mother and promote institutional deliveries or deliveries by skilled personnel.
2. Community mobilization and behavior change communications if amalgamated together might promote the adoption of evidence-based newborn care practices and increased uptake of neonatal services

Conclusion

This study emphasizes the need for newborn care counseling of the mother during antenatal check-ups. Expanding skilled birth attendance can be viewed as an effective strategy to promote essential newborn care. Various behavioral change communication strategies through mass media and interpersonal education during antenatal visits could be studied for their effectiveness in changing critical behavior and barriers among the mothers and birth attendants. High-risk traditional newborn care practices need to be addressed by culturally acceptable community-based health programs to improve newborn care practices. The findings of our study underline the need for more targeted approaches to change newborn-care practices at home and community level.

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A Cross Sectional Study on Prevalence of Anemia in Children Below 5 Years, Kuthambakkam Village, Tamil Nadu

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Abstract

Background: Anemia deficiency is a significant public health problem that occurs worldwide in both developed and developing countries. Iron deficiency anaemia in children has been linked to increased childhood morbidity and impaired cognitive development and school performance. Children between 5 and 12 years of age are at a critical stage of intellectual development, and optimization of their cognitive performance during this period could have life-long benefits.

Objectives: To estimate the prevalence of anaemia among children below five years of age in Kuthambakkam village and to find the factors associated with anemia among study participants.

Material and Method: A Cross sectional study conducted among Children below 5 years of age in Kuthambakkam area. A pre-tested questionnaire, clinical examination was done to find out anemia among study subjects. The sample size calculated was 150.Dataanalysis:Proportions and chi-square was used for analysis.

Results: The prevalence of anemia was found to be 37(25.17%).

Conclusion: Measures for treating anaemia should also be strengthened; doses should be modified according to the current anaemia status of the children.

Keywords: *Anemia, Prevalence, children.*

Introduction

Anemia deficiency is a significant public health problem that occurs worldwide in both developed and developing countries. Approximately 300 million children globally had anemia in 2011.[1] and 50% of anemia cases are caused by iron deficiency.[2] Anemia is defined as a condition in which the number of red blood cells or their oxygen carrying capacity is insufficient to meet physiological needs which vary by age, sex, altitude, smoking and pregnancy status(WHO). It is a common blood disorder and is one of the major disease in India that exists in all age groups especially seen among preschool children and pregnant women.[3]

Low oxygenation of brain tissues, a consequence of anemia, may lead to impaired cognitive function, growth and psychomotor development, especially in children.[4] Infants, under 5-year-old children and pregnant women have greater susceptibility to anemia because of their increased iron requirements due to rapid body growth and expansion of red blood cells.[5]

National Anaemia Prophylaxis Programme (NAPP) has been set up in all states, the benefits have not

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yet been appreciated in the target population due to constraints like lack of operational feasibility to estimate the haemoglobin level, orientation of field workers and acceptance of the programme by the beneficiaries. According to National Family Health Survey (NFHS)-4 shows prevalence of anemia among children between 6-59 months age is 59.4% and Tamil Nadu data shows prevalence of anemia 52.3 in rural area.[6]

Anemia is associated with socio-economic, biological, environmental and nutritional factors. The prevalence of anemia within interior parts of India is unknown and due to this lack of information its necessary to conduct a study, which will be helpful in directing the resources to deficit areas,thereby to reduce prevalence of anemia by 3 percent per year among children,adolescents and women of reproductive age group (15-49 years) between 2018-2022.[7]

Objectives:

1. To estimate the prevalence of anaemia among children below five years of age in Kuthambakkam village.
2. To find the factors associated with anemia among study participants.

Methodology

A cross sectional study was conducted in Kuthambakkam village on July 2017 – September 2017. Children between 1-5 years of age were selected by using Simple Random Sampling method. The sample size of 150 children was estimated from the family folder survey details of our rural field practice area of Saveetha medical college. Using a pre-tested questionnaire socio-demographic details, and factors leading to anemia were collected by interviewing the mothers of under 5 year children. Clinical examination was done by looking for pallor at palpebral conjunctiva, nails, oral cavity and tongue to assess the prevalence of anemia in children. Children who were not present in the field at the time of data collection and those who are not willing to participate were excluded from the study. Data was entered in MS Excel.

Results

Cross-sectional study was conducted among 147 children below 5 years of age group of whom 37(25.17%) were found to be anaemic. Among 95 males ,20(21.1%) were found to be anemic and among 52 females 17(32.7%) were found to be anemic.

However no significant association was found with sex, socio-economic status, IFA consumption history and history of deworming. One third of the children are not taking or taking irregularly iron folic acid supplementation.

Table 1- Distribution of anemia among study subjects

S.No.	Characteristics	Anemia Present (%)	Anemia absent (%)	Total	Chi square	P value
1.	**Age**					
	1-3 years	19 (19.6)	78 (80.4)	97	4.719	0.030 (S)
	4-5 years	18 (36.0)	32 (64.0)	50		
2.	**Gender**					
	Male	20 (21.1)	75(78.9)	95	2.417	0.120
	Female	17 (32.7)	35(67.3)	52		
3.	**Socioeconomic status**					
	Upper Middle	10 (27.8)	26 (72.2)	36	1.970	0.579
	Lower Middle	20 (28.2)	51 (71.8)	71		
	Upper Lower	6 (19.4)	25 (80.6)	31		
	Lower	1 (11.1)	8 (88.9)	9		

Discussion

In this Cross-sectional study out of 147 children, 37(25.17%) were found to be anaemic. A study done by Sudhagandhi et al in Kancheepuram district ,results showed that 75.2% of toddlers were anaemic.[8]

A study done by Verma et al, they found that the Prevalence of anemia among male and female pre-schoolers residing in a slum of Delhi was 82.4% and 73.0% respectively.[9]

Conclusion

The Overall Prevalence was found to be lower than the national and state average. Both boys and girls were found to be anaemic. Measures for treating anaemia should also be strengthened; doses should be modified according to the current anaemia status of the children. Mothers should be informed regarding importance of IFA and iron rich food diet for the children.

Limitation: The Hemoglobin level was not estimated in this study.

Conflict of Interest: Nil

Source of Funding: Nil

Ethical Clearance: Ethical approval was obtained from the Institutional Review Board (IRB) and Institutional Ethics committee. Written informed consent was obtained from the parents of the study participants and information sheet regarding the study was given to all the participants.

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A Preliminary Investigation of Safety Matters among Secondary Health Care Nurses in Jordan

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Abstract

Researchers have characterized safety execution as an essential capacity in deciding the achievement or disappointment of an organization. While, Fatal and non-fatal occupational injuries have turned into a noteworthy worldwide concern and their outcomes to safety and health can be vigorously troubling. This preliminary examination explored the safety issues of nurses in Jordanian emergency clinics to identify potential harm factors. The study aimed to survey the occupational injuries association amidst the working time of Jordanian nurses and their vision of executive support for workplace safety. Thirty-two nurses volunteered and finished the survey — about 81% of reacting nurses some injury. Injuries from sharp devices were accounted for at 25%, trailed by sensitivity episodes risks at 18.8% and back agony related issues at 12.5%. Most of the specialists felt that an absence of top administration support and insufficient preparing were identified with work environment safety issues.

Keywords: *Safety, Occupational Injuries, Preliminary Study, Jordan, Measurement.*

Introduction

Working environment safety is vital to the ceaseless activity, survival and ideal usefulness of organizations[16,17]. Safety at working environments, work sites and crosswise over different organizational structures is basic to the general execution and corporate presence of organizations[5]. Consequently, researchers, industry specialists and significant partners have both recognized and underscored the requirement for improved safety execution pointers in organizations and related work-settings[6,7,21]. Notwithstanding this call, laborers are as yet looked with various perils that happen through substance, natural, mental and ergonomic exposures[4,13,14]. Thusly, different degrees of accidents, injuries and fatalities all of which represent different dimensions of difficulties to organizations are as yet noted in organizations as markers of poor safety execution[8].

In 2015 alone, there were 2.40 million passings because of fatal business related diseases. As indicated by the International Work Organization (ILO), current worldwide insights today demonstrate an expected yearly 2.78 million fatalities in work environments because of poor safety frameworks, the board rehearses, human-blunder factors and basic wasteful aspects. In synopsis, gauges recommend that 7,500 individuals bite the dust each day. Of this aggregate, 1,000 bite the dust from occupational injuries and 6,500 bite the dust from business related sicknesses[11]. Regarding non-fatal occupational injuries around 374 million people over the world are included yearly[14,16].

The results of these worldwide measurements are that the monetary expense of work environment accidents, injuries and fatalities are very disturbing and are a reason for worry in tending to the issues of safety in work places. As Takala et al. (2014)[24] noticed, the financial expense of safety changes somewhere in the range of 1.8% and 6.0% of the Gross Domestic Product (GDP) of different nations.

Middle East: In the Middle East and in Jordan accidents in the working environment have been of worry to researchers and industry professionals alike (Eskandari et al., 2017)[9] in light of the fact that death rates are believed to be higher than in different pieces of the world [15]. For instance, in 2006, Hämäläinen determined that fatal occupational rate per 100,000 was

20.0 in Middle East Sickle nations, when contrasted with 16.1 per 100,000 in Built up Market Economies like Europe and the US and 13.1 per 100,000 in Previous Communist Nations. Just other Asian Nations like Bangladesh, Pakistan and Thailand at 23.1 per 100,000 and sub-Sharan Africa at 21.0 per 100,000 were appraised as more [12].

Jordan: In Jordan, the health part is a dangerous working environment on account of its unpredictability and the dynamic idea of development exercises. Sadly, exact figures are hard to acquire as a decent database and sufficient method for gathering information are missing [3,7]. From an investigation that for the most part depended on government managed savings figures, the occupational fatality rate of Jordan was assessed as 25 for every 100.000 every year for the period from 1980 to 1993 [23]. Different investigations have discovered lower rates. The ILO evaluated a fatality rate of 15.6 in Jordan for 2006 and the rate was required to be about 12.0 somewhere in the range of 2008 and 2014 [7]. In an investigation of clinic confirmations from three noteworthy medical clinics utilizing information from 2008 to 2012, Al-Abdallat, Oqailan, Al Ali, Hudaid and Salameh (2015)[2] evaluated a fatality rate was 2 for every 100.000 specialists. Likewise, they explicitly noticed a 1.1% fatalities rate among Jordanian healthcare specialists versus different classes of laborers. Thinking about this situation in scientific terms, occupationally-initiated fatalities rate among Jordanian health specialists could be high in relationship to the quantity of health care laborers in Jordan.

In 2017, Mohammed Hussein, Administrator of the Arranging Advisory group of First International Jordanian Gathering for Occupational Health and Safety, said that "the international specialist demise rate has expanded in the course of recent years and is probably going to be higher in this area" [1] . These conflicting assessed rates exhibit a key trouble in inspecting the issue of working environment safety in Jordan. That is the nonappearance of relevant information for working environment damage reports, which makes concentrating the issue of work environment injuries and fatalities troublesome. As Dababneh et al. (2018)[7], noticed an "absence of a decent and refreshed database and the nonattendance of a reasonable and solid instrument for gathering, recording and investigating information, make the genuine size of business related injuries and misfortunes substantially more than what is distributed in our official reports" (p. 162).

Method

Subject and study population: The need and irregularity of information in the Jordanian setting are available in all divisions of the Jordanian economy, including healthcare. To elucidate the issue in the Jordanian healthcare setting, the scientist led a fundamental examination of few people from among the objective populace as Kanter, Tsai, Holman and Koerner (2013)[19] and Frohm, Lindström, Winroth and Stahre (2006) recommended. This starter think about was led from spring to April 2018 among 32 nurses utilizing a review. All nurses engaged with this examination were Jordanian.

Survey: A lot of the reviews were disseminated to the respondents for to pick up data from nurses about potential organizational hazard factors, saw work environment perils and damage because of danger presentation at the work environment. The review session was completed by and by to the respondents after a short introduction to assemble data from the respondents. The nurses were sufficiently educated and knew about the reason for the investigation. They were likewise made to understand that cooperation in the review was deliberate and under severe privacy.

Data analysis: This review investigated the fundamental aftereffects of nonfatal occupational damage among Jordanian nurses. Thus, the measurable examination associated with this investigation will just contain spellbinding information results. This is because of a proposal by different creators in past writing who expressed that any fundamental examination ought to be for the most part enlightening [20]. The underlying outcomes were collected from profiling information of respondent's epidemiological information including socio-statistic data, working profile, way of life, health status and injuries data.

Results

Socio-demographic data and work profile: All respondents who volunteered to take an interest in this fundamental examination were Jordanian nurses. Thirty-two overview instruments were picked up as a totally addressed Starter Investigation of Working environment Safety review.

Among the members, 65.6% were male, 34.4% female and 40.6% were between 22 to 50 years of age. The normal period of harmed specialists was around 31

years of age. The vast majority of them (43.8%) have gotten and finished formal instruction and have moved on from nursing school. Additionally, the greater part of them (96.9%) worked all day days amid the week with a normal of 8 hours per day.

Occupational Injury Information: Occupational damage data was acquired from this fundamental study of the Jordanian nurses. Of the 32 respondents, twenty-six (26) asserted that they had encountered damage in the previous three months while working in the medical clinics. The predominance rate for damage events among nurses in Jordanian medical clinics was 81.3% as appeared Table 1.

Table 1: Nurses experiencing any injury in the past 3 months

	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	26	81.3	81.3	81.3
No	6	18.8	18.8	100.0
Total	**32**	**100.0**	**100.0**	

Table 2. Socio-demographic of injured workers and types of experienced injury (n=32)

	Characteristic	Frequency	Proportion (%)
Age	22-30 years	14	43.8
	31-40 years	13	40.6
	41-50 years	5	15.6
Gender	Male	21	65.6
	Female	11	34.4
Types of injury experienced	No injury	6	18.8
	Back pain	4	12.5
	Sharp tool injury	8	25.0
	Infection	2	6.3
	Slipping	2	6.3
	Allergy Incidents	6	18.8
	Others	4	12.5

The normal reason for injuries was from needle stick and sharp device injuries (25%), hypersensitivity occurrences (18.8%) trailed by back torment (12.5%). The greater part of the laborers guaranteed that injuries were brought about by falling (6.3%) and radiation or medicine introduction (15.6%). The lower body was accounted for as the most widely recognized site influenced by injuries (12.5%). The seriousness and recurrence of non-fatal occupational damage were estimated dependent on the respondents' self-report. There was a redundancy of similar injuries at a similar three months which was demonstrated by short of what one damage events in a year. Table 2 abridges the outcomes.

Perceptions of Workplace Safety and Health: The analyst studied 32 representatives crosswise over various clinics in Jordan about their impression of safety in the work environment safety. Those things were positioned dependent on recurrence of event and the outcome is appeared as follows.

The outcomes for laborers in the Jordanian emergency clinics were frightening. Most of nurses detailed that an absence of enthusiasm for preparing nurses in crises (62.5%) was the primary danger in their work environment. About 56.3% of nurses felt that safety took a rearward sitting arrangement to their assignments and 75% trusted that safety is to a lesser extent a need at their working environment. As for the executives, 59.4% nurses announced that administration did not indicate care about the safety of nurses and that administration did just the base legally necessary to protect representatives. About 56.3% said nurses were hesitant to report safety issues. These discoveries could be utilized as a pointer that administrators and chiefs must be increasingly proactive with regards to working environment safety.

Other key findings from workers across all industries include:

- 31.3% said that the health and wellbeing of nurses was advanced at work.
- 37.5 said safety preparing is a piece of each new worker's introduction.
- 40.6% detailed everybody is associated with settling work safety issues.

Discussion

This primer examination found that pervasiveness rate of non-fatal damage events among nurses in Jordanian emergency clinics was 81.3% in a quarter of a year preceding the study and that youthful specialists had higher damage rate than the general rate. Most of specialists felt that an absence of top administration support and insufficient preparing were issues. In this way, safety preparing, safety advancement and work association of supervisors ought to be used to lessen the issues.

Conclusion

Safety execution starts with the act of safety the executives. Nurses need to see that their chiefs and friends' proprietors are proactive and care about their prosperity. Hazardous practices will in the end influence the safety levels and budgetary returns. The discoveries of this primer examination fill in as a marker for bosses and directors to be increasingly proactive with regards to working environment safety and as a spring board for a progressively total investigation. The strategy including the study instrument give a pathway and rules to a directing a future increasingly far reaching study using a bigger example.

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Outcome of Laparoscopic Assisted Endorectal Pull through Versus Trans Anal Approach in Management of Hirshsprung Disease

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Abstract

Aim of the Study: The aim of this study is to compare outcomes for infants with Hirschsprung's disease undergoing a TERPT procedure with those undergoing a laparoscopically assisted transanal pull-through (LAPT).

Method: Forty patients with Hirshsprung Disease were operated between January 2016 and January 2019 were reviewed. Twenty patietns underwent trans anal endorctalpull through TERPT while the other 20 patients underwent laparoscopic assisted pull through LAPT. Age at operation, presenting symptoms, operative time complications and degree of continence were evaluated. Bowel functions were assessed using the Cleveland Clinic Incontinence Score. Ethical procedures including obtaining informed consent were conducted in accordance with the ethical standards of the Committee on Human Experimentation of Minia University.

Results: The mean age of the patients at the time of operation were 18.9 month for the trans anal group versus 21.3 months for the laparoscopic group. The mean follow-up period was 6 month, ranging from 3 to 12 month. The rate of enterocolitis occurred in 15% of cases in trans anal group versus 30% of cases in the laparoscopic group. Constipation was found in 25% of cases of TERPT group versus 10% of cases in the LAPT group. The rates of normal continence (score 0:4) was 60% vs 50% for TERPT vs LAPT respectively while the rate of severe incontinence (score 15:20) was 20% vs 5% for TERPT vs LAPT respectivel.

Conclusion: The functional outcomes after LAPT was satisfactory in term of fecal soiling compared to trans anal approach this may be due to less pelvic dissection comared to trans anal pull through

Keywords: *TERPT, LAPT, Hirshsprung disease, Incontinence.*

Introduction

Since the first description of Harald Hirschsprung's in 1889[1]. The choice of rectal dissection technique is controversial, although the three primary options remain full-thickness dissection with end-to-end anastomosis as described by Swenson in 1948,[2] and Duhamel's retro-rectal anastomosis or Soave's extramucosal dissection which were developed later.[3],[4] During the 1980s, one-stage (primary) procedures were proposed for uncomplicated cases, thereby avoiding the morbidity associated with stoma formation.[5] In 1995, Georgeson *et al*[6] described a minimally invasive approach using laparoscopy for colonic biopsies and mobilisation, followed by transanalendorectal dissection of the rectum and coloanal anastomosis. Subsequently, laparoscopic Swenson and Duhamel-type procedures have been described.[7],[8] In 1998, De La Torre *et al* reported the first entirely transanal primary endorectal pull-through without laparoscopic assistance.[9] The transanal

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Swenson-type procedure has been reported but no case-controlled data have been published; a purely transanal Duhamel is not feasible technically.[10]

Benefits of this approach include utilisation of a single incision and the avoidance of abdominal wall scarring, with the potential for better cosmesis and reduced postoperative pain, a shorter operating time and the suitability of this technique for use in resource-poor settings which may lack equipment for laparoscopy.[11–13] Potential disadvantages regarding a totally transanal approach include the possible impact of prolonged dilation of the sphincter muscles on faecal continence,[14,15] the risk of colonic torsion and the inability to confirm the histological transition zone prior to starting mobilisation of the colon as many surgeons would change their operative approach when faced with longer segment aganglionosis.[16]

Aim of the study: The aim of this study is to compare outcomes for Patients with Hirschsprung's disease undergoing a TERPT procedure with those undergoing a laparoscopically assisted transanal pull-through (LAPT).

Patients and Method

The study included Forty patients with HD disease operated on from January 2016 to January 2019 in the department of Pediatric Surgery Minia University . Twenty patients were operated upon using (TERPT) and Twenty patients were operated using (LAPT) .

Inclusion criteria:

1. Age range from 4 month to 12 years
2. Patients suffering from Hirschsprung's disease by their clinical picture, rectal biopsy, with barium enema study.
3. Cases should not have any contra indication for surgery or laparoscopy
4. The study included infants and children with HD disease who fit for surgery.

Exclusion criteria:

1. Age for neonates and above 12 years.
2. Patients with associated co-morbidity
3. Previous surgery for Hirschsprung's disease.
4. Patients with suspected other cause of chronic constipation
5. Patients presented with enterocolitis or obstruction.
6. Patients with associated major gastrointestinal anomalies.

Preoperative evaluation: After detailed history and full physical examination, each patient underwent the proper investigations to confirm the diagnosis and assess the fitness for surgery. Consent is taken after discussing with the parents the details of the procedure, expected benefits and possible intra- and postoperative complications. Also, parents were told that the results of this study will be published, and consent for publication is taken. Detailed history was taken from all of our patients as sown in table 1.

Table 1: Presenting symptoms of patients

Presenting symptoms	Total (n=40)	TA (n=20)	LA (n=20)	P-value
Chronic Constipation	30 (75%)	17 (85%)	13 (65%)	0.14
Delayed meconium passage	28 (70%)	12 (60%)	16 (80%)	0.16
Abdominal distension	15 (37.5%)	9 (45%)	6 (30%)	0.32
Preoperative enterocolitis	17 (42.5%)	8 (40%)	9 (45%)	0.74
Neonatal bilious vomiting	4 (10%)	2 (10%)	2 (10%)	1

Rectal examination for empty collapsed rectum with absent rectal ampulla, tight anal sphincter and impacted stools. Also to exclude signs of enterocolitis. Investigations was done in the form of full laboratory investigations and radiological imaging in the form of Plain abdominal X-ray films erect and supine and unprepared (unprepared to prevent transient dilatation of the aganglionic segment) single contrast enema were done to confirm the diagnosis by revealing the "transition zone" or the funnel shaped area between the narrowed

aganglionic distal segment and the dilated ganglionic proximal segment, with special attention to the lateral views in contrast study for accurate assessment of the distal colorectal segment. Delayed X-ray film after 24 hours if transition zone is not identified. If significant barium is still present in the colon, it increases the suspicion of Hirschsprung's disease. Contrast injection was done under screen to inject a moderate amount of barium. Antero-posterior and lateral views usually taken immediately and delayed films were taken 24 hours later. Anorectalmanometry was not routinely indicated, but rather obtained based on the patient's medical history and underlying illness. Partial thickness rectal biopsy was done for all patients to confirm the diagnosis by the absence of ganglion cells in the diseased segment. These biopsies were taken under general anesthesia before the definitive procedure. Consent for surgery was conducted with the parents or guardians in attendance of the surgeons and anaesthiologist and the whole procedure, regarding preoperative preparation, medications anaesthia and preoperative and postoperative events and complications are explained and discussed.

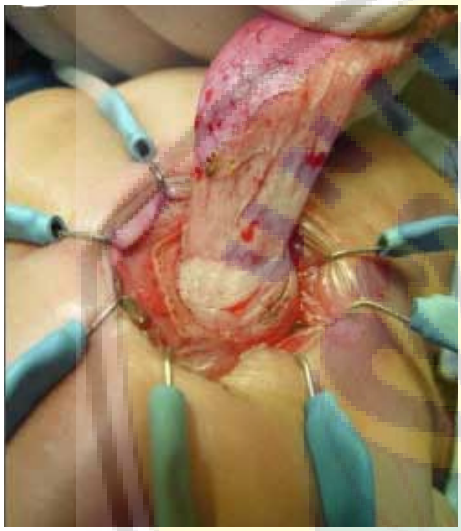

Fig 1: Transanalpull through of the colon

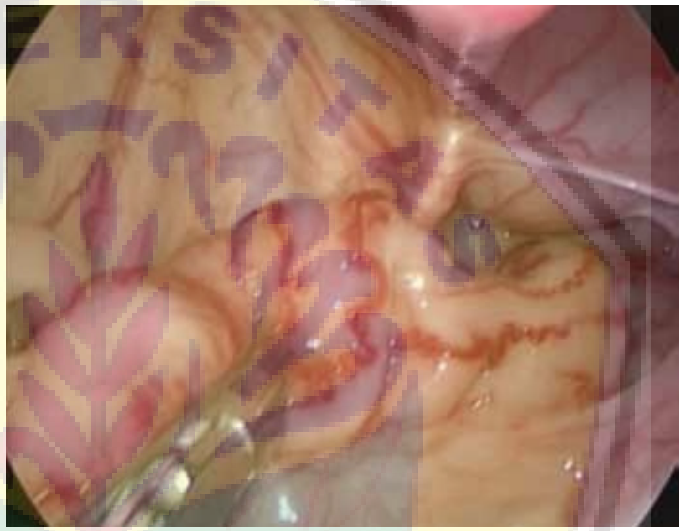

Fig 2: Inspection of the narrow and dilated segments

Results

The mean age of the patients at the time of operation were 18.9 month for the trans anal group versus 21.3 months for the laparoscopic group. Patients were reviewed retrospectively. The mean follow-up period was 6 month, ranging from 3 to 12 month.

The mean operative time was less in the trans anal group in con+trastto laparoscopic group 90 min vs 120 min respectively. The post operative hospital stay was more in trans anal group compared to the laparoscopic group 5.3 days vs 3.3 days respectively. Intraoperative bleeding occurred in only one case of LAPT group vs no cases in the trans anal group. This case was controlled laparoscopically without need to convert to open surgery. Two cases of the transanal group required laparotomy due to inadequate colon mobilization.

Regarding the early post operative complications, none of the cases in both groups developed anal stenosis after dilatation . Three cases 15% developed post operativeenterocolitis in the trans anal group while 5 cases 25% of the cases of the laparoscopic group developed this complication in the early post operative period . Bowel control was assisted for patients older than 3 years. Functional assessment was performed using the Cleveland Clinic Incontinence (CCI) score[13]. In this scoring system, the frequency of incontinence, in addition to the extent to which a person's life is altered, is evaluated using 5 questions assessing the type of incontinence (solid, liquid, gas, wears pad, lifestyle alteration). The frequency with which each type of incontinence occurs is rated on a scale from 0 (never) to 4 (always or 1/day). The frequencies are added to yield a total score, which can range from 0 to 20, with

higher scores indicating higher levels of incontinence. A good outcome was considered when the patient was continent (score 0-4) or had mild incontinence (score 5-9). Poor outcome patients were those presenting with moderate (score 10-14) or severe (score 15-20) incontinence. Regarding our results, In the trans anal group 50% had normal continence,30% of cases had mild incontinence and 20% had severe incontinence while the laparoscopic group had better outcomes regarding the degree of incontinence 70% of cases had normal bowel control,20% had mild incontinence and only 10% had severe incontinence. Episodes of constipation occurred in 25% of case in the trans anal group versus 10% of cases in the laparoscopic group. None of our cases developed abscess formation, intestinal obstruction, intestinal ischaemia, enteric fistula formation.

Discussion

Since the first reports in the late 1990s the transanal pull-through has become a popular procedure worldwide for Hirschsprung's disease management and the role of laparoscopy remains controversial.[12],[17] . Five eligible studies comparing TERPT to LAPT. In general, these studies were of low quality, featuring heterogeneity with respect to outcome assessment, limited adjustment for potential confounders and inadequate long-term follow-up. The only outcome assessed, where there was a significant difference, was duration of surgerywith two studies demonstrating a significantly shorter duration of operation time for TTERPT compared with LAPT similar to our study . This may be due to avoidance of time spent accessing the abdomen with a laparoscopically assisted procedure and concords with results from studies comparing open abdominal procedures with transanal pull-through.[18] It may be likely to be subject to a degree of case selection, it is possible that cases with shorter, less-complicated disease segments were preferentially chosen for TTERPT.

The other relevant outcomes assessed were the incidence of Hirschsprung's associated enterocolitis (HAEC) and functional gastrointestinal outcomes. We found no evidence to suggest any difference in rates of postoperative HAEC between TERPT and LAPT procedures in our study 15% versus 25% respectively while incidence of HAEC ranged from 10% to 45% across studies; this compares to a reported incidence of 5–35% from previous studies.[19],[20] The variable rates of HAEC reported may relate to inconsistent definitions between studies. Kim et al[21]used a previously validated scoring system to assess severity and utilised a Delphi score to 'further secure uniformity' of the diagnosis of HAEC. Van de Ven et al[22] also used a Delphi score to diagnose HAEC. Neither Ishikawa et al[23] or Dahal et al[24] included definitions for the diagnosis of HAEC. In our study we found that there is significant difference between both groups in terms of faecal continence. The laparoscopic group had better outcomes regarding the degree of incontinence 70% of cases had normal bowel control compared to 50% in the trans anal group while in the other studies there was no difference in rates of faecal incontinence or constipation between TTERPT and LAPT groups. of crucial importance in the assessment of incontinence and constipation is an adequate period of follow-up to allow assessment of children at an age when continence should be expected and they have gained the necessary level of maturity and communication skills to report these outcomes. Follow-up durations were variable in the four studies that assessed these outcomes. In our study we reviewed only cases that was more than 3 years similar to Kim et al[21] who restricted their analysis to infants over 3 years of age and Ishikawa et al[23] included only infants with three or more years of postoperative follow-up. Van de Ven et al[22] included all infants with follow-up longer than 3 months. Dahal et al[24] did not set a minimum follow-up period, with an age range from 6 to 171 months. In all studies, the method used to assess faecal incontinence include an element of subjectivity. In our study we used the Cleveland Clinic Incontinence (CCI) scorewhile Kim et al[21] employed a previously published parental telephone interview survey of bowel function with investigators blinded to the patient's operative arm. Ishikawa et al[23] did not detail how follow-up data were obtained. There is some evidence that bowel function following definitive surgery for Hirschsprung's disease continues to improve until adolescence.[25] In addition, Dahal et al[24] acknowledge that the decision to utilise TTERPT or LAPT depended on results of barium enema, with longer segment disease more likely to be treated with a LAPT procedure. Reliance on a contrast enema to select patients for TTERPT introduces another potential difficulty for the surgeon as recent reports suggest that 10–31% of infants have no radiologically identifiable TZ and a further 8–38% of reported TZs are discordant with the confirmed pathological length of aganglionosis.[26]

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Conflict of Interest: Nil

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Inflammatory Mechanism Evaluation between Application of Platelet-Rich Fibrin Membrane with Releasate and Amniotic Membrane in Rabbit Gingival Wound Healing

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Abstract

Background: Wound healing process is needed to restore the anatomical structure and physiological functions of the damaged tissue. The inflammatory phase in the wound healing process is characterized by the recruitment of neutrophil, macrophages and lymphocytes cells to the lesion site. Wound healing can be accelerated with PRF and amniotic membranes that can be used as dressings. These membranes have their respective strengths and weaknesses. This study aims tocomparethe inflammatory phasein the healing process of open wounds after the application of these two membranes.

Method: The subject of this study consisted of 36 males *Oryctolagus cuniculus* which, given a wound to the labial gingival of mandibular central incisors with deepitelization method. Subjects were divided into group I which applied to the PRF releasate membrane, group II, which applied with amniotic membrane and group III which not applied with both membranes. Three subjects were decapitated from each group on the 1st, 3 rd, 5th and 7th day. The number of neutrophils, macrophages and lymphocyte cells were observed with a light microscope equipped with Optilab Viewer software, then calculated and analyzed by two-way ANOVA test followed by the LSD Post Hoc test.

Results: The data of the average number of neutrophil, macrophage and lymphocyte were analyzed and shows the difference in the number of neutrophil between each group were significantly different ($p<0.05$). It also shows that the difference in the number of macrophages between the membrane groups and control group was significantly different ($p <0.05$), but the number of macrophages between group the membrane groups was not significantly different ($p >0.05$). Lastly, it shows the difference in the number of lymphocytes between each group were significantly different ($p <0.05$).

Conclusion: Growth factors contained in amniotic membrane and PRF membrane release can suppress inflammatory cells, so the inflammatory phase takes place faster than physiologically.

Keywords: *Neutrophils, macrophages, lymphocytes, PRF, releasate amniotic.*

Introduction

Wounds are the normal structure of the skin and its supporters that were damaged[1]. Surgery can cause damage to the epithelium which causes open wounds[2]. The presence of wounds will make the tissue respond by holding a wound healing process. Gingival wound healing has the same stage as skin wounds healing[3]. The wound healing process is needed to restore the anatomical structure and physiological functions of the damaged

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tissue[4]. The wound healing process were hemostasis phase, inflammation phase, proliferation phase and maturation phase[5]. Migration of inflammatory cells such as neutrophils, macrophages and lymphocytes occurs in the inflammatory phase, where the cells have their respective roles in the wound healing process. Healing of open wounds is relatively slow due to epithelial loss, thus a dressing is usually addedto cover the wound so that postoperative complications do not occur while keeping the physiological healing process[6-7].

Biological membranes can be used as post-surgical dressing both in close and open wounds. Amniotic membranes have been shown to provide better wound healing after vestibuloplasty and gingival depigmentation. This membrane has the advantage of fulfilling ethical rules, is easy to obtain and contains factors that can accelerate wound healing. However, it has weakness in a clinical application such as thin and fragile so it is difficult to apply[8]. Another clinically proven membrane that can accelerate wound healing is the PRF membrane. This membrane comes from the patient's own blood and ashes relatively simple tools and materials [9]. PRF contains many growth factors that can help the wound healing process[10]. Growth factor contained by this membrane were such as PDGF, TGF-β and many more [11]. However, this membrane has limitations on the number obtained[12].

PRF membranes releasate and amniotic membranes have their advantages and disadvantages. Both membranes have also been shown to increase clinical gingival thickness. However, research on the differences in the inflammatory phase of wound healing after the application of these two membranes is still very limited. This study aims to determine the differences in the healing process of open wounds in the inflammatory phase after the application of these two membranes. Knowledge of this mechanism is expected to be useful as a material consideration for choosing the right dressing to be applied after surgery to open wounds.

Materials and Method

Materials: Oryctolagus cuniculus (LPPT-UGM, Indonesia), 4x4 mm amnion membrane (Batan Research Tissue Bank, Indonesia), ketamine hydrochloride (Kepro B. V, Holland) alcohol (One Med, Indonesia), 10% formalin buffer (Medis, Indonesia), xylene (Interchemie, Holland), paraffin (Medis, Indonesia), hematoxylin-eosin (HE, Merck, Germany), blue nylon no. 06 (Ailee, Korea), saline (Widathra Bhakti, Indonesia), centrifugator (MPW Med Instruments, Poland), light microscope (Nikon, Japan), platelet-rich fibrin (PRF) box (Osung, USA), dental loop, scalpel (Dentika, USA), needle holder (William, UK), eppendorf (Eppendorf, Germany), tweezers (dentika, USA), injection syringes (Terumo, Japan), glass slides and glass cover slides (Sigma-Aldrich, USA), microtoms (Rotary microtome, China), digital scales (Metler, USA), sonde, probes (William, UK), scissors (Dentika, USA), bent (Kurashiki, Japan), calipers (Tricle Brand, China), glass plate (Misumi, Japan), staining jar (Kilner, USA), waterbath (Huber, India), freezer (Hitachii, Japan).

Method

Preparation of experimental animals: The study was conducted using 36 Oryctolagus cuniculus rabbits divided into 3 groups, namely the application of membrane platelet-rich fibrin (PRF) with releasate amniotic membrane application group and negative or untreated control group. Each group consisted of 12 rabbits which were further divided into 4 groups according to decapitation days, namely days 1, 3, 5 and 7 after injury. The animal is trying to be adapted for 1 week before being given treatment.

Making platelet-rich fibrin (PRF) membranes and releasate: The blood used for making platelet-rich fibrin is taken from rabbit ear veins. Rabbit ear veins are dilated using xyelene. Taking 3 ml of blood is done using an injection syringe and inserted into eppendorf. The blood obtained was centrifuged at a speed of 2700 rpm for 12 minutes to form 3 layers, namely: plasma in the uppermost layer, platelet-rich fibrin in the middle layer and red blood cells in the lowest layer. Platelet-rich fibrin was taken using sterile tweezers and compressed using the PRF box for 5 minutes to form a stronger and more stable membrane and to provide a liquid or releasate by product. The PRF membrane is left submerged in releasate a few moments before it is applied.

Try Animal Injuries: The animals were anesthetized first by injecting ketamine hydrochloride and xyla fluids intramuscularly in the groin of the study subjects at a dose of 25 mg/KgBB. Injuries to the labial gingival area were performed using a deepitelization procedure in the labial gingiva of Oryctolagus cuniculus with a length of 4 mm and a width of 4 mm after anesthetized research subjects. The depth of the wound is controlled using a dental loop.

Giving treatment to experimental animals: Treatment in experimental animals is given according to the group of experimental animals. One layer of the amnion membrane with a width of one layer and releasate membrane PRF membrane was applied to the wound area of each group, then sutured using blue nylon no. 06. The negative control group was not applied to the amniotic membrane or PRF membrane with releasate.

Making histological preparations: Rabbits were decapitated on days 1, 3, 5 and 7. The tissue taken was fixed with a 10% formalin buffer solution, then histological preparations were made using hematoxylin-eosin staining technique.

Interpretation of results and data analysis: Calculation of the number of neutrophils, macrophages and lymphocytesin the connective tissue around the wound was carried out in 5 visual fields using a light microscope with 400x magnification. Observations were made by 3 observers with a double blind method. The results of the observation data are normality and homogeneity test, followed by two-way ANOVA and Post Hoc test using the LSD (Least Significant Difference).

Results

The number of neutrophils in the connective tissue around the wound were performed as seen in figure 1.

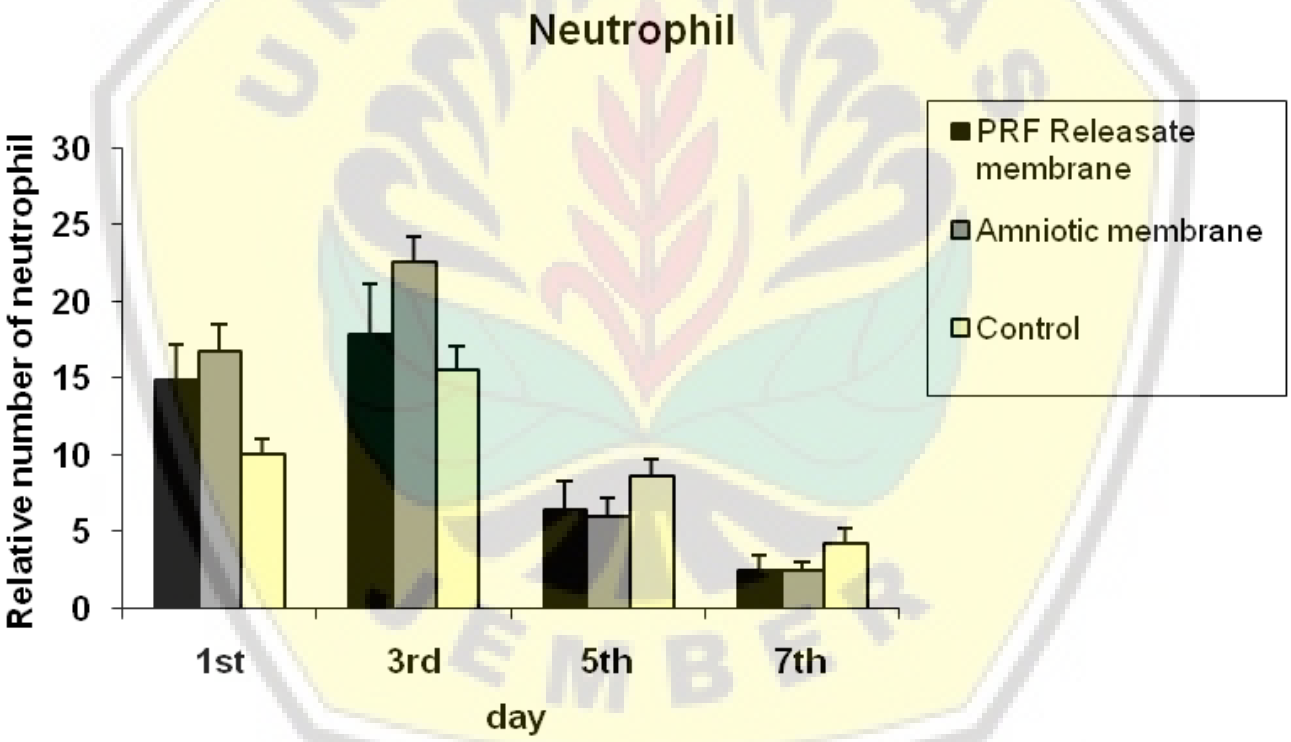

Figure 1: Relative number of neutrophils in the various days on PRF releasate membrane amniotic membrane and control (*, P<0.05, Anova two-way).

Based on figure 1, the number of neutrophil in each group increased from the first day to 3th day when they reached their peak with the number of neutrophil in group I and II were higher than group III and group I was lower than group II, then they were decreased on the 5th day until 7th day.

The relative numbers of macrophages in the connective tissue around the wound were confirmed as shown in figure 2.

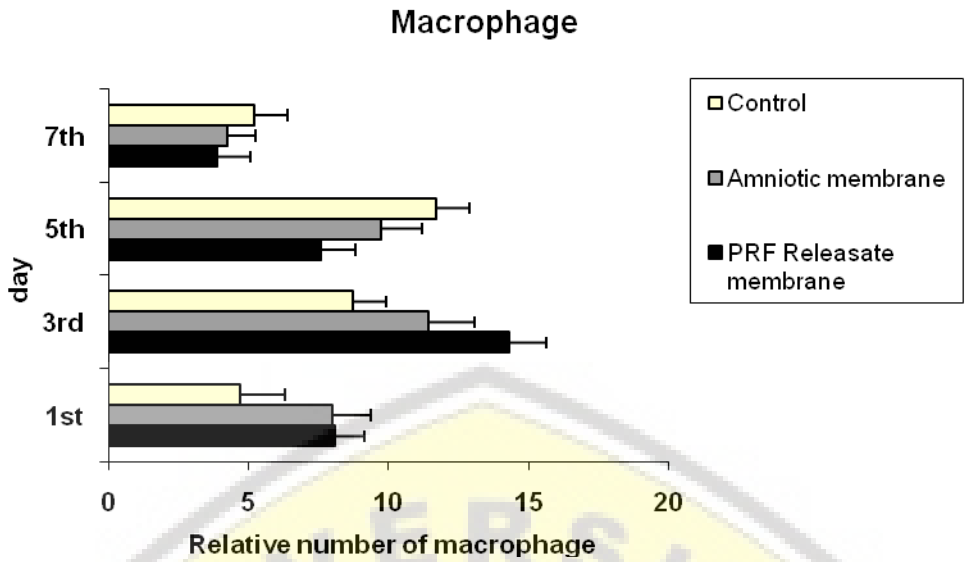

Figure 2. Relative number of macrophages in the various days on PRF releasate membrane amniotic membrane and control (*, P<0.05, Anova two-way).

Data in figure 2 shows the number of macrophages in group III increased from the 1st day and reached their peak on the 5th day, then decreased until 7th day, meanwhile group I and II increased from the 1st day and reached their peak on the 3 rd day then decreased until the 7th day. The group I and II reached the peak faster than the group III, with the number of macrophages in the group I was higher than group II on their peak day.

The relative numbers of lymphocytes in the connective tissue around the wound were confirmed as shown in figure 3. The number of lymphocytes in group III increased from the 1st day until the 7th day and reached their peak on last day, meanwhile group I and II increased from the 1st day and reached their peak on the 5th day then decreased until the 7th day. The group I and II reached the peak faster than the group III, with the number of macrophages in the group I was higher than group II on their peak day.

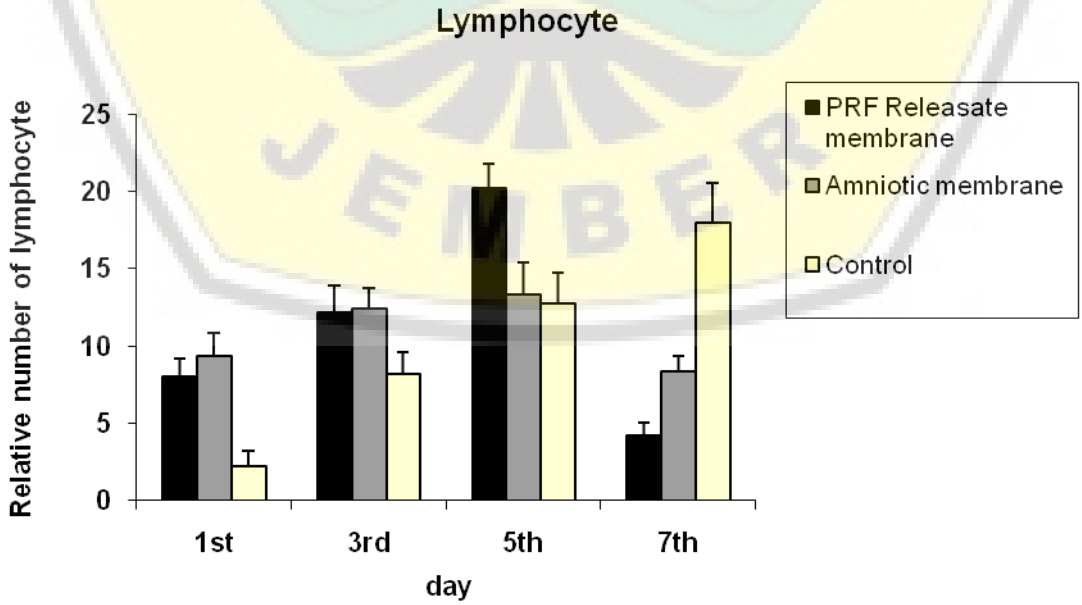

Figure 3. Relative number of lymphocytes in various days on PRF releasate membrane amniotic membrane and control. (*, P<0.05, Anova two-way).

The normality test with Saphiro Wilk and homogeneity test with Kolmogorov-Smirnov were examined. They showed the average number of neutrophil, macrophage and lymphocyte in each group was normally distributed and homogeneously. The Post Hoc LSD test shows the significant difference in the number of neutrophil and lymphocyte between each group ($p < 0.05$). Furthermore, the number of macrophages between the membrane groups and control group was significantly different ($p < 0.05$).

Discussion

PRF membrane releasateis a membrane from autologous blood that has been centrifuged without additional materials, so this membrane will be accepted by the body easier than amniotic membrane, while amniotic membrane is a membrane made of fluid from the deepest layer of the placenta and have functioned as an allograft material[8,13-14]. The body's acceptance to PRF membrane releasate is better than amniotic membrane, so it can suppress the inflammatory process. The inflammatory process that can be suppressed makes neutrophil counts in the PRF membrane releasate group lower than the amniotic membrane group on the 1st and 3rd days where these days are the time for neutrophils to work optimally. Neutrophils are the first inflammation cell that migrates to the injured area to do phagocytosis[4]. Some growth factors can trigger chemotactic and migration of neutrophils, so that at the beginning of the inflammatory phase neutrophil counts are higher in the treatment group than physiologically. In a previous study, it was known that the amniotic membrane contains TGF-β and b-FGF, while PRF membrane releasate contain TGF-β and VEGF[8, 15-17]. The workings of growth factors contained in these two membranes caused the difference in neutrophil counts. Neutrophils induce a rapid and sustained suppression of NF-κB signalling in the macrophage through a unique regulatory relationship[18]. Neutrophil counts in the PRF membrane releasate group show higher than the control group that neutrophils in the PRF membrane releasate group could call for more macrophage cells, whereas neutrophil counts in the PRF membrane releasate group is lower than in the amniotic membrane group showed that although fewer neutrophils appeared, but signaling to cell macrophages were more effective in the PRF membrane releasate group than in the amniotic membrane group.

Like neutrophils, macrophages that appear in the wound area are responsible for continuing phagocytosis and securing several growth factors activation of keratinocytes, fibroblasts and endothelium[4]. Recruitment of macrophages to the wound area can be triggered by growth factors, such as TGF-β and PDGF[4]. Amniotic membrane contains several growth factors and one of them is TGF-β[16]. PRF membrane themselves contains inflammatory mediators and growth factors, such as TGF-β, PDGF, VEGF and glycoproteins[15]. In addition, there is also a relationship between neutrophils and macrophages, so that on the 3 rd day the average number of macrophages from the PRF membrane releasate group and the amniotic membranes group reached their peak. This is probably due to the number of neutrophils in the membranes group are greater than the control group, so that the number of macrophage cells was more recruited to the wound area and neutrophils in the PRF membrane releasate group are more effective in giving signals to macrophage cells. Meanwhile the control group just reached its peak on the 5th day, whereas on the same day the number of macrophages in the PRF membrane releasate group and amniotic membranes had decreased. This shows that PRF membrane releasateis more effective in suppressing and accelerating inflammatory processes.

Lymphocytes which are the last inflammatory cells entering thewound area. Lymphocytes play a role in environmental regulation around lesions through the production of extracellular matrix scaffolding and collagen remodeling[3]. Lymphocytes also play a role in killing infected antigens and cells[19]. Lymphocytes reach the peak on the fifth day for the amniotic membrane and PRF membrane releasate group. This can occur because on the fifth day after injury the average number of macrophages has reached the peak. Macrophages themselves have a role in securing several cytokines such as IL-1β, IL-4 and IL-6[20]. IL-1β, IL-4 and IL-6 play a role in lymphocyte cell recruitment[21]. Some cytokines secreted by macrophages can support the proliferation and recruitment of lymphocytes in the lesion area so that when the number of macrophages increases, the number of cytokines also increases and results in increased lymphocyte counts and reaching the peak. On the seventh day, the mean number of lymphocytes showed a decrease in the PRF membrane releasate group and the amniotic membrane group, while in the control group it still increased and only reached its peak. A decrease in the number of lymphocytes on the seventh day is likely due to the apoptosis process. PRF membrane releasate

contain FGF and VEGF, which trigger the wound healing process to immediate reach the proliferation phase[22-24]. Inflammatory cells that have no role in the healing process of wounds, such as lymphocytes, will be eliminated by the process of apoptosis so that inflammation will soon end. So, the inflammatory process in the PRF membrane releasate group will end faster.

Conclusion

Growth factors contained in amniotic membrane and PRF membrane releasate can suppress inflammatory cells, so the inflammatory phase takes place faster than physiologically. This aims to prevent the delay in the wound healing process due to excessive inflammatory reactions.

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Clinical Presentations and Surgical Management of Hepatic Hydatid Cyst: Ten Years' Experience in Three Teaching Hospitals in Egypt and Yemen

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Abstract

Objective: The aim of this study is to review our ten years' experience regarding diagnosis, management of hepatic hydatid disease

Method: Retrospective review of all patients who underwent surgical treatment of hepatic hydatid cyst at Alwehdah Teaching hospital and Alkwait teaching hospital in Yemen and Kasralainy teaching hospital in Egypt from March 2008 till February 2019. One hundred and forty-five patients of either sex were included in the study. Reviewing their pre-operative clinical presentations, biochemical and radiological findings, surgical options, post-operative complications.

Results: A total of 145 patients were included, 102 (70.3%) men and 43 (29.7%) women with a mean age 40.75 years (range 24- 57 years). The presenting signs or symptoms leading to the diagnosis of hepatic hydatid cyst were: jaundice (10 cases, 6.9%), abdominal pain (28 cases, 19.3%), gastrointestinal discomfort of the upper abdomen (e.g. nausea, vomiting, distention, anorexia) (20 cases, 13.8%), palpable right hypochondrial mass (21 cases,14.5%). There were two mortalities (1.4%). Biliary fistula, pleural effusion and infection of the residual cavity were the major complications which represent (4.8%, 3.5%, 10.3%) respectively. Recurrence was seen in six patients (4.1%), three of them underwent resection, the other three were treated conservatively by long term albendazole.

Conclusion: Hydatid cyst of the liver is frequently asymptomatic and diagnosed incidentally during investigation for other abdominal pathology. Right hypochondrial pain and palpable mass were the most common presentations.

Pericystectomy and hepatic resection are associated with lower risk of recurrence but a higher rate of complications including biliary fistula and pleural effusion.

Keywords: *Hydatid disease, Pericystectomy, Echinococosis.*

Introduction

Hydatidosis is a zoonotic infection caused by a tapeworm. Of the various species, Echinococcus granulosus and E. multilocularis cause disease in humans. While dogs are the definitive hosts, humans are accidental intermediate hosts. Infection is acquired by ingestion of parasitic eggs released in the feces of the infected definitive host. On accidental ingestion by the

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intermediate host, the eggs hatch and migrate to different tissues to form a multilayered cyst which is termed as primary echinococcosis.[1,2] Hydatid cysts are common in countries with agricultural areas,including North Africa, Spain and Portugal, Middle East, and Australia.[3-5]

Hydatid cysts can develop in any organ of the body, but are most frequently seen in the liver (60%-70%) and lungs (20%-30%).[6-8] The cysts grow about 1-30 mm in diameter yearly. Daughter cysts can develop inside the primary ones. The host isolates itself from the parasite by a connective tissue capsule (peri-cystic reaction).[9] The peri-cyst is important for surgical management, as leaving the peri-cyst in situ and removing the content of the cavity is a well documented and accepted surgical technique.[10]

Several modalities of treatments have been described to treat hydatid disease of the liver. Medical therapy alone is insufficient to cure the disease, although stabilization of disease have been reported with albendazole alone or in combination with other antiparasitic drugs like praziquantal.[11-13]

The physical characteristics and the location of the hydatid cysts, together with the general status of the patient, will guide the indications and type of surgery.[14,15]

We express our ten years' experience, reporting the various clinical presentations of the disease and evaluating the clinical outcome of patients who underwent surgical treatment of hepatic hydatid cyst.

Patients and Method

This retrospective analysis was conducted, reviewing all patients who underwent surgical treatment of liver Hydatid cyst at Alwehdah Teaching hospital and Alkwait teaching hospital in Yemen and Kasralainy teaching hospital in Egypt from March 2008 till February 2019. One hundred and forty-five patients were included in the study. These patients belonged to different parts of Yemen and Egypt. Patients with extra-abdominal involvement were excluded from the study. Similarly, patients with previous history of abdominal surgery, other hepato-billiary conditions like liver abscess, gallstones and obstructive jaundice were also excluded if these conditions were attributed to another cause. Cases of systemic illnesses like hypertension and diabetes mellitus were also not included.

All patients have been evaluated clinically, biochemically and radiologically before surgical intervention.

Pre-operative investigations included full blood counts, liver function tests, viral profile, blood sugar, blood urea, chest x-ray (P.A view), abdominal ultrasound, abdominal CT scan. Thoracic CT scan was performed in selected cases. All patients were admitted one day before surgery and one unit of cross matched blood was arranged in selected cases. An informed consent was taken in all cases.

Right subcostal incision was used in all cases for exposure of hydatid cyst of liver. For peripheral cysts radical excision was performed. The cyst was removed including the peri-cyst to avoid spillage of the hydatid fluid. For deep cysts, drainage with partial or total cystectomy was preferred.

The operative site was protected with gauzes soaked with H_2O_2 or povidone iodine. The residual cavity was soaked with a scolicidal agent: hypertonic saline solution (10-15%), H_2O_2 or povidone iodine. The peri-cyst was cleaned with removal of any daughter cysts found in the peri-cyst. Any communications with the biliary tree were ligated. Residual cavities were packed with omental flaps (Omentoplasty).

Any suspicion of intra-biliary rupture, the common bile duct was explored and intra-operative cholangiography was done.

A dose of albendazole 15 mg/kg/d for a period of few months was administered to all patients who had residual disease or had suspected peritoneal spillage.

Demographic data, clinical presentation, anatomical sites of the cysts, operative details, any reported postoperative complications and follow-up results were recorded and statistically analysed.

The statistical analysis relied on proportions and utilized common descriptive techniques. Summary statistics for these factors are presented as frequency and percentage. Follow-up was performed by clinic visits and ultrasonography was done when appropriate.

Results

A total of 145 patients were included, 102 (70.3%) men and 43 (29.7%) women with a mean age 40.75 years (range 24- 57 years). The presenting signs or symptoms leading to the diagnosis of liver hydatid cyst

are illustrated in table one. Jaundice was present in ten patients representing 6.9%. Abdominal pain represented 19.3%. The disease was diagnosed incidentally in 61 cases. Cysts were located on the right lobe in 93 patients (64.1%) and on the left lobe in 52 patients (35.9%) . Drainage with total or partial cystectomy was performed in 90 cases (62.1%), while a total peri-cystectomy was performed in 50 cases (34.5%) and partial hepatectomy was performed in 5 cases (3.45%).

The early postoperative course was totally uneventful in 115 (79.3%) patients. Overall complications were 20.7%. Bile leakage occurred in 7 patient (4.8%) and gradually subsided in three patients and ERCP with sphincterotomy was indicated in the remaining four patients with bile leakage. Suppuration and abscess formation in the residual cavity occurred in three patients (2.1%), who were reoperated for drainage of the abscess. One of the three patients developed septic shock and died. Five patients developed atelectasis and pleural effusion (3.5%) and were managed conservatively. Fifteen patients developed primary wound infections (10.3%) and were treated with drainage and antibiotics (Table 2). The mean hospital stay was 16.8 days.

There were two mortalities (1.4%). One died in the first week post operatively due to sepsis and the other one died three months post-operatively, due to acute hepatic failure, which was attributed to albendazole toxicity. Recurrence was seen in six patients (4.1%), three of them underwent resection, the other three were treated conservatively by long term albendazole.

Table (1): Clinical presentation of liver hydatidosis

Clinical presentation	Number (%)
Diagnosed incidentally	61(42.1%)
Abdominal pain	28 (19.3%)
Right hypochondrial mass	21(14.5%)
Gastrointestinal discomfort	20 (13.8%)
Jaundice	10(6.9%)
portal hypertension	5(3.4%)

Table (2): Complications following surgical treatment of liver hydatid cyst.

Complication	Number
Bile leakage	7 (4.8%)
Suppuration/residual cavity	3 (2.1%)
Atelectasis and pleural effusion	5 (3.5%)
primary wound infections	15 (10.3%)

Discussion

Hepatic hydatid cyst is still an endemic health problem in Yemen, as in some other areas of the world specially the Mediterranean area. Hepatic hydatidosis should be included in the differential diagnosis in case of incidental liver cyst.

Hydatid cyst of the liver usually remains asymptomatic and commonly diagnosed incidentally. The most common symptom is right upper quadrant and/ or epigastric pain.[16]

While Pain in the epigastrium and/or the right hypochondrium was the most common finding representing (19.3%) of patients in our study, the most common finding was a palpable mass which represented (14.5%) of the study.

The reported diagnostic sensitivity of ultrasound and CT scan is 96-96% and 100% respectively.[17,18] In the current study, the main diagnostic modalities employed were abdominal ultrasound and CT scans in all cases and had diagnostic accuracy of 100%.

The management of hepatic hydatid differs depending on different factors such as; the stage, localization, size, complications of the cysts, and the surgeon's preference. Surgical intervention remains the gold standard option.

The aim of surgical intervention is to inactivate the parasite, to drain the cystic fluid along with removal of the germinal layer, to prevent peritoneal implantation with scolices, to ligate any biliary communication and to manage any residual cavities, which can be done uneventfully in more than 85% of patients.[19]

There is, however, considerable disagreement about the preferred surgical technique. The major issue of debate is whether complete removal of the peri-cyst is necessary to cure the disease properly and thus whether conservative or radical procedures should be favored.[20,21]

The modalities of surgery including conservative and radical treatment can influence outcomes of the hydatid cyst of the liver.[22,23]

Some surgeons favour radical peri-cystectomy or hepatectomy, and some surgeons especially in endemic areas prefer more conservative approaches.[24-26] Two retrospective non-comparative studies concluded that radical treatment have decreased morbidity.[27,28] The

only prospective comparative study was reported by Tasev et al., who compared 102 patients undergoing radical surgery with 250 patients undergoing conservative surgical procedures.[29] They concluded that radical surgical procedures were associated with lower postoperative morbidity and mortality rates and a shorter postoperative hospital stay. However, these procedures were performed more frequently for hydatid cysts located in the left hepatic lobe. In another study, Birnermaun concluded that hepatic resection of the hydatid cyst did not increase surgical morbidity.[30]

Schmidt-Matthiesen et al. reported a comparative retrospective study and concluded that conservative procedures were preferable to peri-cystectomy which had the higher morbidity.[31] Other authors reported no difference between the two procedures.

We agreed with Dziri et al. that the radical procedures including peri-cystectomy and hepatic resection increase the operative risk of a benign disease.[16] However, these procedures were associated with a lower risk of recurrence. The conservative procedures were safer and easier to perform, although the morbidity was more prevalent.[16]

Baraket, O et al. stated that the post-operative overall morbidity rate was 26.6% in his study which include 120 patients,compared to our study in which the overall morbidity was 20.7%.[16]

The specific morbidity observed after surgical treatment of the hydatid cyst of the liver was variable. The most frequently encountered complications were postoperative biliary fistulas and abcess formation in the residual cavity.[16,33] In our study, biliary fistula, pleural effusion and infection of the residual cavity were the major complications representing (4.8%, 3.5%, 10.3%) respectively.

We agreed with Aktan and Yalin who reported in a prospective comparative nonrandomized study that included 70 patients that albendazole was effective in decreasing the viability of liver hydatid cysts when given for 3 weeks before operation, as albendazole has showed decreased incidence of recurrence in our study.[34]

Abbreviations: ERCP (endoscopic retrograde cholangio-pancreatography) CT scan (computed tomography) Kg (kilogram) mg (miligram) L (liter)

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Association between Obesity and Atopy in Children

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Abstract

Background: Increased incidence of atopy and obesity within the last few years poses a serious global health problem causing physical, social and economic burdens. The impact of obesity in the incidence of atopy is still controversial.

Objective: The study aims to determine the impact of obesity on the frequency of atopy in children.

Method: This study was a preliminary study with cross sectional design and conducted during June-August 2017 targeting the elementary, junior and high school students in the city of Makassar aged between 6 to 18 years old. Subjects who consented to participate in this study were asked to fill in the ISAAC questionnaire consisting of clinical manifestation and risk factors of atopic diseases. Total Ig E level was measured using ELISA method.

Results: A total of 120 subjects were enrolled and divided into two groups: 60 obese and 60 well-nourished children, following the criteria of Indonesian pediatrician society. Frequency of atopy in obese was 18 (30%) and 2 (3.3%) in well-nourished children. Statistical analysis using chi-square test revealed that the frequency of atopic was much higher in obese children $p < 0.05$; OR = 12.442; 95% CI 2.735-56.580.

Conclusion: Obesity strongly impacts the occurrence of atopy in children.

Keywords: *Atopy, obesity, well-nourished.*

Introduction

Obesity is defined as a state of comparison of body weight and height above the standard determined according to age and sex, due to excessive accumulation of body fat in adipose tissue so as to reach a level that can interfere with health. Obesity in children is functionally defined as an increase in body fat mass associated with high morbidity and mortality[1].

The prevalence of overweight and obesity in children worldwide increased from 4.2% in 1990 to 6.7% in 2010 and is expected to reach 9.1% in 2020. Based on basic health study data in 2013, there was a prevalence of obesity in (1) children under five in 2007, 2010 and 2013 based on body weight according to body height more than Z score using anthropometric standard of WHO 2005 were 12.2%, 14.0% and 11.9% and (2) children aged 5-12 years, 13-15 years and 16-18 years respectively 8.8%, 2.5% and 1.6% based on body mass index according to age more than Z score using WHO 2007 anthropometry standard[2].

Atopy is a genetic tendency to produce immunoglobulin E (Ig E) antibodies exposed to allergens[3]. A family epidemiology study supports the incidence of allergies, that genetic factors affect the atopic family. If one parent has an allergic disease, 25-40% of children will suffer from allergies. If both parents have allergies, the child's risk is 50-70% with

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asthma (OR 1.5) or allergic rhinitis (OR 1.4)[4]. For cases of asthma, the WHO estimates occur in 5% -15% of the child population worldwide[3]. In Indonesia, the prevalence of allergic diseases that have been studied in some groups of society or hospitals shows variations, for example data from the RSCM Children's Allergy-Immunology Allergy Polyclinic of pediatric patients suffering from allergies about 2.4% in the form of cow's milk allergy[4].

Study by Musaad *et al*[5] showed that food sensitization affects the incidence of atopy. Continuous analysis of BMI with levels of immunoglobulin E (Ig E) supports the concept of weight gain in line with increased predisposition to atopic disease. Previous study by Chen *et al*[6] in China found no difference between the incidence of atopy in overweight or obese children with normal weight children. A study conducted by Visness *et al*[7] in the United States also examined the relationship of body weight with total serum Ig E, Ig E specific allergens atopy and allergic symptoms in children aged 2-19 years, while Eldin *et al*[3] correlate obesity and atopy, so did Apandi *et al*[4] in a study in Indonesia. it was found that there was a correlation between atopy and a history of family atopy in children. But in study conducted by Tin *et al*[8] in Hong Kongfound no correlation between obesity and atopy in children. So there was still controversy regarding the relationship between obesity and atopy in children, so It is important to know whether obesity is associated with atopic atopy in children in order to prevent complications that may occur in obese children. Based on this background, this study aimed to determine the relationship between obesity and the incidence of atopy in children.

Materials and Method

Design and Variable Study: This study is a preliminary study with a design cross sectional. The study variables consisted of: independent variables (obesity), dependent variables (atopy), intermediate variables (the biological process of forming immunoglobulin E (IgE) which is a sign of atopy in obese children), moderator variables (socioeconomic status, type of labor, number of siblings, duration of breastfeeding, mother's education level), random variables (genetics, stressors, gender, age, antigen exposure, air pollution, hygiene, and diit), and control variables (atopic family history and worm parasitic infection).

Location and Time of Study: The study was conducted in June - August 2017 for elementary, junior high and private high school students in Makassar. Examination of blood samples was carried out at the NECHRI laboratory of Hasanuddin University Makassar.

Population and Sample: The affordable population of this study is elementary, junior and senior high school students aged 6-18 years in the city of Makassar who come from private schools with middle and upper economic status based on criteria determined by the Makassar City Education Office. In this study, the selected elementary, junior high and high school were used as models to obtain the study population. Samples are all affordable populations that meet the study criteria.

Method of Collecting Data and Analysis: All patients who meet the requirements for history taking and physical examination are then recorded in the form provided previously . Weight measurement using a stepping scale that has been tested with accuracy of 0.1 kg. Height measurement using microtoise with accuracy of 0.1 cm. Nutritional status is determined based on body weight according to height according to NCHS standard. Then the calculation of BMI obtained from the results of body weight divided by height squared (Kg/m^2). Recording sample data using the ISAAC questionnaire and routine faecal examination to exclude worm infestations. Atopy determination was determined based on examination of total serum IgE. Obtained data were grouped based on purpose and type of data then analyzed using with univariate and bivariate analysis.

Results

During the study period, a total sample of 122 students was obtained, among the total sample there were 2 students whose blood samples were analyzed, so that the total sample analyzed was 120 students consisting of 60 obese students and 60 well-nourished students who met the inclusion criteria. Of the 120 study subjects consisted of 61 (50.8%) boys and 59 (49.2%) girls. The mean age of the study subjects was 12.62 years (Table 1).

Table 1. Characteristics of Study Samples

No.	Sample Characteristics	Obesity (n = 60)	Good Nutrition (n = 60)	P value
1.	**Gender**			
	Man	32(53.3%)	29(48.3%)	0.715 *
	Woman	28(46.7%)	31(51.7%)	
2.	**Age (Year)**			
	Mean	12.25	12.99	
	Median	12.00	14.00	0.155 **
	Minimum - maximum	6-17	6-18	
	Standard deviation	2.93	3.32	
3.	**BMI (kg/m^2)**			
	Mean	28.14	18,17	
	Median	28.03	18.09	0,000 **
	Minimum - maximum	21.57-35.01	14,18-23,44	
	Standard deviation	3.24	2.28	
4.	**Type of Labor**			
	Normal delivery	58(96.7%)	54(90%)	0,272 *
	Sectiocaesarea	2(3.3%)	6(10%)	
5.	**Mother's Education Level**			
	No school	0(0%)	0(0%)	
	Elementary school	0(0%)	0(0%)	0,583 *
	Junior high school	2(3.3%)	1(1.7%)	
	High school	22(36.7%)	27(45%)	
	University graduate	36(60%)	32(53.3%)	
6.	**Breastfeeding**			
	Less than 6 months	10(16.7%)	7(11.7%)	0.009 *
	6-12 months	37(61.7%)	24(40%)	
	More than 1 year	13(21.7%)	29(48.3%)	
7.	**Economic Status**			
	Very High Income Group	48(80%)	54(90%)	
	High Income Group	12(20%)	6(10%)	0,200 *
	Medium Income Group	0(0%)	0(0%)	
	Low Income Group	0(0%)	0(0%)	
8.	**Number of sibling (People)**			
	Mean	2.37	2.52	
	Median	2.00	2.00	0,497 **
	Drinking - the maximum	1-6	0-8	
	Standard deviation	1,207	1,408	
9.	**Serum total IgE levels (Iu/ml)**			
	Mean	128.83	96.00	
	Median	98,155	92,115	0.005 **
	Minimun-maximum	71.19-761.01	12,31-181,23	
	Standard deviation	120.75	24.86	

*Uj Chi Square, **Mann-Whitney U test

In the normality test using the *Kolmogorov-Smirnov test* for total IgE levels, the data distribution was abnormal (<0.05), so the *Mann Whitney* test was used. The mean total IgE level in the obese group was 128.83 IU/mL, median value was 98.15 IU/mL and range was 71.19-761.01 IU/mL. Whereas in the good nutrition group, the mean value of total IgE levels was 96.00 IU/mL, the median value was 92.11 with a range of 12.31-181.23 IU/mL. *Mann Whitney* test results showed that there were significant differences between the two groups with $p = 0.005$ ($p < 0.01$) (Table 2).

Table 2: Average value of total IgE level in obese group and good nourished group

Total IgE (IU/mL)	Obese Group (n=60)	Good Nourished (n=60)
Mean	128.83	96.00
Median	98.15	92.11
Standard deviation	120.75	24.86
Minimum–maximum	71.19 – 761.01	12.31 – 181.23

Mann Whitney Test, p= 0.005 (p<0.05).

Chi-square test showed no significant difference in atopy frequency based on sex (p = 1.000), type of delivery, with p = 1.000 (p > 0.05), level of mother's education (p = 0.09), period of breast feeding (p = 0.876), economic status (p = 0.499) and number of siblings (p = 0.08).Large analysis of risk for atopy showed that sex, type of delivery, level of mother's education, period of breastfeeding, economic status, and number of siblings was not a risk or protective factor for atopy. Crude Odds Ratio (COR) of sex, type of delivery, economic status, and number of siblings were 0.961(0.368-2.510), 1.43 (0.166-12.309), 0.651 (0.190-2.234), and 2.897 (0.903-9.22) respectively.

Meanwhile, analysis of the association between obesity and atopy showed based on *chi square* test showed a significant differences between the obesity and good nourished groups with p = 0.000. The odds ratio (OR) = 12.442 (95% Cl 2.735-56.480), which means that children with obesity were 12.43 times riskier to have atopy compared to good-nourished children. (Table 3).

Table 3. Frequency Analysis Based on Sex, Type of Labor, Mother's Education Level, Length of Mother's Milk, Economic Status, Number of Siblings, and Nutrition Status

	Atopy		Total	P	OR (95% CI)
	Yes	No			
Sex					
Man	10 (16.4%)	51 (83.6%)	61 (100%)	1.000 *	0.961 (0,36 - 2,51)
Woman	10 (16.9%)	49 (83.1%)	59 (100%)		
Type of Delivery					
Normal delivery	19 (17.0%)	93 (83.0%)	112 (100.0%)	1.000 *	1.43 (0.16 - 12.30)
Caesarean section	1 (12.5%)	7 (87.5%)	8 (100.0%)		
Mother's Education Level					
No school	0 (0%)	0 (0%)	0 (0%)	0.09 *	-
Elementary school	0 (0%)	0 (0%)	0 (0%)		
Junior high school	1 (33.3%)	2 (66.7%)	3 (100%)		
High school	12 (24.5%)	37 (75.5%)	49 (100%)		
University Graduate	7 (10.3%)	61 (89.7%)	69 (100%)		
Period of breastfeeding					
Less than 6 months	3 (17.6%)	14 (82.4%)	17 (100%)	0,876 *	-
6-12 Months	11 (18.0%)	50 (82.0%)	61 (100%)		
More than 1 year	6 (14.3%)	36 (85.7%)	42 (100%)		
Economic status					
The income group is very high	16 (15.7%)	86 (84.3%)	102 (100%)	0.499 *	0.65 (0.19 - 2.23)
High income group	4 (22.2%)	14 (77.8%)	18 (100%)		

	Atopy		Total	P	OR (95% CI)
	Yes	No			
Number of siblings					
Less than 3	16 (21.6%)	58 (78.4%)	74 (100%)	0.08 *	2.89 (0,90 - 9,29)
More or equal to 3	4 (8.7%)	42 (91.3%)	46 (100%)		
Nutritional status					
Obesity	18 (30%)	42 (70.0%)	60 (100%)	0.00 *	12.43 (2.73 - 56.48)
Good Nourished	2 (3.3%)	58 (96.7%)	60 (100%)		

* Chi square test

Discussion

In this study, the frequency of atopy in boys compared to girls was not significant with p = 1.000. This is similar to what was found by Leung *et al*[9] in Hong Kong who found no significant difference between sex with atopy. This is different from the study by Visness*et al*[7] which found that girls have a higher risk of atopy. It means that sex does not bias in the analysis between atopy and non-atopic groups.

This study found that obesity affects the incidence of atopy. The same result was obtained by Visness *et al*[7] which stated that total IgE levels in children with obesity was higher than good nourished children. Musaad *et al*[5] found that food sensitization affects the incidence of atopy. Continuous analysis of BMI with levels of IgE supports the concept of weight gain is positive correlate with increased predisposition of atopic disease. Eldin *et al*[3] who examined the association between obesity and atopy in children aged 4-18, and Setiabudiawan *et al*[10]who analysed the correlation between total serum IgE levels and obesity in children aged 6 - 11 years had significantly similar results, obese children with atopy had higher total IgEserum levels.

IgE levels are strongly influenced by genetic factors, age and race factors. Apandi *et al*[4] in Indonesia found that there was a correlation between atopy and a history of family atopy in children. Different results were discovered by Tin *et al*[8] who found no correlation between the two, but this study was lackingin the data of environmental factors related to the onset of atopy.

Previous studies suggested that it is possible that obesity can cause atopy or inflammation and there are several factors that predispose to both obesity and atopy. Leptin is an important regulator that reflects the mass of adipose tissue, which is comparable in number with fat mass. Triglycerides are a type of lipid in the blood whose numbers increase in the condition of diet-induced obesity[11]. Triglycerides contained in the blood are thought to inhibit leptin from entering the blood brain barrier.

In obesity, there is resistance to the leptin receptor which will affect the balance of Th1 and Th2. Resistance to leptin receptors in obese children occurs one of them is due to interference with leptin signaling in leptin receptors. In addition to disorders of leptin signaling in obese children, leptin receptors, receptor defects, reduced number of leptin receptors and impaired leptin transport into the central nervous system were also found. Leptin resistance will cause increased production of Th2 cytokines, such as IL-4, IL-5, and IL13. IL-4 secretion will cause the *switching* process of B lymphocytes which then produce specific IgE, which is an atopic marker[3,4]

In this study, there was no significant difference in the relationship between obesity with several factors including: sex, economic status, mother's education level, period of breastfeeding, and the number of siblings, becausethey were excluded. Genetic factors for atopy are very difficult to identify; but genetic polymorphism in the β IgE (Fc RI-B) receptor chain is located on chromosome 11q12-13, as well as class II HLA involvement. This indicates that the production of specific IgE associated with the HLA class II and genetic polymorphisms in the cytokines IL-4 which causes the formation of IgEspeccific[4]. This study concluded that the frequency of atopy incidence in children with obesity was higher (30%) than good nourished children (3.3%).

Conflict of Interest: No Potential conflict of interest relevant to be declared

Source of Funding: This study was conducted with self funding, no external funding sources for this study.

Ethical Clearance: The study has been permitted and

acknowledged by Hasanuddin University Ethic Medical Committee. Before each interview, each participant was given written information on the study. Each participant was also informed that his or her participant was voluntary. Before each interview, we emphasized the importance of maintaining confidentiality in relation to patient cases. All participants provided written consent to participate in this study.

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Evaluation of Serum B12, Folic Acid, Iron, Ferritin, Total Iron Binding Capacity and Unsaturated Iron Binding Capacity in Patients with Recurrent Aphthous Stomatitis in Sulaimani City

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Abstract

Background: Many studies have demonstrated that iron, folate, Serum ferritin, Total iron binding capacity (TIBC), Unsaturated Iron Binding Capacity (UIBC), vitamin B1, B2, B6, B12 deficiencies occur in Recurrent aphthous stomatitis (RAS. The aim of this study was to evaluate serum level of vitamin B12, folate, ferritin, iron binding capacity, unsaturated iron binding capacity among patients with RAS.

Materials and Method: A cross sectional study carried out in Al-Sulaimani teaching center of dermatology for period from 1st of March to the end of June, 2014 on 30RAS patients and 30 healthy controls. Data were collected were demographic information and results of haematinic investigations for selected patients. Data were analyzed using software SPSS program version 17.

Findings: Mean age of RAS patients was 40±14 years. Male and female patients were equally distributed. A significant difference was observed between patients and controls in family history of RAS ($p<0.001$). Mean B12 level of RAS patients was

190.6±80.3Pgm/ml, there was a significant difference in means of B12 between patients and controls ($p=0.009$). Mean serum folate level of the patients was 10.2±4.6 ngm/ml, there was a significant difference in means of serum folate between patients and controls ($p=0.01$). Meanserum iron level was 55.5±18.8 µg/dl a significant difference was observed between patients and controls in means of serum iron ($p<0.001$). No significant difference was observed between patients and controls in means of ferritin, TIBC and UIBC ($p>0.05$).

Conclusions: Family history, serum B12 level and serum iron are associated with RAS patients. It is important to investigate vitamin B12, folate and iron deficiencies in patients with RAS.

Keywords: *Aphthous, stomatitis, vitamines anemia.*

Introduction

Recurrent aphthous stomatitis (RAS) is defined as the presence of recurring ulcers confined to the oral mucosa[(1)]. RAS is characterized by recurrent, small, round, or ovoid ulcers often multiple with circumscribed margins, erythematous haloes and yellow or grey floors that present first in childhood or adolescence[(2)]. RAS occurs worldwide and are reported on every populated continent. RAS affects 20% of the population, with the incidence rising to more than 50% in certain groups of students in professional schools. Children from high socioeconomic groups may be affected more than those from low socioeconomic groups[(3)].

The etiology of recurrent aphthousstomatitisis

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still not under stood although many predisposing and precipitating factors have been described: trauma, stress, changes in the immune system, sensitivity to certain types of food, or ingested substances such as preservative agents or the substances like cinnamaldehydeorsodiumlauryl sulfate present in some toothpastes and iron, zinc, folate, vitamin B1, B2, B6, B12 deficiencies [4].

The main pathogenetic event is the inflammatory response with production of inflammatory cytokines, prostaglandin E2 and nitric oxide. The pathophysiology of aphthous ulcers is not clearly understood. Alteration of local cell mediated immunity is often encountered in patients with recurrent aphthous ulcer. Systemic T- and B-cell responses have also been reported as altered in patients with RAU[5]. Three clinical presentations within recurrent aphthous ulcer has been identified which are : Aphthous ulcer minor (synonym Mikulicz ulcers) (Mi AU); Aphthous ulcer major; and Herpetiform recurrent aphthous ulcer[6].

Discussion

RAs is a common presentation for both dermatology and genral practice clinics. Considerable proportion of people are unware of the method to reduce its prevalence. The demographic characteristics of our sample are consistent with results Fariba I, et al study in Iran (2005) that reported equal male to female ratio and mean age of patient was 30.5 years [14]. Our findings are also close to results of Tarakji B, et al study in Saudi Arabia (2012)[15] that reported prevalent age group of AS patients 30-39 years but males were more than females, on other hand, these findings are inconsistent with Abdullah MJ, et al study in Al-Sulimaniya (2013)[16] that reported main age group for RAS was 20-29 years and females more than females.

The prevalence of RAS among adults was significantly higher than that (17.9%) reported in US adult population aged over 17 years [17]. More than half of the RAS patients had positive family history. Reports of family history were frequent in this population (53.3%) as observed in the previous literatures [18, 19] supporting a genetic involvement in the etiology of RAS.

The present study revealed a significant decrease in mean of serum B12 among RAS patients (p=0.009). Mean of serum B12 for patients was 190.5±80.3Pgm/ml and that for controls was 240±60.8Pgm/ml. Volkov I, et al study in USA (2009)[20] concluded that vitamin B12 treatment, which is simple, inexpensive and low-risk, seems to be effective for patients suffering from RAS, regardless of the serum vitamin B12 level.

Burgan SZ, et al study in Jordan (2005)[21] reported that Patients with recurrent aphthous stomatitis have more hematinic deficiencies, particularly vitamin B12 deficiency, compared with controls. Correction of these hematinic deficiencies could help in the management of the disease. Liu HL, et al study in Southern Korea (2013) [22] resulted vitamin B12 therapy to have a statistically significant benefiton pain relief among recurrent aphthous stomatitis sufferers.

Binary logistic regression analysis revealed that the main risk factors for RAS in this study were family history (p=0.002), serum B12 (p=0.003) and serum iron (p=0.008). A genetic predisposition for the development of aphthous ulcer is strongly suggested as about 40% of patients have a family history and these individuals develop ulcers earlier and are of more severe nature. Various associations with HLA antigens and RAS have been reported. These associations vary with specific racial and ethnic origins [18].

It has long been thought that iron, folate and vitamin B12 deficienciesplay an important role in RAS, but some controversy does exist. Wray D, et al [23] reported that hematinic deficiencies affect up to 21% of adult patients with RAS and when they replaced the deficient element, 59% of the patients showed resolution of RAS and 28% showed significant improvement. However, other studies have shown that patients with RAS and controls had comparable serum iron, folate or vitamin B12[24, 25].

Conclusion

In conclusion, family history, serum B12 level and serum iron are associated with RAS patients. It is important to investigate vitamin B12, folate and iron deficiencies in patients with RAS.

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Food Security and Coping Strategy among Household in Food Insecure Area

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Abstract

Introduction: Food security is a problem in developing countries. Food insecure household usually adopted coping strategies. Therefore, this study aim to analyse the correlation of household food security and coping strategies in food insecure area.

Method: This cross sectional study were done in Bangkalan District, Madura Island, Indonesia which included 200 households having children under five. A structured questionnaire was used to collect the household characteristics and coping strategies. The food security status was assessed by Food Insecurity Experience Scale (FIES). Correlation data was analysed by Chi-square test.

Results: The prevalence of household food insecure was 67.5%. As much as 41% was mildly food insecure, 20.5% moderately food insecure and 6% severly food insecure. The popular coping strategy was borrowing food/money from friends and relatives (34.5%) and eating less-preferred foods (21.5%). The household coping strategy was correlated with household food security status ($p<0.001$). The more severe food insecurity status the higher proportion of coping strategies adopted.

Conclusion: High prevalent of food insecure household in food insecure area. Social capital become an important factor in combating food insecurity. Targeted activities or beneficials are recommended in order to alleviate the burden of food insecurity in this area.

Keywords: *Food security, coping strategy, household food insecurity, FIES.*

Introduction

Food security exists when all people have access to sufficient, safe and nutritious food that meets dietary needs and food preferences[1]. Food insecurity is a problem in developing countries particularly in an archipelago country like Indonesia. In general, there were 9.76% of households with moderate and severe food insecurity in Indonesia[2]. Nonetheless, this proportion was quite diverse among province and higher in isolated Island[3].

Food insecure households adopted coping strategies to minimize the effect of food shortages. Various coping strategies were done by the households to overcome the food insecurity condition by doing food compromisation (quantity and quality of food) and or financial coping strategies[4)] such as borrowing money, selling assets or crop and looking for a new jobs[5)]. Study in the poorest area of South Africa found that food coping strategies done by the households in the area had a long-term detrimental effects[5)].

Several studies have explore coping strategies[6)], food security asessment[7)] and it's determinant[8)9)10)] and its association with coping strategies[4)5)]. Nonetheless, household food security assessment using Food

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insecurity experienced scale (FIES) is new in Indonesia and it was used to assess the household food security officially in 2017. Limited information about household food security and it's relationship with food coping strategies in food insecure area. Therefore, this study aim to analyse the correlation of household food security and coping strategies in food insecure area.

Method

This cross sectional study were done in Bangkalan District, Madura Island, Indonesia. Bangkalan district was purposively selected as a study site because it was a food insecure area with high prevalence of malnourished children. Data were collected from 200 households having children under five. A structured questionnaire was used to collect the data. Household characteristics, food security status in the last 12 months and coping strategies in the last four week period were asked to each household. The food security status was assessed by Food Insecurity Experience Scale (FIES)[11]. There were 8 FIES questions which explain 3 domains (uncertainty and worry about food, inadequate food quality and insufficient food quantity). Food security status categorized into food secure when the household did not experience one of the 8 items of FIES, mild food insecurity (experience condition 1-3), moderate food security (experience condition 4-6) and severe food insecurity (experience condition 7-8).

Five standard coping strategies were generated from the reduced coping strategy index(CSI)[12] and were asked to the respondents. This five questions were the five most common behaviors changes in response to food shortages. This five coping strategies can describe the dietary changes, increase in short-term household food availability and rationing strategies or managing the shortfall.

Correlation were analyzed by chi-quare test. This study received ethical clearance from ethical committee of Faculty of Public Health, Universitas Airlangga (No 561/EA/KEPK/2018).

Results

Table 1 showed that most of the households have less than 6 family member, 39% were small household (≤4 family member) and 37% were medium household (5-6 family member). Majority of the hus Bands and wives education level were less than 9 years (basic education). Half of them were graduated from elementary school. Only 12% hus Bands and 9.5% wives were graduated from higher education such as diploma or under-graduated school.

Based on FIES (Table 1), Most of the households (67.5%) were food insecure. Only 32.5% were identified as food secure. Greater proportion of household experienced mild food insecurity (41%) than moderate (20.5) and severe (6%). From 8 questions of FIES (Table 2), it can be seen that more than half household (61.5%) were worried anxious and concerned that they might not having enough food or run out of food because of lack of money or other resources. Almost half of the household (44%) were worried that they not able to eat nutritious and healthy food. Moreover, 19.5% of the household experienced insufficiency of diet quantity and 29% having low diet quality. Less than 10% of the household felt hungry and went without eating for a whole day.

Discussion

High proportion of food insecure household (67.5%) was found in this study, 41.0% of them were mildly food insecure. This finding showed almost half of the households experienced the anxiety or worry about food and inadequate food quality. Inadequacy of food quantity was also experienced by the household particularly eating less than they should be and ran out of food. The food insecure proportion of this study was lower than studies in isolated island in Madura [3] but higher than African countries [7] and poorest states in Brazil [13]. Nonetheless, this differences can be happen due to different geographical condition and the instrument used in assessing the food security status. The instrument to assess food security in this study was using FIES. This FIES has been validated in many countries including Indonesia[7]. Since 2017, FIES also had been entered in national socio-economic survey Indonesia which conducted quarterly. High burden of food insecurity can affect the nutrition security [14][15]. Indonesian nutrition surveillance showed that Madura Island particularly Bangkalan District have a high prevalence of malnutrition among children under five [16].

Households respond to food insecurity differently. Many households using multiple coping strategies to cope their food shortage. Increasing short-term food availability and dietary changes (quality and quantity) were the most common coping mechanism. Borrowing food/money from friends and relatives was more popular than changing the dietary habit in this area. Madurese

has a strong kinship. Neighboring members know each other and most of them have kinship links and maintain exchange relationship. Nearby neighbours are the first focus of solidarity [17].

The household coping strategy was correlated with household food security status ($p<0.001$). The more severe food insecurity status the higher proportion of coping strategies adopted. Coping strategies not only adopted by the food insecure household but also the food secure ones. Although not many food secure households doing it. Coping mechanism that were done by the household when it continue and done in long term can be an adaptive mechanism therefore can endanger the nutrition security.

Conclusions

High prevalence of food insecurity was found in this study. Coping strategies commonly adopted was borrowing food/money from friends and relatives. The more severe food insecurity status the higher proportion of coping strategies adopted.

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Ethical Clearance: This study received ethical clearance from ethical committee of Faculty of Public Health, Universitas Airlangga (No 561/EA/KEPK/2018).

Recommendation: Targeted beneficials and activities in improving food security are recommended in order to alleviate the burden of food insecurity in this area. Social capital such as strong kinship among Madurese need to be preserved and can have a potential role in building food secure household.

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Health Care Seeking Behavior of People with Tuberculosis to Improve Cases Finding on Private Practitioners in Surabaya, East Java, Indonesia

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Abstract

Introduction: Indonesia is the third burden country of Tuberculosis (TB). Cases finding acceleration is an important strategy for TB elimination. This study aimed to describe health care seeking behavior of PWTB and identify the factors associated to patient delay on seeking care for TB.

Method: This was a cross sectional study in Surabaya City, East Java, Indonesia from April-June 2018. All PWTB aged >15 years old who diagnosed from January until May 2018 were selected for interview. Health care seeking behavior including type of health facilities visited previously and patient delay from first onsettoseeking care for TB. Data were collected through face to face interview using a structured questionnaire.

Results: One hundred and sixty people with TB (PWTB) were enrolled in this study. We found 40(25.0%) PWTB previously seeking care to private practitioners (PPs), 75(46.9%) to PHC/PHC and 45(28.1%) self-treatment. The median time of patient delaywere 30 days,91(56.9%) were ≤30 daysand 69 (43.1%) were >30days (delay). PWTB who previously seeking care to PPsis higher risk to delay compare to PHC/ hospitals (AOR=4.341; 95%CI:1.491-12.637). The others factors of patient delay were perceived barrier about diagnostic cost (AOR=8.384; 95%CI: 1.812-38.802) and fever (AOR=2.435;95%CI: 1.042-5.693). Hence, the factors that prevent the diagnostic delay were have TB family history (AOR=0.294; 95%CI: 0.111-0.778), knowledge aboutTB is a curable disease (AOR=0.133; 95%CI: 0.041-0.430) and duration of the therapy (AOR=0.022; 95%CI: 0.002-0.287).

Conclusions: The patient delay among who previously come to PPs and self-treatment need to be shorten. PPM program should be provided capacity building to PPs and health providers. They should educate the presumptive TB particularly about the variation of TB symptoms, the cost and detail of TB examinations and treatment to encourage them to follow TB examinations.

Keywords: *Tuberculosis, health care seeking behavior, patient delay, cases finding, private practitioners.*

Introduction

Indonesia is the third Tuberculosis (TB) burden country with 842,000 estimated incidence. The National Tuberculosis Control Program (NTP) targeting TB Elimination in 2030. One of important strategy is achieve the optimal cases finding and cure all notified. The TB cases finding in 2017 is relatively low, the cases detection rate (CDR) were 42.4%. The CDR already increasing compare to 35.8% in 2016, but still far from the target 70%[1–3]. A bold strategy is needed to accelerate the cases finding and support the TB Elimination.

The TB prevalence survey 2013-2014 in Indonesia shows 36.5% of people who previously TB seeking

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treatment in private sectors (PPs and private clinic)[4]. Private practitioners (PPs) have important role on TB cases finding. One of the focuson Indonesia TB elimination roadmap 2030 is strengthening public-private mix (PPM). The strengthening of PPM were implemented at the first milestone (2018-2021)[5,6]. The engagement of PPs in PPM scheme as an indicator on the TB implementation program in each district/city [7].

The PPM program in Surabaya already initiated in 2015. The collaboration begun with dissemination and workshop regarding TB program. The evaluation shows the contribution of PPs in Surabaya city to PWTB finding in 2017 were very low, only1.4% among all cases[8]. Study among PPs already done and continued by a modified collaboration. Improvement on recording and reporting system of PWTB who refer from PPs also already done. Based on the latest evaluation in 2018, the contribution of PPs on TB cases finding were still low 4.5%[8].

The most barrier from presumptive/PWTB is about the health seeking care behavior. The delay on seeking care will lead to the delay on diagnosis and treatment. This is a major barrier on TB cases finding and prevention [9]. Therefore a study to understand the health seeking care behavior before PWTB came to diagnosis confirmation and factor to the diagnosis delay is important to accelerate and improve the cases finding in all health facilities especially in PPM program. This study aimed to describe health care seeking behavior of PWTB before diagnosed and identify the factors associated to patient delay.

Method

Design: This was an operational research to support TB control program performance on expanding the cases finding in private practitioners. The design is cross-sectional study.

Study Settings: Surabaya city is the second biggest city in Indonesia with population in 2017 was 3.057.766 persons. TB control program in Surabaya City implement the national TB control guidelines that adopted based on WHO guidelines. The cases notification rate in 2017 was 225.7 per 100.000 population, still not yet reach target 257 per 100.000 population. The success rate for TB treatment are increasing from 83% to 87% in 2017 or 3% to target 90%[8].

Study population and sample: Study population are all adult pulmonary PWTB (aged >15 years old)in Surabaya City. Sample were selected from pulmonary PWTB who diagnosed from January until May 2018 at PHC in East Surabaya. All sample selected were invited to participate. Pulmonary TB was diagnosed according to the criteria established in the Indonesian Guidelines for Tuberculosis[7]. PWTB who refused signing the inform consent form were excluded from the study.

Variables and the operational definition: Health seeking care behaviors were including the type of health facilities visited before for seeking care for TB and the duration of time (in days) between the first onsets of TB symptoms until seeking care for TB (patient delay). The duration was divided into ≤ 30 days and > 30 days (delay). The factors of patient delay including characteristics (individual and clinical characteristic) knowledge and perceived about TB. Individual characteristics were age, sex, education, occupation and health insurance status. Clinical characteristics were TB family history and TB symptoms. Knowledge were knowledge about mode of transmission, mode of prevention, TB symptoms, TB examination, TB is a curable disease and duration of TB therapy. Perceived were perceived about the severity of TB, benefit of TB examination, barrier on TB diagnostic costs and barrier on distance to PHC.

Data collection and analysis: Data were collected through face to face interview using a structured questionnaire. The questionnaire were tested for validity and reliability before used for data collection. We trained 12 interviewers to perform the data collection. They trained to approach PWTB, make an appointment and interview using the structured questionnaire at the PWTB's home. Descriptive analysis presenting relative frequency, mean and median in cross tabulation. Binary logistic regression was perform to identify association between the subject characteristics and factors with the patient delay. Adjusted Odds Ratio (AOR) with the 95% confident interval (CI) were presented for the strength and direction of the association.

Ethic Approval: The ethical clearance was obtained from The Ethical Committee of Faculty of Public Health, Universitas Airlangga.

Results

One hundred and sixty people with TB (PWTB) were enrolled in this study. The average of age was 43.2 years old, 90(56.3%) were female, 88(55.0%) were senior high school or higher education level and 143(89.38%)

have health insurance. We found 40(25.0%) PWTB previously seeking treatment to PPs, 75(46.9%) to hospitals/PHC and 45(28.1%) to alternative medicine.

The median patient delay were 30 days,91(56.9%) were ≤30 days and 69 (43.1%) were >30days (delay). PWTB who previously seeking care to PPsis higher risk to delay compare to who directly seeking treatment to PHC/hospitals (AOR=4.341; 95%CI: 1.491-12.637). The others factors of patient delay were perceived barrier about diagnostic cost (AOR=8.384; 95%CI: 1.812-38.802) and fever (AOR=2.435; 95%CI: 1.042-5.693). Hence, the factors that prevent the patient delay were have TB family history (AOR=0.294; 95%CI: 0.111-0.778), knowledge aboutTB is a curable disease (AOR=0.133; 95% CI: 0.041-0.430) and duration of the therapy (AOR=0.022; 95%CI: 0.002-0.287).

Table 1: The Characteristics, Tuberculosis Symptoms and Diagnosis Duration by Type of Health Care Seeking Behavior Before Notified

Variables	Type of Health Care Seeking Before Notified			
	PHC/Hospital (n=75)	Private practitioner (n=40)	Self-treatment (n=45)	Total (n=160)
Age	41.4±15.0	43.4±17.3	46.3±16.0	43.2±19.9
≤ 40 years old	37(49.3)	19(47.5)	16(35.6)	72(45.0)
> 40 years old	38(50.7)	21(52.5)	29(64.4)	88(55.0)
Sex				
Male	24(32.0)	14(35.0)	32(71.1)	70(43.8)
Female	51(68.0)	26(65.0)	13(29.9)	90(56.2)
Education Level				
Junior high school or lower	37(49.3)	13(32.5)	22(48.9)	72(45.0)
Senior high school or higher	38(50.7)	27(67.5)	23(51.1)	88(55.0)
Occupation				
Unemployed	11(14.67)	10(25.0)	4(8.9)	25(15.7)
Employee	14(18.7)	9(22.5)	16(35.6)	39(24.4)
Household mother	4(5.3)	1(2.5)	0(0.0)	5(3.1)
Merchant, farmer and others	37(49.3)	18(45.0)	10(22.2)	65(40.6)
Have health insurance	65(86.7)	39(97.5)	39(86.7)	143(89.4)
Have TB family history	27(36.0)	14(35.0)	9(20.0)	50(31.3)
Tuberculosis symptoms				
Prolong cough (≥2 weeks)	47(62.7)	32(80.)	38(84.4)	117(73.1)
Sputum cough	42(56)	31(77.5)	32(71.1)	105(65.6)
Fever	45(60.0)	22(55.0)	30(66.7)	97(60.6)
Weight loss	35(46.7)	29(72.5)	34(75.6)	98(61.3)
Pain with Breathing	15(20.0)	14(37.5)	7(15.6)	36(22.5)
Breathing difficulty	29(38.7)	16(40.0)	17(37.8)	62(38.8)
Nodes enlargement	13(17.3)	7(17.5)	4(8.9)	24(15.0)
Diagnosis duration (days), median (IQR)	30(30)	60(60)	60(60)	30(60

Table 2: The Factors Associated To Diagnostic Delay of People with Tuberculosis

Variable	Initial model			Final model		
	AOR	95%CI	p value	AOR	95%CI	p Value
Age group, >40 years old	0.462	0.199-1.074	0.073	0.471	0.212-1.044	0.064
Occupation						
Unemployed	reff					

Variable	Initial model			Final model		
	AOR	95%CI	p value	AOR	95%CI	p Value
Employee	0.383	0.069-2.117	0.271	-	-	-
Household mother	1.029	0.237-4.463	0.970	-	-	-
Merchant, farmer and others	0.405	0.098-1.681	0.213	-	-	-
Have health insurance	1.450	0.282-7.462	0.657	-	-	-
Have TB family history	0.027	0.095-0.773	0.015	0.294	0.111-0.778	0.014
Tuberculosis symptoms						
Sputum cough	1.831	0.640-5.238	0.259	1.981	0.791-4.959	0.144
Fever	3.606	1.269-10.244	0.016	2.435	1.042-5.693	0.040
Pain with Breathing	0.381	0.117-1.240	0.109	0.519	0.181-1.485	0.221
Type of health care seeking before notified						
PHC/hospital	reff					
Private practitioners	5.252	1.649-16.732	0.005	4.341	1.491-12.637	0.007
Self-treatment	2.519	0.819-7.747	0.107	2.413	0.889-6.546	0.084
Knowledge about:						
Mode of prevention	0.514	0.162-1.632	0.259	0.470	0.160-1.383	0.170
TB symptoms	0.595	0.209-1.698	0.332	-	-	-
TB examination	0.198	0.036-1.097	0.064	0.344	0.081-1.456	0.147
TB is a curable disease	0.131	0.036-0.482	0.002	0.133	0.041-0.430	0.001
Duration of TB treatment	0.020	0,001-0.340	0.007	0.022	0.002-0.287	0.004
Perceived about:						
Severity of TB	0.533	0.139-2.046	0.359	-	-	-
Barrier on TB diagnostic cost	11.876	2.124-66.412	0.005	8.384	1.812-38.802	0.007

Discussion

This study found 25% of PWTB previously seeking care to PPs. Median patient delay in overall found 30 days. PWTB who previously seeking care to PPs and self-treatment have longer median patient delay until 60 days compare to who came to PHC were 30 days. Prolonged median patient delay may cause by health seeking care behavior from one PPs to other PPs for second opinion. Among self-treatment, they try several time with symptomatic drugs from alternative medicine and/or modern medicine that freely saleat drug store [10]. This result supported by the multivariable analysis that found the probability of PWTB delay on diagnostic is 4.3 time compare to who directly come to PHC/hospitals. The results indicate a problem on their acceptability and awareness regarding the disease. The delay also associated to the physiological proses particularly the self-acceptance proses[11].

This study succeeded identify the factors of patient delay. Beside the previous seeking care to PPs, the others factors encourage the diagnostic delay were PWTB with fever, cough and have perceived barrier about diagnostic cost. PWTB Fever is a common symptoms for many infection diseases. The PWTB who with fever and cough will belief the symptoms just a common infectious disease. The possibility for TB will be last until the come to PHC. This result is concordance compare to others study that found majority of PWTB with cough were having significant patient delay. The main reasons behind that were self-medication and having perception that symptoms are not severe and will disappear gradually[12]. Education should focus to explain about the variation of TB symptoms. Explanation about risk of TB in Indonesia as the third burden country are important. The possibility for TB should be thinking if the symptoms were occurred.

PWTB who perceived that following TB examinations will spend additional costs will tend to delayed on accessing PHC. They may perceived about cost of the examinations, transportation and income lost during the process. Perceived barriers about diagnostic cost in an individual-level barriers[13]. This perceived should be tackle by explaining about the benefit of TB

early detection. Education should explain that early detection have important beneficiary such as perfect treatment outcome and prevent transmission to others around.

Factors that prevent the diagnostic delay were have family history of TB, knowledge about TB is curable disease and duration of TB treatment. Presumptive/ PWTB who have TB family history already exposed more information regarding TB previously have higher awareness regarding TB. Knowledge about TB is a curable disease and duration of TB treatment will increase their understanding, belief and confidence for following TB examination. Knowledge is an established factor of patient delay and health seeking care behavior based on many studies previously[9,11]

These study findings have important policy implications. First, the study shows theimportant of motivation to presumptive and PWTB who previously came to PPs. Second, a comprehensive education should provide to presumptive TB to accept recommendation for further TB examination in PHC. The comprehensive education should consider cognitive and psychological aspects. The collaboration with PPS in PPM scheme should provide capacity building for PPs how to educate,motivate and encourage presumptive TB Come to PHC immediately.

Conclusions

The patient delay should be shorten particularly among who previously come to PPs and self-treatment. PPM program should provide capacity building to PPs and others health provider regarding how to educate, motivate and encourage presumptive/PWTB for TB early detection. They should educate the presumptive and PWTB particularly about the variation of TB symptoms, the cost and detail of TB examinations and treatment to encourage them to follow TB examinations.

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Supplementation of Stenochlaena Palutris Micronutrient for Reducing Anemia During Pregnancy

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Abstract

Background: This research aims to raise an agricultural asset in traditional household diets in Dayaknese community in which it was believed that Kalakai (*Stenochlaena palutris*) might increase hemoglobin levels in pregnant women and breastfeeding mother. The objective of this research is to evaluate the effects of micronutrient supplementation during pregnancy.

Method: This research using a quasi-experimental was undertaken in Palangka Raya, Central Kalimantan in which the respondents received a menu-contained *Stenochlaena palutris* (as intervention). Independent t-test and paired t-test were used to examine group differences.

Result: The result between before and after intervention showed that Hb levels were 10.321 ± 0 .88 g/dl higher after intervention given compared to a point before invasion (9.628 ±1.01 g/dl) with a significant association test result (*ρ* value: 0.002).

Conclusion: According to correlation value, it suggested that about 34% of *Stenochlaena palutris* menu contributed to elevated Hb concentrations while the other random factors attributed the rest. Fe elements in a boiling *Stenochlaena palutris* may enhance Hb level.

Keywords: *Micronutrients, Stenochlaena palutris, pregnancy, Hb.*

Introduction

Anemia is one of the primary burden diseases in Indonesia in which its prevalence in pregnant women remains unchanged, according to the Indonesia Health Survey (RISKESDAS). It revealed approximately 24.5% of anemia prevalence each in 2007 and 2010[1]. However, the number was elevated considerably by 12.6% in 2013(1).

A tablet supplementation program which was established by the Ministry of Health, Republic of Indonesia was divided into two parts based on the number of tablets given during pregnancy (30 pills called Fe1 and 90 tablets called Fe. In 2003, Indonesia Government determined about 93% of pregnant women received 90 tablets of Fe.However, the number of tablet consumed was far less than expected. Only 17.5% of them did consume the tablet for more than 90 days as well as almost half of them consumed the pill less than 90 days. Although the rate of a proper Fe tablet consumption was low, the percentage of the opposite was a few. Palangka Raya is recorded as the lowest percentage of Fe tablet distribution (73.1% of a 30 tablet and 66.3% of a 90 tablet) compared to the other districtt(2).

However, the actual situation does not comply with government regulation.Until recently, people have not discovered an innovative health promotion for preventing anemia in pregnant women through pharmacology with *Stenochlaena palutris* as the main ingredient. Our data from a quasi nutrient supplementation trial in urban

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Dayaknese were used to examine Hb levels throughout gestational age in relation to new menu contained *Stenochlaena palutris*.

The benefits of the research will be beneficial to a lot of people. The success of elevated Hb levels in pregnant women will contribute to them as it will be considered as an affordable method by utilizing local agricultural assets. Furthermore, it will complement government program for mitigating anemia by promoting *Stenochlaena palutris* being used in their daily menu.

Method

This research using a quasi-experimental was undertaken in Palangka Raya, Central Kalimantan in which the respondents received a menu-contained *Stenochlaena palutris* (as intervention). Independent t-test and paired t-test were used to examine group differences. The characteristics of the confounding factors which distinguish between pregnant women, age, education, parity, income, occupation, Fe tablet consumption were assessed. The quantitative research is owing to Fe measurement in *Stenochlaena palutris* and improving Hb levels in pregnant women. For the intervention group, pregnant women were assigned to receive a menu containing boiling *Stenochlaena palutris* while the control group was not designated for any treatment.

Results

Stenochlaena palutris content was assessed in a laboratory at Gajah Mada University. As shown in Table 1, it suggested that Fe levels in a 1-mnt boiling *Stenochlaena palutris* were 0,75 mg/kg. In contrast, there were approximately 0,36 mg/kg Fe in a 5 gr boiling *Stenochlaena palutris*. The highest levels of Fe in *Stenochlaena palutris* were found in unboiling leaves. (Table 1).

Table 1. Fe levels in a Package of Stenochlaena palutris Soup

Boiling Stenochlaena palutris				
r	Cooking Time	Result	Unit	Method
Fe	1 Minute	0.075	mg/100 gr	ICP
	5 Minute	0.036	mg/100 gr	ICP
Stenochlaena palutris Leaves				
Fe		0.384	mg/100gr	ICP

The initial planning of sample size with test power at 95% was required 23 eligible respondents in the trial group and another 23 in the control group. However, our respondents exceeded the minimum calculated sample (29 dan 42 respondents in trial and control groups, respectively).

The respondent characteristics represented inparity, education, occupation, gestational age, income. It suggested that about 69% of pregnant women were multipara with Hb levels at 10.3 g/dl after trial. More than half of them holding a higher education status had 10.3g/dl of Hb levels after trial (55.2%). Based on their occupation, Hb levels in their blood reached 10.4g/dl among 73.3% of them. It is also evident in 65.5% of them in their third trimester. In average, the age of respondents was 27.5 years old with 2.1 million rupiahs of income per month.

The result showed a significant value of ρ was >0.05. It indicated that the Hb level distributed normally. Therefore, the analysis proceeds to the independent t-test. The homogeneity test showed homogenous meaning that Hb levels in each group were more than 0.05.

The average of Hb levels was higher in the trial group than those in the control group(10.321 g/dl > 9.61 g/dl with Δ=0.711 g/dl). 95% CIwere 0.29 g/dl – 1.12 g/dl. Statistically, the average Hb levels in each group were different. It represented in ρ value <0.05. All above explanations, it is inferred that the study proved a statistically significant association between the intervention and improving Hb levels (10.3 g/dl ± 0.88 g/dl in the trial groupversus9.6 g/dl ± 0.84 g/dl in control group).

The average of Hb levels in the trial group was higher than in the control group (10.321 g/dl and 9.61 g/dl, respectively) with Δ 0.711 g/dl. 95% CIof the difference was 0.29 g/dl – 1.12 g/dl. Randomly, Hb levels between groups were considerably different. It can be seen in ρ value <0.05. The research conclusion revealed that the package-contained *Stenochlaena palutris* has Hb levels, which is higher than those in the control group. (10.3 g/dl ± 0.88 g/dl and 9.6 g/dl ± 0.84 g/dl, respectively).The average of Hb in Fe consumption was higher than it was in a group who did not drink Fe tablets in the trial group (10.35 mg/dl and 10.31 mg/dl, respectively) with a mean difference at 0.04 mg/dl.

It can be inferred that this study revealed an elevated Hb level at *0.04 mg/dl* in the group who have prescribed the *Stenochlaena palutris*Package and drank the

designated-Fe tablets simultaneously. From this group, their Hb levels exceeded the other group who did not consume. The result steamed from most likely due to limited time when the observation took about 10days to evaluate the intended effects.

Discussion

Education is a primary external factorfor pregnant women owing to a better understanding of given information, particularly in health education[3]. Inadequate level of mother's education (significant level < 0.05) may cause inappropriate daily intake during pregnancy. Therefore, this is the potential risk of suffering from anemia during pregnancy. The more well-educated the mothers, the better understanding of processing information. This may lead to a sufficient daily intake during pregnancy[38]. The attendances of mothers in the program reflect the self-awareness of mothers towards health prevention throughout pregnancy[4].

Multipara group made of approximately 63,4% of mothers. The result was in accordance with the previous studies[5]. They reported that mothers with parity less than 2 tended to have normal Hb levels, whereas mothers with multigravida showed abnormality. This indicates that equality plays leverage over HB levels (Table 1). In a healthy pregnancy, a hormonal change causes a high plasma volume, which leads to reducing Hb levels. This effect is deemed reasonable if the standards of Hb do not decrease at less than 11.0g/dl[6].

Most respondents were a housewife (83.1%) in which the status has a benefit in time flexibility, and In addition, the condition might be linked with income per month hence it will fill daily necessity during pregnancy. A variety of gestational ages affect daily intake of Fe in every trimester. In the first trimester, the adequacy of Fe is not as much as in the second semester while in the subsequent trimester, the Fe daily intake is higher in order to fill the suitability of fetal growth. Hb levels during the first and the second trimester are about 11.6 g/dl due to diluted blood (hemodilution-derived increased plasma volume)[45]. The above question is in conjunction with this research, reporting approximately 64.8% of mothers in the third trimester with anemia had Hb levels at 9,8 -10,1 gr/dl[7].

The package of *Stenochlaena palutris* soup is considered as an alternative attempt for improving mother's nutritional status during pregnancy in an area with many vegetables. Several studies revealed that *Stenochlaena palutris* leaves are the main ingredient in a side course which contains Fe at the highest concentrations of 50.169 ppm (5.017 mg/100 g) and the lowest levels at 4.087 ppm (0,408 mg/100g)[8].

The researchers utilized *Stenochlaena palutris* leaves, which were boiled at a specific temperature in 1-5 minutes. The *Stenochlaena palutris* were processed into meals that are served for pregnant women. After cooking, Fe levels were reduced with boiling time (table 1). Fe levels before a minute boiling were 0,38 mg/100gr while afterward were 0,075 mg/100 gr. Likewise, it was in a 5 minute boiling, and the Fe levels reached 0,036 mg/100gr. It is clear that Fe levels in raw *Stenochlaena palutris* leaves were 0,38mg/100 gr in which they nearly approached the lowest levels of Fe at 0,408 mg/100gr according to the previous standards[9].

Stenochlaena palutris leaves used in this research were bought from the local market in Palangka Raya. At the research time, *Stenochlaena palutris* leaves were not easy to be found because of the wet season and flooded peatland. The content of Fe was influenced by peatland structuresten, which has been thin due to forest fires.

Before trial, the Hb levels were 9.6 g/dl while afterward were 10.3 g/dl. This showed an increase after an experiment with a difference at 0.69 g/dl. In the control group, the average mean was 9.6 g/dl with a difference at 0.711 g/dl.

Fe non-hemeis penetrated easily in the body when it is consumedwith animal proteinsand vitamins C Vitamin C supplementation helps increased levels of Hb [10]. Vitamin C supplementation will improve Hb levels significantly if it is consumed with non-heme food sources[11]. Patin and Gabus fishes mixed with lemon squash were proven in optimum absorption of Hb levels in a trial group before and after trial. It rose to 0,69 g/dl. In total, Fe levels in *Stenochlaena palutris* soup were 1,8 mg/100 gr which were given consistently for ten days with 100-gram lemon squash. According to the preceded research, Eating vegetables and fruit-contained vitamin Csis essential in Fe absorptionup to 4 times higher.Fe supplementation and vitamin C are more effective to elevate Hb levels and the number of blood cells compared to the sole supplementation either Fe or Vitamin C.

In 100 gram oranges contains Vitamin Cs at 49 mg. It is also found in Jambu monyet, Jablang, Jambu Putih, gandaria, mangoes which comprise of vitamin C more

than oranges fruit in which in a 100 gr jambu monyet contains197 gram, 130 mg, 116 mg, 111 mg, 61 mg vitamin C, respectively. Oranges were chosen in this research because of its affordable prices as well as its ubiquitous fruit.

A pregnant woman needs 85 mg/day of vitamin C[12]. *Stenochlaena palutris* leaves contain 219,7 mg per 100 g of Vitamin Cs. Vitamin C is stable in the dry state and will damage easily in the dissolved statedue to oxidation, which is catalyzed by the presence of Cu and Fe. In this research, vitamin C in *Stenochlaena palutris* leaves did not exist in *Stenochlaena palutris* leaves because of boiling[13]. Vitamin C intake in a pregnant woman for ten days was foreseen as adequate because it derived from lemon squash at 50cc of 1 orange contained vitamin Cs (100 gr) at 49 mg. In the field, vitamin C was administered at more than 100-150 cc, considering respondents' requests.

It is evident that 30.4% of *Stenochlaena palutris*-basedimproved Hb levels in pregnant women, and the rest was due to random factors which were not covered in this research. About 75% anemia in pregnant women are due to Fe and folate acid deficiencies as well as vitamin B12 deficiency (anemia megaloblastic) The other precursor agents of it are hemoglobinopathy, inflammation, chemical toxicity, and malignancy[14].

Due to itsprices and ubiquitous vegetables, *Stenochlaena palutris* leaves were urged by researchers to be additional meals for nutritional adequacy. In line with government program of 90 Fe tablets, therefore, PKM encourages its attendances to consume *Stenochlaena palutris* leaves. This implementation was run as part of the government program. Likewise, the package was a source of Fe non-heme in which it may catalyze the absorption aiming to maximize Fe levels until their parturition.

Conclusion

Result of this research the effects of micronutrient as Fe contained *Stenochlaena palutris*,that 30.4% of *Stenochlaena palutris* based reduces anemiafor pregnant women.Promotive and preventive attempts may be in the form of promotion of Fe supplementation regularly every month as well as providing health education owing to the utilizing of local agriculture, for instances, *Stenochlaena palutris* leaves, and lemon squash or orange squash. For pregnant women, it is expected that encouraging to raise their awareness and promoting the importance of health prevention during pregnancy and parturition. There are many ways to achieve that are routinely visiting hospitals owing to prenatal care and consume Fe tablets while combined with additional vegetables for instances, oranges, or lemon squash in order to increase Hb levels.

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Factors Causing Bangkalan Communities to Consume Earthworm Boiled Water (Drugs/Traditional Remedies) for Typhoid Handling

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Abstract

Based on Riskesdas data in 2013, Bangkalan District one of the districts with high typhoid case is Bangkalan Regency. The high number of typhoid cases and various other cases were not proportional compared to the visit of medical facilities in Bangkalan. On the other side, the use of traditional medicine in Bangkalan is high based on BPS in 2014. In the Madura ethnic (/tribe) especially in Bangkalan Regency there is a local wisdom about using earthworm decoction as a solution for handling typhoid fever particularly for children . This research aims to identify the causes of the people in Bangkalan in consuming earthworm decoction for typhiof treatment. This study used a qualitative method in the form of interviews of 3 producers and 6 consumers. This study was conducted in 3 production locations of earth decoding in Bangkalan sub-district, Bangkalan regency. This study was held in January 2019. The sampling technique that was used in this study was purposive sampling. Based on the study that has been done about the cause factor of people in Bangkalan consuming earthworm decoction for typhoid treatment, it was Showed that there are various factors behind it such as personal choice (comfortable using traditional medicine), marketing (well -known), culture (habitual), psychological (cure faster) and accessibility (easily available). Beside those factors, there are other factors namely natural ingredients and no side effects.

Keyword: *traditional medicine, typhoid, earthworm*

Introduction

Typhoid fever is a health problem that still needs attention. Case prevalence varies depending on location, local environmental conditions and community behavior. WHO estimates that the number of typhoid fever cases around the world is around 17 million people per year with a mortality rate reaching 600,000 people each year, which is about 3.5% of all cases. 70% of typoid fever cases occur in developing countries in Asia. The number of deaths in Asia annually reaches 420,000 cases. Typhoid fever is still a global health problem, due to the high incidence

Indonesia is one of the countries with a high incidence of typhoid fever, Indonesia's Health Profile in 2015 recorded typhoid fever, including the top 10 diseases in hospitals. The number of typhoid fever sufferers in Indonesia alone is reported at 81.7 per 100,000 population with distribution according to age group 0.1/100,000 population (0-1 years), 148.7/100,000 population (2-4 years), 180.3/100,000 population (5-15 years) and 51.2/100,000 population (≥16 years). This figure shows that most sufferers in the age group 2-15 years. The number of typhoid events in Indonesia in 2015 was 298,687 people.(1)

The latest data related to typhoid notes that based

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on the Early Awareness System and Response of the Ministry of Health in 2016, typhoid is still the top 10 diseases that occur in the community, so it still needs serious attention.

Based on 2013 Risesdas data, Bangkalan is one of the districts in East Java with typhoid cases above the provincial average and is among the top 10 districts with the highest typhoid cases. The high number of typhoid cases and various other cases is not comparable with Bangkalan community visits to health facilities, this is needed by the patient coverage in Bangkalan which is still low compared to the target including: coverage of outpatient visits 47.02% while the target is 89.2% and coverage Outpatient visits were 11.5% while the target was 26.59%. [(2)] On the other hand the use of traditional medicines in Bangkalan District is quite high, based on BPS data in 2014 54.63% of the population in Bangkalan District did not seek treatment when sick while 45.37% treated. of 45.37% of those treated, 28.86% used traditional medicines and other non-medical drugs.

In the Madura tribe, especially in Bangkalan Regency, there is local wisdom by using boiled water as an solution for handling typhoid fever, especially in children. The use of traditional medicine is not only applied to Indonesian society but is also used in many world populations. Based on WHO reports 80% of Asian and African populations use traditional medicine (TM) to meet health care needs. [(3)]

Traditional medicine has so far been considered contrary to medical treatment, whereas the integration between traditional medicine and modern medicine has been recommended by WHO since 1978 with the ultimate goal of improving health status. WHO's focus on traditional medicine is contained in the WHO 2014–2023 Traditional Treatment Strategy which has two main objectives, one of which is to support Member States in exploiting the potential contribution of traditional and complementary medicine to health . [(4)]

Treatment using traditional medicine with natural ingredients contributes to modern medicine. [(5)] Natural ingredients that form the basis of traditional medicine show some differences in their effects, chemical structure and biological activity in their use. [(6)]

The problem in this study emphasizes more on the factors that cause people in Bangkalan to consume traditional medicines/ingredients, namely boiled water for earthworms for handling typhoid. Thus this study aims to mengeta h ui causative factor in Bangkalan community earthworms consume boiled water (medicine/traditional ingredients) for the treatment of Typhoid

Method

This research is a qualitative study conducted in Bangkalan Regency in January to June 2019. The sampling technique used was *purposive sampling* . The sample in this study was divided into two: 3 producers selected from 3 places for making earthworm cooking water in Bangkalan Regency among others in Pangeranan and BancaranVillages, Bangkalan District and in Keleyan Village, Socah District and 6 consumers found during the visit in a place for boiling water for earthworms with various different backgrounds

Results

The custom of using traditional medicines in the Madura community especially in Bangkalan Regency has been going on for a long time. Recorded in the book "Dissecting the Secrets of Madura Potion" that consuming herbs/traditional medicine is a hereditary tradition and has even been familiarized since childhood.

Specifically for habits of consuming boiled water earthworms are only taken when a fever (which does not recover with medical treatment). Based on an interview with one of the consumers, she ordered boiled water for earthworms for her child who still has a fever despite being taken to the doctor. According to him more effective again after seeing the doctor then proceed with drinking boiled water for earthworms h. Previous studies have also explained that some patients have the perception that the use of traditional medicines together with pharmaceutical drugs can affect treatment outcomes for the better. [(6)]

Apart from being a companion to medical drugs, there are parents who give boiledwater for earthworms as soon as their child has a fever without being treated to the doctor because there is a previous experience when their child has a fever to recover with boiled water for earthworms.

The process of making boiled water for earthworms in 3 research locations tends to be the same, based on interviews with earthworm makers in Bangkalan, the manufacturing process is about 20 earthworms cleaned from the ground and dirt that clings to water many times,

until it feels clean then boiled with 3 cups water until cooked.

A different thing is found in the location of earthworm cooking water in Bancaran Village, which is an earthworm cooking water innovation. Not only earthworm stew like in general but there are made the worm that is boiled earthworm water mixed with a jar (a type of fruit or seed from a tuba teak tree). Earthworm boiled water mixed with tempayang makes the cooking water brownish with a sweet aroma like tea, so it is called worm tea. The origin of this innovation according to the makers of worm cooking water, is because many children and even adults do not want to drink earthworm cooking water because it tastes bad, so it is hoped that the shape resembles that of small children who want to drink earthworm cooking water. Earthworm cooking water is sold at the same relative price in 3 locations, 15-20 thousand for 1 medium size bottle with the rule to drink 1 bottle for 1 day.

Then based on interviews with earthworm makers in Bancaran, Pangeranan and keleyan, on average, 10 to 30 bottles of boiled earthworm boiled water are sold in one day and the buyers come from Bangkalan District, Burneh District, Socah District, Tanjungbumi District and other districts. Some even bring earthworm boiled water to outside the Bangkalan region such as to Sampang, Sumenep, Surabaya and other areas. Besides being sold in the form of boiled water, some are also sold in the form of worms in clean condition (already washed, just boiled). Sales of clean earthworms can be ordered at the worm water producers located in the Socah Subdistrict of Keleyan, while in Bangkalan Subdistrict precisely in Pangeranan and Bancaran Villages only accept orders in the form of medium-sized (600 ml) earthworms and large-size (1.5 ml) boiled water L).

Based on the results of interviews with the makers of boiled water for earthworms when asked about the efficacy of boiled water for earthworms

"Aeng worms can be used for typing polanna almost all who drink the heat down (earthworm water can be for typhoid because almost all consumers who drink boiled water of earthworms tell that their body temperature gradually decreases)" (IU 5)

"Earthworm water is the intermediary for your recovery, because the earthworm's cooking water cools the body" (IU 6)

"Treatment is suitable - suitable, incidentally many earthworm water is suitable for reducing heat" (IU 7)

Based on interviews with consumers or ordering boiled water for earthworms the reason for consuming it is because there are no side effects, prefers natural remedies, feels that consuming boiled earthworms can cure typhoid fever, experience of previous success,

"There are no side effects due to natural circumstances although I work at the pharmacy but prefer natural ones" (IU 6)

"Get better soon than medicine after drinking the heat down here is well known for typing ya order worm water here" (IU 7)

"It is suitable here, it has been a subscription from the first if it's already hot like I want to type directly order here" (IU 8)

"It's easy to get a message through the telephone then made finished can be taken ordirectly come here, here immediately ready morning message afternoon or evening just take" (IU 9)

"It's a lot if it's hot to go to the doctor, it's easy to drink worm water again" (IU 8)

"It has been treated, it does not go down and down, so the order of worm water usually goes down" (IU 9)

Discussion

Based on studies that have been carried out regarding the factors that cause people in Bangkalan to consume boiled water for earthworms (medicine/ traditional ingredients) for the treatment of typhoid shows that there are various underlying factors including personal factors (Suitable to consume traditional herbs), Marketing Factors (Famous), Factors Culture (Habit), Psychological Factors (Heal faster) and Access Factors (easy to obtain) besides that there are other Factors namely natural ingredients and no side effects This is in accordance with research by Pramono which states that traditional medicine is mixed from the ingredients provided nature, so it's safer. [7] Does not contain chemicals, without side effects and can be obtained cheaply so that cost savings are similar to the research conducted by Ganik, the reason for consuming traditional ingredients compared to medicine is because they come from natural ingredients so it is safer, has no side effects and the price is also cheaper. [8]

The results of interviews with respondents are also in line with research conducted in Bangkalan in 2016 by Andriati regarding the reason Bangkalan people consume drugs/traditional ingredients include: Personal factors namely feeling fit to consume traditional medicines/ herbal ingredients, marketing factors are advertisements obtained from people closest to either family, or community members, social factors, namely the advice of those around him (family, friends, colleagues, etc.).(10)

Cultural factors due to traditional medicines/herbal concoctions have been cultivated early on, Psychological factors due to deadlock (not cured) when taking pharmaceutical drugs (modern drugs) so that switching or consuming traditional medicines that are considered more able to cure the disease, the price factor due to traditional medicines/herbal ingredients are relatively affordable.

While other research shows, the factors that encourage people who choose traditional medicine are caused by various things, which are divided into internal and external factors of the patient. Internal factors, including lack of knowledge about health, beliefs and perceptions that traditional medicine can cure diseases. External factors, namely supporting factors include the distance that is close enough and the cost is cheap. Other external factors are driving factors which are rigid social impulses, culture which always dictates classical traditions and disease severity . (11)

Based on interviews there were respondents who directly compared traditional medicine with medical treatment and chose traditional treatment because it was more natural, no effect, cheaper and effective, easier to access than health workers. Some reasons for the respondents are in line with the reasons for consuming traditional ingredients compared to drugs according to Ganik because they come from natural ingredients so it is safer, has no side effects and the price is also cheaper. And easier access than to health facilities. [8] It is also in line with Pramono that mixed traditional medicine of materials - materials that nature provides, so it's safer. Does not contain chemicals, without side effects and can be obtained cheaply so that it is cost effective.(7)

However, previous studies have shown that boiled water for certain concentrations of earthworms does not inhibit the growth of *Salmonella typhosa* bacteria.(9) Therefore, further research is needed regarding the benefits of consuming earthworm traditional medicines for the treatment of typhoid fever.

Conclusion

Many things cause people to use traditional medicines although traditional medicine has not been clinically proven compared to medical treatment. The community believes that boiled water is more natural, without side effects, is well-known among the community, is easily accepted by the community, is a local custom and is easily available.

Suggestion: Various approaches are needed so that people move from traditional service to health services.

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The Influence of Emotional Support and Tradition on the Mother's Decision to Select Birth Attendants in Kaiwatu Village, Indonesia

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Abstract

Maternal Mortality Rate (MMR) is the number of maternal deaths during pregnancy, childbirth and childbirth caused by pregnancy, childbirth and childbirth or its management but not due to other causes such as accidents or falls in every 100,000 live births . This indicator is to assess the maternal health program and the degree of public health, because of its sensitivity to improving health services, both in terms of accessibility and quality. Delivery assisted by health workers is proven to contribute to the decrease in maternal mortality ratio . Competent health workers who provide birth assistance can have the opportunity to provide education related to Early Breastfeeding Initiation, exclusive breastfeeding and even care during the postpartum period. This study aims to analyze the influence of the support of social and cultural to decision helper mothers choose birth not health workers . This research is a descriptive study with qualitative method. Data collection is done by in-depth interviews, participatory observations and secondary data. Research informants are mothers who have given birth in the last 5 years in Kaiwatu village. The results showed the mother's decision to choose a birth attendant birth attendant was influenced by emotional support and tradition. Therefore, mothers in Kaiwatu village tend to choose birth attendants.

Keywords: *Emotional support, tradition, birth attendants.*

Introduction

Maternal Mortality Rate (MMR) is the number of maternal deaths during pregnancy, childbirth and childbirth caused by pregnancy, childbirth and childbirth or its management but not due to other causes such as accidents or falls in every 100,000 live births . This indicator is to assess the maternal health program and the degree of public health, because of its sensitivity to improving health services, both in terms of accessibility and quality. (Kementerian Kesehatan, 2016).(1)

According to data from the Central Statistics Agency (CPM, 2016), the maternal mortality rate in Indonesia by island, Nusa Tenggara, Maluku and Papua has the highest MMR, which is 489 per 100,000 live births, then followed by the island of Kalimantan by 466 per 100,000 live births and The lowest MMR on Java and Bali was 247 per 100,000 live births.(2)

Delivery assisted by health workers certainly greatly contributes to improving maternal and child health. Competent health workers who provide birth assistance can have the opportunity to provide education related to Early Breastfeeding Initiation, exclusive breastfeeding and even care during the postpartum period.

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Based on data from the Kementerian Kesehatan Indonesia (2018), coverage of birth attendants by health workers in health facilities in Indonesia has fluctuated in the last three years. In 2015 it was 88.55%, but it dropped to 80.01% in 2016, increasing again in 2017 by 83.14%. Furthermore, coverage of childbirth assistants by health workers in a facility in Maluku province has also fluctuated in the last three years. In 2015 as many as 46, 90%, down to 25.71% in 2016, then in 2017 increased to 30.65%.[3]

Data from the Maluku provincial health office, in 2016 coverage of deliveries assisted by health workers in the health facilities in Southwest Maluku regency ranked second as low as 7.9%, then in 2017 it increased to 19.74% and 2018 as much as 22.36%. Although it has increased every year, but this is certainly not yet reached the target set in the Strategic Plan of the Department of Health in 2015, namely births attended by a health worker by 80% (Dinas Kesehatan Provinsi Maluku, 2019).[4]

Based on preliminary studies conducted by researchers, pregnant women in Kaiwatu village tend to choose birth attendants by birth attendants. Out of 10 pregnant women, 7 people preferred birth attendant birth attendants, 3 others chose health workers because they experienced difficulties at delivery. This is consistent with data obtained from the Tiakur Health Center in the last three years showing that, coverage of birth attendants assisted by TBAs in Kaiwatu village tends to increase . In 2016 as much as 87%, increased in 2017 as much as 93% and in 2018 it increased again to 95%, while the coverage of birth attendants by health workers was highest in Tiakur village and continues to increase. In 2016 as much as 92%, in 2017 as much as 93%, increasing again in 2018 as much as 95%.[5]

The impact of the low birth attendance by health workers in the village of Kaiwatu, is that the coverage of IMD and exclusive breastfeeding is very low because maternity mothers who are assisted by birth attendants do not do IMD so that it will certainly affect the coverage of exclusive breastfeeding as well. Lack of knowledge and certain beliefs sometimes affect the mothers so as not to give colostrum to babies like in the village of Kaiwatu, colostrum is milked by hand and discarded. This means that Kaiwatu village is one of the villages that affects the low coverage of IMD and exclusive breastfeeding in Southwest Maluku district. Data on the health profile of the Maluku province in 2015 showed that IMD coverage in the Southwest Maluku district was 5%, while exclusive breastfeeding coverage was 9.3%.[6]

In addition, the ratio between the number of residents and health workers in Kaiwatu village, which is 700 residents: 3 doctors, 4 midwives, 8 nurses, then access to health facilities is relatively easy and the distance traveled is also very close, but the local communities who are indigenous and settled there prefer helper non-health delivery, if not experiencing difficulties at delivery. Based on the background and identification of the problems above, the researcher wanted to examine the "Influence of Emotional Support, Social Networking Support and Tradition Against the Decision of Mothers Choosing Birth attendants Delivery Assistance in Kaiwatu Village, Indonesia ".

Method

This research is a descriptive study with qualitative method. Data collection is done by in-depth interviews, participatory observations and secondary data . In setting informants, researchers used snowball sampling techniques. With this snowball sampling technique, the researcher chose one mother who is a native of Kaiwatu village who gave birth in the last five years with the help of delivery of health and non-health workers who will be key informants to further provide clues as to who other key informants can provide further information . In this study, researchers used two types of triangulation, namely source triangulation and technique triangulation.

Triangulation source, to test the credibility of the data is done by way of checking the data that has been obtained through several sources. Triangulation of this source is used by researchers to check data from traditional healers, health workers, hus Bands and families. While triangulation techniques to test the credibility of the data is done by way of verifying data to the same source with different techniques. Triangulation of this technique is used by researchers after getting interview results which are then checked with the results of observation and documentation. of the three techniques, of course, will produce a conclusion related to the influence of emotional support, social networking support and tradition on the decision of mothers choosing birth attendants instead of health workers .

Results

Kaiwatu Village is one of the villages in Maluku Province, Southwest Maluku Regency, Moa District.

The total area of the village of Kaiwatu amounted to 5,417.228 ha with a population of 700 inhabitants (CPM, 2018).[7] Informants in this study were 6 key informants and 10 triangulation informants .

The results showed that emotional support influenced the decision of mothers to choose birth attendants by non-health workers or traditional birth attendants.

"*Yes, when my stomach started hurting, my hus Band and mother did go to call a birth attendants to help my childbirth ...*" (WS.31 years)

"The *family is very supportive because it happens that my grandmother isa birth attendants so the family would support later discussion is convenient because when it starts to contract again the birth attendants massage my waist ...* "(SS.30 years).

"*The family recommends to the TBA because it has been proventheir service is very good, friendly to the community whenever we give birth they are ...*" (IN.25 Years)

"*All the family was there when I gave birth at home so I wasn't worried, if in hospital only can be accompanied by one person, hus Band or other family..*"(YP.25 Year).

"*Families take care during the puerperium, starting from the need for food to take a shower and even wash my child's clothes ...*" (PP. 29 Years)

The hereditary tradition in the family also influences the decision of mothers in choosing birth attendants by non-health workers.

"A *long time ago, if our family gave birth then it is only helped by birth attendants, so it has been proven that the service is good. During helped not died, some acquaintances giving birth in hospital actually died whereas helped by midwives and doctors ...*" (WS.31 Years).

"The Birth attendants took care of me until my child's umbilical cord fell, bathing me and my child, besides massaging me after 1 week of giving birth ..." (OT. 20 years).

"*Birth attendants always massage in the third trimester and after giving birth. I prefer birth attendants because the service is better...*" (SS. 30 Years).

"*The birth attendants massages after one week of giving birth, giving herbal concoctions to drink, the baby is warmed using a baked handkerchief in embers, making hundred to tighten the vagina ...*" (YP. 25 years).

Discussion

Social support factors can influence the decision of mothers to choose birth attendants, both health and non-health workers. The social support factor in this study is emotional support. Sarafino (2011), suggests that emotional support include expressions of empathy for example, listen, be open, showing the attitude of believers towards what is complained of, to understand, expressions of affection and concern for someone who will make an impact positive to reduce the anxiety that makes feel valuable, comfortable, safe, secure and loved.[8]

The study results in Kaiwatu village show that the decision of mothers to choose a birth attendants birth attendant is strongly influenced by emotional support from the family. Hus Band and family play an important role in the process of giving birth. Hus Band and family play an important role in the process of giving birth. Hus Band and family play a role in determining birth attendant birth attendants because based on previous experience, birth attendants provide the best services so that mothers and families are more comfortable if the birth attendants help during labor and it has been proven that no mothers and babies have died. This study is also consistent with research conducted by Hidra (2017) in the working area of the Pasir Putih Puskesmas, Muna Regency, showing that family support greatly influenced the decision of mothers to choose birth attendants for health workers by 56.8% and non-health workers by 43.2%.[9]

Culture is one aspect that can not be separated in human life. The results of this study indicate that cultural actors who can influence a mother's decision to choose not health workers or birth attendants, namely the trust of local communities and hereditary traditions. Birth attendants have the advantage of services that cannot be performed by health workers, namely massaging the mother before giving birth to correct the position of the fetus so that during birth the right position Besides that another advantage is that after giving birth the birth attendants also massages as well as provides herbal concoctions for the mother and roughens the mother's vagina so that the wounds caused by childbirth are quickly healed.

The results of this study are consistent with studies

conducted by Aryani and Islaeni (2018) in the Riau Islands, showing that mothers prefer birth attendants by birth attendants because they have advantages in the eyes of the community, namely because birth attendants provide massage or ingredients during labor that are not obtained by the community if doing per copy at a health facility.[10]

In addition, research conducted by Lestari and Agustina (2018), shows that people believe in birth attendants more because birth attendants have an important role in socio-religious positions in society.[11] Aside from being a helper for childbirth, the advice and suggestions from the birth attendants have influence in determining the facilities. Studies conducted by Preis et al (2018) at the Women's Community Health Center in Metropolitan Israel, show that mothers have confidence that labor is natural so there is no need for medical intervention.[12]

Conclusion

Mothers' decisions choose birth attendants instead of healthcare workers affected by the emotional support and tradition. Therefore, mothers in Kaiwatu village tend to choose birth attendants instead of health workers.

Suggestion: Emotional support and information from health workers need to be seen again its influence on mothers in choosing delivery helpers. In addition, social networking support also needs to be investigated to see how much influence it has on mothers in determining birth attendants.

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Efficacy and Safety of Liquorice Extract in Patients with Bronchial Asthma: A Randomized Controlled Trial

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Abstract

Background: Liquorice is one of the most commonly used medicinal herb in Egypt as it has many pharmacological activities including anti-inflammatory and anti-allergic effects that encourage its use in asthma. Aim: evaluate the efficacy and safety of aqueous liquorice extract in asthmatic patients.

Method: our study included 127 asthmatic patients who were classified into 3 groups which are, group 1(placebo group) maintained at inhaled corticosteroids (ICs) and long-acting beta agonist (LABA) and received starch capsules (500 mg starch) three times daily as placebo, group 2 maintained at ICs and LABA and received liquorice capsules twice daily and group 3 maintained at ICs and LABA and received liquorice capsules three times daily and the study lasts 4 weeks. Blood and sputum eosinophils %, pulmonary function test asthma control test (ACT) score, serum potassium level and blood pressure were measured before and after the 4 weeks of the study.

Results: Only 95 patients completed the study and the results showed that liquorice in group 2 and 3 resulted in no significant reduction in blood and sputum eosinophils %. However, it significantly improved Forced Vital Capacity %, Forced Expiratory Volume % in one second and ACT score. Neither blood pressure (systolic and diastolic), nor serum potassium level showed any change in group 2. However, there was a significant elevation in systolic and diastolic blood pressure and reduction in serum potassium level in group 3.

Conclusions: liquorice significantly improved the pulmonary function in both the lower and higher doses used in the study, however the lower dose of the extract was safe and increasing this dose resulted in a significant elevation in systolic and diastolic blood pressure and reduction in serum potassium level.

Keywords: *Asthma, liquorice, pulmonary function, potassium, blood pressure.*

Introduction

Asthma is a heterogeneous disease characterized by chronic airway inflammation with variable expiratory airflow limitation[(1,2)]. There are many inflammatory cells involved in asthma pathogenesis as eosinophils that play important roles in the asthma development. Blood and sputum eosinophils are usually increased in patients with uncontrolled asthma and thus can be taken as indicators to the degree of asthma control[(3)]. Pulmonary function parameters like Forced Vital Capacity (FVC) and Forced Expiratory Volume in one second (FEV_1), can also be helpful in the determination of the severity of the disease.

Liquorice has been used in traditional Chinese medicine (TCM) in productive cough and liver

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diseases [4]. The main active ingredient of liquorice is glycyrrhizin is responsible for the anti-inflammatory activity of liquorice as it inhibits 11β- hydroxysteroid dehydrogenase (11-β-HSDH), the enzyme responsible for the metabolism of cortisol to cortisone, resulting in cortisol accumulation[5]. Serious side effects of liquorice were reported that include hypertension and hypokalemia and these effects are mainly due to glycyrrhizin that makes a state of apparent hyper mineralocorticoid due to cortisol accumulation that activates the renal mineralocorticoid receptors [6]. Many studies were made to estimate the safe dose of liquorice as a study made on 24 healthy subjects who took aqueous liquorice extract pills and the results of this study revealed that a dose of liquorice extract equivalent to 217 mg daily of glycyrrhizin produced no side effects [7]. Another study, made on 20 healthy volunteers showed that high dose of liquorice (equivalent to 370 mg glycyrrhizin once daily) increased both systolic and diastolic blood pressure (S BP and DBP) significantly[8].

Patients and Method

Study Design: This study is a parallel randomized controlled trial in which 127 patients of chronic stable, moderate bronchial asthma were enrolled. Patient selection was done randomly from the outpatient clinic of the Cardiothoracic University Hospital, Minia University. Patients were classified into 3 groups. Group 1 included 43 patients and they were maintained at their usual asthma treatment ICS (fluticasone in moderate to high doses) plus LABA (salmeterol) and received a 500mg maize starch capsule 3 times daily as placebo. Group 2 included 44 patients and they were maintained at the same asthma treatment as group 1 in addition to 500mg aqueous liquorice extract capsule (equivalent to 100mg glycyrrhizin) twice daily [the extract was purchased from the Changsha Zhongren Biotechnology Company, Hunan, China (Mainland). Group 3 included 40 patients and they were maintained at the same asthma treatment as group 1 in addition to liquorice capsule three times daily. The study lasted for 4 weeks. The followings were excluded from the study: hypertensive patients, patients in acute asthma exacerbation, patients with heart diseases, especially those taking digoxin, pregnant and lactating mothers and women taking oral contraceptives.

All patients were subjected to:

Full medical history and routine clinical examination: It includes name, age, sex, smoking ,symptoms of asthma as cough, wheeze and dyspnea and history of hypertension. Routine general and chest examination was also done. Blood pressure (BP) was measured.

Blood eosinophilic % determination: One milliliter of venous blood was collected for complete blood count (CBC). Blood smears were stained with Leishman stain to confirm eosinophil count. Normal values of eosinophils% in the blood is up to 4%[9].

Sputum eosinophilic % determination: Equal volumes of phosphate buffer saline and acetyl cysteine 20% were added to the sputum sample and the samples were examined microscopically. Total leukocyte count was done manually using a hemocytometer Normal values of eosinophils % in the sputum is up to 2% [10]. This test was done at the baseline and after 4 weeks of taking the medication.

Serum K level determination: Ion selective electrode ST-200 Sensacore Medical instrumentation PVT LTD, India was used. Normal serum potassium level is (3.5-5) mEq/l [11]. This test was done at the baseline and after 4 weeks

Pulmonary function test: Spirometry was performed using Spirostik that is a USB- spirometer.

Asthma Control Test (ACT): This test is composed of 5 questions, each answer has a score and then the total score was calculated. Scores from 20-25 indicate a well-controlled asthma, Scores from 16-20 indicate not well-controlled asthma and Scores from 5-15 indicate a very poorly-controlled asthma.[12]

Statistical method: Data were collected from the patients and revised, verified, coded and then entered PC for statistical analysis done using IBM SPSS statistical package version 20[13]. Kolmogorov-Smirnov for normality test was used to differentiate between parametric data and non-parametric data. Numeric data were displayed as the median and interquartile range (IQR). Categorical data were displayed as number and percent and the comparison between the three studied groups was done using Kruskal Wallis and chi-squared test while the paired comparison was done using Wilcoxon signed-rank test. The P - value is considered significant at <0.05.

Results

Only 95 patients have completed the study. Regarding the demographic data (age, sex, and smoking), it was found that there was no statistically significant differences in the median age , sex and smoking of patients in the three groups as shown in table 1.

Table 1: Demographic data of patients enrolled in the study.

Data		Group 1 n=40	Group 2 n=40	Group 3 n=15	P-value
Age in years	Median (IQR)	26.5 (25-34) 14-47	30 (23.25-40) 16-36	30 (25-34) 16-40	0.176
Sex: n (%)	Males	24 (60%)	15 (37.5%)	7 (46.7%)	0.130
	Females	16 (40%)	25 (62.5%)	8 (53.3%)	
Smoking: n (%)	Yes	20 (50%)	12 (30%)	5 (33.3%)	0.165
	No	20 (50%)	28 (70%)	10 (66.7%)	

Group 1: This is the control group and patients were maintained on inhaled corticosteroids (ICs) and long acting beta agonist (LABA) and received starch capsule twice daily as placebo , Group 2: patients were maintained on (ICs) and (LABA) and received liquorice capsules twice daily, Group 3: patients were maintained on (ICs) and (LABA) and received liquorice capsule three times daily. IQR is the interquartile range

NB: Each capsule contains 500mg aqueous liquorice extract capsule (equivalent to 100mg glycyrrhizin).

It was found that there were no statistically significant differences in the measured parameters between the three groups before the start of the study as shown in table 2.

Table 2: Baseline blood and sputum eosinophil%, blood pressure, pulmonary function and ACT score in patients enrolled in the study (Data are presented as Median and interquartile range IQR).

Data	Group 1 n=40	Group 2 n=40	Group 3 n=15	p-value
Blood Eosinophils %	2.5 (2-4)	2 (2-3)	2 (2-3)	0.622
Sputum Eosinophils %	2 (1-4)	2 (1-2)	2 (1-2)	0.158
Serum K(mEq/l)	4 (3.8-4)	3.9 (3.8-4.3)	3.9 (3.8-4.3)	0.979
SBP(mmHg)	115(100-120)	125 (100-125)	120 (100-120)	0.475
DBP(mmHg)	85 (70-85)	75(70-80)	80 (70-80)	0.112
FVC %	80 (64-86)	90 (68-95)	78 (64-81)	0.160
FEV1%	84 (74-91)	89 (78-90)	87 (75-91)	0.134
ACT score	15 (14-16)	14 (12-17)	14 (11-15)	0.629

SBP is the systolic blood pressure, DBP is the diastolic blood pressure, FVC is the forced vital capacity, FEV is the forced expiratory volume and ACT is the asthma control test.

Regarding liquorice efficacy, the results of the reduction in blood and sputum eosinophils % show that there was no significant reduction in both blood and sputum eosinophils % in group 2 and 3 when compared to group 1. In addition, there was no significant reduction in blood or sputum eosinophils in group 3 when compared to the reduction in blood and sputum eosinophils in group 2. There was a highly significant increase in FVC % in group 2 and 3 when compared to group 1, while there was no significant increase in FVC % in group 3 when compared to group 2. Similarly,

there was a significant increase in the FEV1 % in group 2 and 3 when compared to group 1, however, there was no significant increase in the FEV1 % in group 3 when compared to group 2. On the other hand, it was found that ACT score was a statistically significantly increased in group 2 and 3 when compared to group 1, while there was no statistically significant increase in ACT score in group 3 when compared to group 2 as shown in table 3.

Table 3: Changes in blood and sputum eosinophilic %, pulmonary function and ACT score in patient groups. (Data are presented as Median and interquartile range IQR).

Data	Group 1 n= 40	Group 2 n= 40	Group 3 n= 15	P1	P2	P3
Blood eosinophil % Reduction	0.5(0-2)	0(0-1.75)	1(0-2)	0.857	0.665	0.545
Sputum eosinophil % Reduction	0(0-1)	0(0-1)	0(0-1)	0.528	0.746	0.746
FVC % Increase	0.5(0-5)	8(0-18)	6(4-11)	0.003	0.005	0.560
FEV1 % Increase	2(0-4)	6(0-13)	7(1-15)	0.027	0.005	0.054
ACT score Increase	5(2-7)	7(3-9)	8(5-8)	0.032	0.023	0.180

P1: group 2 vs. group 1, P2: group 3 vs. group 1 and P3: group 3vs. group 2. FVC is the forced vital capacity, FEV is the forced expiratory volume and ACT is the asthma control test.

It was found that serum K level was not significantly changed in group 1 and 2 ,while in group 3, the serum K level was very highly significantly decreased as shown in figure 1.

Besides, both SBP and DBP were not significantly changed in group 1 and 2 ,while in group 3 both SBP and DBP were significantly increased in group 3 as shown in table 4.

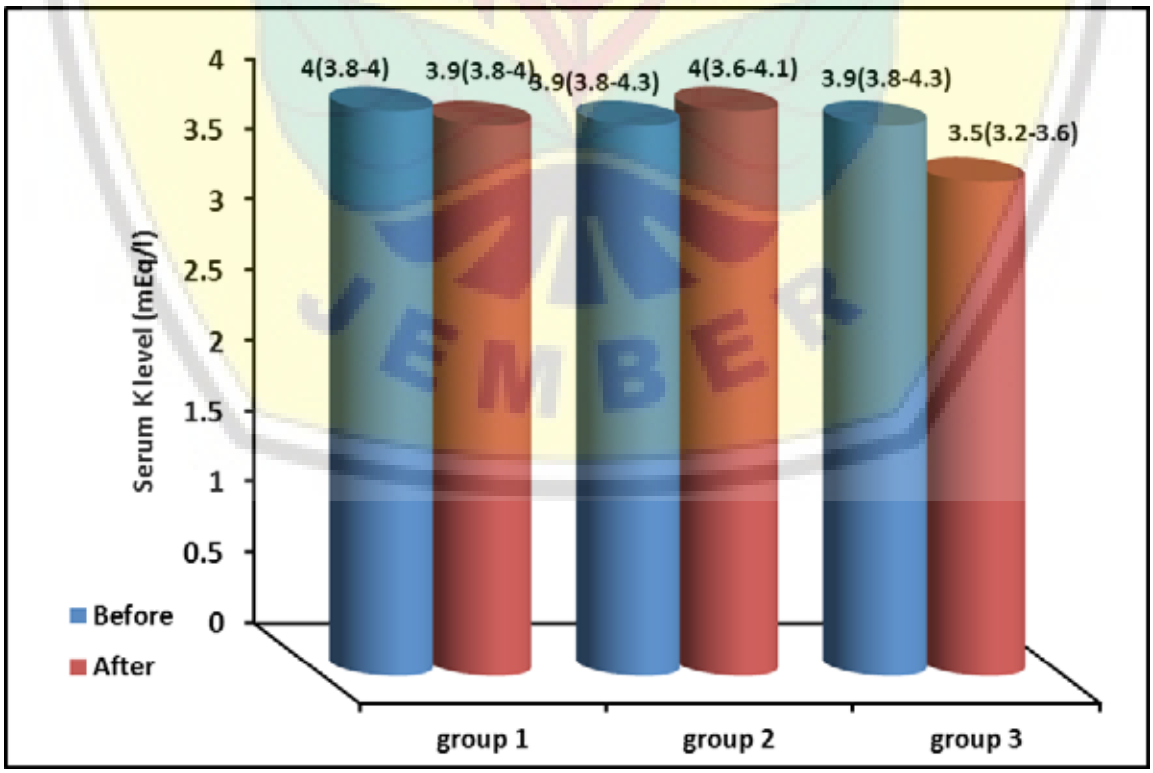

Fig. 1: Serum K level before and after patient enrollment in the study in group 1, 2 and 3 Data are presented as Median (interquartile range IQR)

Table 4: Changes in SBP and DBP before and after patient enrollment in the study. Data are represented as median (interquartile range IQR)

Group No.	SBP (mmHg) before enrollment in the study	SBP(mmHg) after enrollment in the study	P-value	DBP (mmHg)before enrollment in the study	DBP (mmHg) after enrollment in the study	P-value
1	115(100-120)	120(100-120)	0.094	85(70-85)	85(70-85)	0.125
2	125(100-125)	125(110-125)	0.060	75(70-80)	80(70-85)	0.109
3	120(100-120)	140(130-140)	0.003	80(70-80)	95(80-100)	0.008

Discussion

Regarding liquorice efficacy, the use of liquorice capsules resulted in no benefits on blood and sputum eosinophilic % reduction when compared to the reduction in the placebo group. The lack of effect may be due to the low doses used in our study, so, higher doses may be required to achieve a significant effect.

Comparing the pulmonary function improvement in group 2 and 3 to that of group 1 revealed that there was a significantly higher improvement in FVC% and in FEV_1% when compared to the placebo group (group 1). These results come in agreement with a study on 18 asthmatic patients which revealed a significant improvement of FEV_1% and FVC% after 3 weeks of treatment with liquorice [14].

The use of liquorice capsules in group 2 and 3 resulted in a significant improvement in ACT score when compared to that of group 1. These results can be supported by a study on the effect of aqueous liquorice extract on cough in mice as liquorice significantly decreased the frequency of cough in mice [15].

The use of liquorice capsules in group 2 resulted in no change in both SBP and DBP. These results are in agreement with a study on the safe dose of glycyrrhizin which demonstrated no adverse effects with a dose of 217mg daily [7]. However, in group 3, there was a significant elevation in both SBP and DBP and these results are consistent with the study mentioned above [7] on the safe dose of glycyrrhizin. Regarding serum K level in group 2 ,there was no significant change in serum K level. These results come in agreement with a study on 15 healthy volunteers who received pure liquorice extract equivalent to 250mg glycyrrhizin daily for 2 months with no significant change in serum K level [16]. However,in group 3, there was a highly significant reduction in serum K level. These results come in agreement with the case report of the patient who took glycyrrhizin 280mg daily and after two months, he suffered from hypokalemia and the K level was normalized after stopping glycyrrhizin [17].

Conclusions

The aqueous liquorice extract capsules significantly improved pulmonary function and ACT score in asthmatic patients at a dose equivalent to 200 and 300 mg glycyrrhizin daily and the dose of liquorice extract equivalent to 200mg glycyrrhizin daily was safe, however, increasing this dose resulted in a significant increase in BP and a significant reduction in the serum K level.

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Conflicts of Interest: There were no conflicts of interests.

Ethics Approval: All procedures performed in our study were in accordance with the ethical standards of the ethics committee in El Minia University Hospital that followed the International Conference on Harmonization - Good Clinical Practice (ICH-GCP) guidelines (Registration No.80-11/2018) and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The trial was explained to each subject and his or her consent was obtained.

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Protective Effect of Vitamin E Against Hepato-nephrotoxic Oxidative Stress Induced by Isoprinosine Toxicity

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Abstract

Isoprinosine was approved that it had hepatic and renal disorder in rabbits. This review covers key studies of protective effects of vitamin E (18.7 mg/kg P. O.) against isoprinosine (163.3 mg/kg P. O.) toxicity for 21 days when vitamin E was co-administered with isoprinosine. Blood samples were collected and the protective effect of vitamin E onbiochemical constituents in serum such as liver injury biomarkers as serum ALT, AST and ALP, kidney injury biomarker as serum creatinine and urea and oxidative stress biomarkers such as serum SOD, GPX and MDA. The obtained results indicated that vitamin E has protection effects through prohibiting the raise in liver and kidney injury biomarkers and oxidative stress biomarkers.

Keywords: *Isoprinosine, Vitamin E, Liver and kidney function and Antioxidant enzymes.*

Introduction

Isoprinosine is an immuno-modulatory antiviral drug that has been licensed since 1971 in several countries worldwide. It has beneficial clinical effects in several diseases and infections including mucocutaneous herpes simplex infections, sub-acute sclerosing panencephalitis, genital warts, influenza, zoster and type B viral hepatitis([1]). Several clinical trials established safety profile of isoprinosine as([2]) who found isoprinosine appeared to have a relatively low degree of both acute and chronic toxicity in both rodent and non-rodent species. Isoprinosine seem to be highly toxic for chicken embryos([3]). Isoprinosine, in higher doses, caused excessive release of enzymes and generation of free radicals which caused lung injury and worsening symptoms of bovine respiratory disease (BRD)[(4)].

Antioxidants have been defined as substances that prevent the formation of reactive oxygen species (ROS) or other oxidants, scavenge them or repair the damage they cause. Antioxidant defenses act as a balanced and coordinated system and each relies on the action of the other ([5]). Antioxidant defenses consist of low molecular mass antioxidant such as vitamin E and enzymes e.g. SOD, CAT and GPX ([6]).

Vitamin E is the most important lipid phase antioxidant ([7]). Vitamin E is an important antioxidant in biological system that diminishes the peroxidation of un-structural lipids by chain breaking free radical (FR), thus it contributes to the stability of cellular membranes([8]).

The aim of the work: This study examines protective effects of vitamin E against isoprinosine for 21 days. Blood samples are collected and the protective effects of vitamin E on liver, kidney and antioxidant enzymes are examined through measuring some constituents in serum as ALT, AST, ALP, creatinine, urea, SOD, GPX and MDA.

Drugs and chemicals: Isoprinosine 50 mg/kg (Ip50, reference standard) ([9]) was supplied by Newport pharmaceutical. Vitamin E (vitamin E 400 mg capsule once daily) was supplied by PHARCO pharmaceutical. The human dose of isoprinosine and vitamin E converted to rabbit dose (163.3 mg/kg P. O.) and (18.7 mg/kg P. O.) respectively ([10]).

Animals: A total of twenty (40) Newzealand white

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rabbits of 2-3 months old and weighing about 1800-2000 gm were used in the work. The rabbits were obtained from laboratory Animal Farm, Faculty of Veterinary Medicine, Zagazig University. All animals were kept under observation for two weeks for acclimatization to the laboratory environment before starting the experiments.

Ethical Clearance: The experimental animals were managed according to the management standard. The experimental study was approved by the committee of Animal Welfare and Research Ethics Faculty of Veterinary Medical Zagazig University, Egypt.

Experimental design: Rabbits randomly distributed into 4 major groups. 1st group was left non-treated, 2nd group was treated by isoprinosine for 21 days, 3 rd group was treated by vitamin E for 21 days and 4th group was treated by oral co-administration of isoprinosine and vitamin E for 21 days.

Preparation of serum sampling: Blood samples were collected and left to clot for 30 minute at room temperature, then centrifuged at 3000 rpm for 15 min. The top layers of serum were collected then stored at -20˚C and defreezed just before use.

Biochemical markers of liver injury: Determination serum ALT and AST were done according to ([11]). Determination of serum ALP was done according to ([12]).

Biochemical markers of kidney injury: Determination serum creatinine was done according to ([13]) and urea according to ([14]).

Biochemical markers of antioxidant activity

Determination serum SOD, GPX and MDA were done according to ([15]) and ([16]) respectively. Statistical analysis

The obtained data in the present study were statistically analyzed using the computer program (SPSS version 15 for Windows) and comparison were made using one way ANOVA. Post hock test was carried which considered statistically significant when P< 0.05 ([17]).(mean± S.E), (N=10).

Results

Effect of co-administration of isoprinosine and vitamin E on biochemical markers of liver injury (U/L) of rabbits at 7th, 14th and 21th day post

Oral co-administration of isoprinosine andvitamin E produced a significant decrease in serum ALT at 7th, 14th and 21th day post treatment (57.63 ± 1.883, 42.66 ± 1.309 and 34.00 ± 1.469) when compared with isoprinosine alone (64.38 ± 2.89, 54.75 ± 3.603 and 44.01± 3.938).

Oral co-administration of isoprinosine with vitamin E produced a significant decrease in serum AST at 7th and 14thday post treatment (43.43 ± 3.573 and33.76 ± 4.144) when compared with Isoprinosine alone (54.57± 3.798 and 45.62 ± 4.001respectively).

Oral co-administration of isoprinosine with vitamin E produced high significant decrease in serum AST at 21th day post treatment (26.42 ± 1.601) when compared with isoprinosine alone (39.53 ± 1.007).

Oral co-administration of isoprinosine with vitamin E produced high significant decrease in serumALP at 7thday post treatment (95.16 ± 1.456) when compared with isoprinosine alone (101.63 ± 0.779).

Oral co-administration of isoprinosine and vitamin E produced a significant decrease in serum ALPat 14th and 21th day post treatment (86.74 ± 0.792 and 82.39 ± 0.532respectively) when compared with isoprinosine alone (90.61 ± 1.464and 87.02 ± 1.426respectively).

Effect of oral co-administration of isoprinosine and vitamin E on serum biochemical markers of kidney injury (mg/dl) of rabbits at 7th, 14th and 21th day post treatment:

Oral co-administration of isoprinosine and vitamin E produced high significant decrease in serum creatinine at 7th, 14th and 21thday post treatment (1.86 ± 0.076, 1.49 ± 0.036and 1.17 ± 0.084 respectively) when compared with isoprinosine alone (2.10 ± 0.061, 1.82 ± 0.046and 1.53 ± 0.049respectively).

Oral co-administration of isoprinosine and vitamin E produced high significant decrease in serum urea at 7th day post treatment (66.97 ± 2.672) when compared with isoprinosine alone (77.42 ± 1.193).

Oral co-administration of isoprinosine and vitamin E produced a significant decrease in serum urea at 14th and 21th day post treatment (54.37± 1.822 and 40.87 ± 1.286) when compared with isoprinosine alone (60.63± 1.522 and 46.43± 1.993).

Effects of oral co-administration of isoprinosine and vitamin E on serumbiochemical markers of

antioxidant activity (U/L) of rabbits at 7th, 14th and 21th day post treatment: Oral co-administration of isoprinosine andvitamin E produced high significant increase in serum SOD at 7thday post treatment (2.33 ± 0.05) when compared with isoprinosine alone (1.08 ± 0.015).

Oral co-administration of isoprinosine and vitamin E produced a significant increase in serum SOD at 14th and 21th day post treatment (3.03 ± 0.043 and 3.28 ± 0.102 respectively) when compared with isoprinosine alone (1.82 ± 0.071 and 2.10 ± 0.95 respectively).

Oral co-administration of isoprinosine and vitamin E produce high significant increase in serum GPX at 7th and 14thday post treatment (99.67 ± 2.126 and98.97 ± 2.043 respectively) when compared with isoprinosine alone (74.90 ± 2.892 and82.07 ± 3.718respectively).

Oral co-administration of isoprinosine and vitamin E produce a significant increase in serum GPX at 21th day post treatment (98.53 ± 2.806) when compared with isoprinosine alone (91.20 ± 2.739).

Oral co-administration of isoprinosine and vitamin E produced high significant decrease in serum MDA at 7thday post treatment (27.73 ± 1.399) when compared with isoprinosine alone (33.40 ± 1.44).

Oral co-administration of isoprinosine with vitamin E produce a significant decrease in serum (MDA) at 14th and 21th day post treatment (22.83 ± 1.488 and 17.53 ± 1.496respectively) when compared with isoprinosine alone (27.15 ± 1.773 and 22.83 ± 1.774respectively).

Discussion

Vitamin E is one of the most important antioxidant drugs due to its hepato-nephro protective properties as reported by researches as ([18]). This study demonstrated the hepato-nephroprotective effect of vitamin E against isoprinosine toxicity. For liver biomarkers, we found that isoprinosine elevated serum alanine aminotransferase, serum aspartate aminotransferase, serum alkaline phosphatase which agreed with many researchers as ([19]).

For kidney biomarkers, we found that isoprinosine elevated serum of creatinine and serum urea which agreed with many researchers as ([20, 3]).

For antioxidant enzymes, we found that isoprinosine decreased superoxide dismutase and glutathione peroxidase and increased malondialdehyde which agreed with many researchers as ([21]).

According to the pervious results, we think to overcome hepato-nephrotoxic oxidative stress which induced by isoprinosine by use antioxidant agent like vitamin E. Co-administration of isoprinosine and vitamin E led to improve serum ALT, AST, ALP, creatinine, urea, SOD, GPX and MDA. This is in harmony with many researchers as ([22, 23, 24]) who used vitamin E with cytotoxic agents as carbon tetrachloride and prednisolone, respectively. More than administration of vitamin E in some diseases led to improve the illness by improving biomarkers after worsen by these diseases as liver diseases and pulmonary TB diseases, respectively([25, 26]).

There are many researchers who proved and explained the protective effects of vitamin E stabilizing membrane against phospholipase A, free fatty acids and lysophospholipids([27]), diminishing the peroxidation of unstructured lipids by chain breaking free radical([8]) acting against oxidative stress by using antioxidant defense system to control damaging species as reactive oxygen, nitrogen and chlorine species([6]), decreasing lipid peroxidation radicals before they attack the membrane lipid([28]) acting as a lipid soluble antioxidant so preventing normalized ROS damage in polyunsaturated fatty acids a membrane-stabilizing agent so acting against phospholipids damage and breaking the antioxidant chain so preventing ROS-produced cell membrane([29]).

Conclusion

It could be concluded that isoprinosine has hepatic and renal disturbance in rabbits; the co-administration of isoprinosineand vitamin E showed better results than isoprinosine alone. As vitamin E has protective effects against hepatic and renal disturbance, which may attribute to decrease the harmful effects of isoprinosine by in habiting free radical formation and by restoration of antioxidant systems.

Conflict of Interest: The authors declare no conflict of interest.

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Antibacterial Activity and Morphology Changes of Propionibacterium ACNES After Giving Curcuma Xanthorrhiza Extract

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Abstract

The use of antibiotics considered to have raised suspicion of resistance to P. acnes as a causative agent for acne so that it encourages various parties to develop anti-inflammatory preparations that can be given topically or systemically. Curcuma xanthorrhiza Roxb. has the main compound xanthorrizol which is considered potential for development as an antibacterial. The research purpose was to determine minimum inhibitory concentration and minimum bacterisidal concentration as well as morphology changes of P. acnes after giving Xanthorrhiza Curcuma Roxb. extract. Research design was experiment, with sample of P. acnes in the form isolates stock culture (ATCC® 11827™), which further grown on MHA media. Concentration extract was 6.25 µg/ml, 12.5 µg/ml, 25 µg/ml, 50 µg/ml and 100 µg/ml. Research result that concentration 25 mg/ml as the MIC, while the 50 µg/ml as MBC. P. acnes bacteria that were exposed has morphologic change of the cell wall due to shrinkage and a rough rough their cell walls are destroyed so that the cytoplasm out and looked like a melted. From this result indicated that extract of Curcuma xanthorrhiza Roxb. has an antibacterial effect against P. acnes bacteria in vitro.

Keywords: *Antibacterial, Acne vulgaris, Curcuma xanthorriza Roxb., SEM, TEM.*

Introduction

The management of Acne vulgaris were divided by degree of severity, in mild acne light therapy is given only topical treatment including retinoal acid or benzoyl peroxide. Treatment of moderate and severe acne can be added using the oral therapy with doxycycline or other antibiotics, but in pregnant women and breast-feeding is recommended to give antibiotics erythromycin.[1] Tetracycline is widely used for inflammatory acne, but tetracycline left since terhdap P. acnes resistance rates are quite high. Tetracycline derivative is doxycycline and minocycline replacing tetracycline as a first-line oral antibiotic therapy, but erythromycin also restricted only in pregnant women because it easily happens resistance of P. Acnes.[2]

The prevalence of antibiotic-resistant P. acnes vary in different countries. High prevalence occurs in various European countries with a resistance erythromycin/ clindamycin ranged between 45% -91% and tetracycline resistance from 5% to 26.4%. The prevalence of antibiotic-resistant P. acnes in the Asian region there is a big difference, for example in Japan, erythromycin or clindamycin resistance rate of only 4% and tetracycline or doxycycline only 2%. While in Korea, a recent study found only one of the 33 strains (3.2%) isolates were resistant to clindamycin in this case because of antibiotic-resistant P. acnes has not progressed quite well in Korea, while the results of research in Indonesia P. acnes resistance to the antibiotic tetracycline 12.9%, 45.2% erythromycin and clindamycin 61.3% whereas in doxycycline and minocycline there was no resistance.[3]

The use of topical antibiotics trigger only limited resistance in the treated area, but the use of oral antibiotics may develop resistance to all areas of the body. Based on a systematic review of 50 clinical trials on the use of topical antibiotics, there is a decrease in the effectiveness of both erythromycin topical acne lesions inflammatory and non-inflammatory allegedly linked to the development of antibiotic resistance of P. acnes.[4]

The emergence of the alleged resistance to the use of antibiotics for the treatment of acne encourage various parties to develop preparations of anti-inflammatory can be administered topically or systemically, for example, topical nicotinamide to treat acne inflamed mild and moderate, while benzoyl peroxide in the ointment anti Acne vulgaris regarded as topical disinfectants that are sold freely and the most effective in the treatment of Acne vulgaris former stains. Therefore we need an alternative drug substance as an antibiotic against P. acnes on the treatment of Acne vulgaris problem primarily derived from natural materials to minimize side effects.[5]

The content of the antibacterial potential possessed by xanthorrhiza Curcuma Roxb. are flavonoids. Flavonoids are phenolic compounds derivatives can cause disruption of the integrity of bacterial cell walls and membranes that can be seen from the changes in the size and morphology of bacterial cells.[5]The content of the active ingredient in xanthorrhiza Curcuma Roxb. potentially as an antimicrobial make a lot of interested parties to use it as a topical treatment of acne. When this has been circulated freely various types of cream Temulawak questionable results of clinical trials as well as the legality of the drug and food watchdog BPOM so that a MIC and MBCproduct is not yet reliable.

Based on this background set research objectives are: to know the minimum inhibitory concentration and minimum bactericidal concentration as well as morphology changes of Propionibacterium acnes after giving Curcuma xanthorriza Roxb. extract.

Research Method

Research design: This type of research used in this study is the experimental method (experimental), with post test only control group design.

Population and Sample: Samples was Propionibacterium acnes in the form of stock culture isolates American Type Culture Collection (ATCC) by the name of Propionibacterium acnes (ATCC® 11827 ™) were obtained from a laboratory in the field for later grow in media Mueller Hinton Agar (MHA) and incubated at 35o C. for 24 hours with the condition of the carbon dioxide concentration of 5% -10%.[6] Number of replication based on the number concentration of treatment is 4 replications.

Research Variable: The independent variables were the concentration of extract of *Curcuma xanthorrhiza Roxb.* with each concentration of 6.25 µg/ml, 12.5 pg/ml, 25 pg/ml, 50 pg/ml and 100 pg/ml.[7] The dependent variable in this study tends antibacterial activity as measured by minimum inhibitory concentration (MIC) and Minimum Baterisidal Concentration (MBC) in MHA media as well as changes in the structure of cell walls of bacteria P. acnes.

Research Procedure: The procedure of making MHA media containing ethanol extract of *Curcuma xanthorrhiza Roxb.* various concentrations is start with made concentration of stock solution used was 1.000 mg/mL were then added MHB with serial dilution concentrations used were 100%, 50%, 25%, 12.5%, 6.25% and 0%.The solution was incubated at 25 ° C for 24 hours.A solution of each flask is then poured into a petri dish MHA at each containing 10 mL. The media has done as much as P acnes bacteria inoculation 1,5x104 CFU to each surface MHA medium in a petri dish with mayo method.Test media were incubated at 35°C for 24 hours prior to observing.

Observations using SEM and TEM to determine the effect of extracts on P. acnes were carried out by identifying changes in the structure of P. acnes cell walls by observing the size (diameter) of P. acnes bacterial cells, the state of P. acnes bacterial cell walls and the number of P. bacterial cells. acnes field of view. SEM and TEM tests were performed on MHA test media from concentrations of 0 µg/mL (Control) and 25 µg/mL (P3).

Results

Determination of MIC was done by identifying the lowest concentration of the extract was able to inhibit the growth of bacteria, wherever the minimum Baterisidal Concentration (MBC) were assessed by lowest concentration which showed no bacterial growth on MHA.

Table 1. Minimum Inhibitory Concentration (MIC) Result

R	Concentration Extract					
	100 µg/ml	50 µg/ml	25 µg/ml	12.5 µg/ml	6.25 µg/ml	Control (0 µg/ml)
R1	-	-	+	++	++	++
R2	-	-	+	++	++	++
R3	-	-	+	++	++	++
R4	-	-	+	++	++	++

Table 2. Minimum Bacterisidal Concentration (MBC) Result

R	Concentration Extract					
	100 µg/ml	50 µg/ml	25 µg/ml	12.5 µg/ml	6.25 µg/ml	Control (µg/ml)
R1	-	-	+	++	++	++
R2	-	-	+	++	++	++
R3	-	-	+	++	++	++
R4	-	-	+	++	++	++

Information:

Negative (-) : No growth of bacteria *P acnesin*the MHA media

Positive (+) : No growth of bacteria *P acnes* in the MHAmedia

Positive (++) : No growth of bacteria *P acnes* in the MHA media with high quantity

Based on the above results showed that the extract of *Curcuma xanthorrhiza Roxb.* has antibacterial activity against P acnes bacteria on MHA with extract concentration 25 µg/ml, 12.5 pg/ml and 6.25 pg/ml as indicated by the growth of bacteria on inoculated MHA P acnes as well as the MHA and MHB the concentration control also contained P acnes bacteria growth in considerable amounts. Based observations concluded that concentration of 25 µg/ml as MIC.

Based on table 2 can be seen on the replication of R1-R4 on MHA medium containing the extract concentration of 50 µg/ml and 100 µg/ml did not seem the growth of P acnes so the concentration of 50 µg/ml concluded as MBC value.

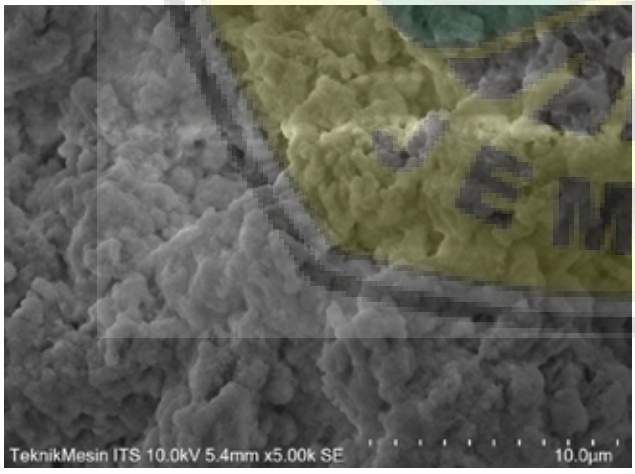

Figure 1. Scanning Electron Microscopy (SEM) Result of P. acnes that are not exposed to Curcuma xanthorrhiza Roxb.extractat 5000x Magnification

*Curcuma xanthorrhiza Roxb.*at concentration 0% (K) and 25% continued with the examination using a Scanning Electron Microscopy at a magnification 5000-20000 times to describe the changes in the structure of cell walls of bacteria P. acnes.

Based on the observations above shows that the P acnes bacteria in the control group looks solid with the conditions of the bacterial cell wall intact.

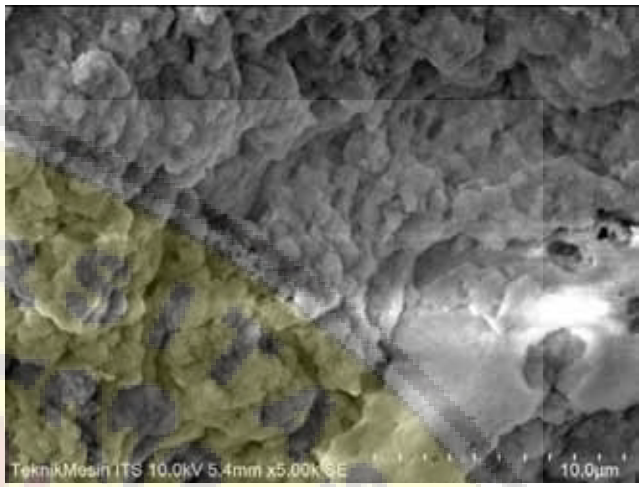

Figure 2. Scanning Electron Microscopy (SEM) Result of P. acnes that are not Exposed Curcuma xanthorriza Roxb. withconcentration of 25% at 5000x magnification

The observation of P acnes bacteria cell walls exposed xanthorrhiza ethanol extract of Curcuma Roxb. with a 25% concentration of morphological changes occur in the form of coarse cell wall due to shrinkage as well as their cell walls are destroyed so that the cytoplasm out and looked like melted.

Transmission Electron Microscopy were carried out at magnification starting from 1.0 µm - 500.0 nm to find out a description of the changes in the structure of the cell wall of P.acnes bacteria in more detail as follows:

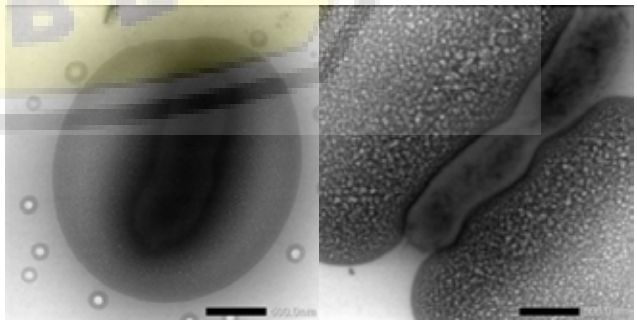

Figure 3. Transmission Electron Microscopy (TEM) Results of Non-Expossed P.acnes with Ethanol Extract Curcuma xanthorrhiza Roxb.at 500 nm magnification

Based on observations at a 500 nm magnification above the visible cell wall intact, the cytoplasm is tightly packed with the cell nucleus in the middle.

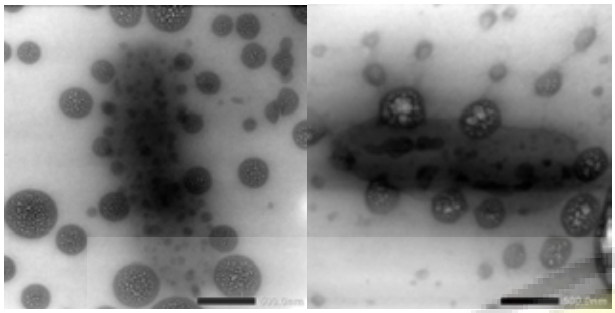

Figure 4. Micrographic Transmission Electron Microscopy (TEM) P.acnes Exposed to Curcuma xanthorrhiza Roxb. extract with a concentration of 25% at 500 nm magnification

The observation of the cell wall of P.acnes bacteria at TEM magnification of 500 nm appeared to damage the cell wall and so that the cytoplasm appeared granulated and became more fluid seen from the cytoplasm color which was more transparent than in the control sample.

Discussion

Research results indicate that extract of *Curcuma xanthorrhiza Roxb.*have antibacterial activity against the growth of P acnes that is a type of gram-positive bacteria. These results are consistent with research conducted by Diastuti which shows extracts of *Curcuma xanthorrhiza Roxb.* containing α-curcumene, xanthorrizol and monoterpenes have significant antibacterial effect against gram-positive bacteria Bacillus subtilis and Staphylococcus aureus and gram-negative bacteria Pseudomonas aeruginosa with MBC value of 15.6µg/mL either the extract with acetone and n hexane extraction.[8] Xanthorrhiza Curcuma Roxb antibacterial effect. weak against gram-negative bacteria Shigelladysenteriae, and Vibrio cholerae, and does not have an antibacterial effect against gram-negative bacteria Escherichia coli, Enterobacteraerogenes and Salmonella thypi.

Other research by Adilashowed that extracts of Curcuma provides third-microbial inhibition test against Candida albicans (13.07 mm), Staphylococcus aureus (15.75 mm) and Escherichia coli (31.56 mm). MIC and MBC fresh ginger rhizome extract against E. coli respectively 12.5% and 25%. Whereas in C. albicans and S. aureus fresh ginger extract does not kill the bacteria test.[9] The difference value caused by E.coli cell wall structure that different from S. aureus and C. albicans, where E. coli although belonging to gram-negative bacteria have a cell wall composition intricate yet E.coli have an outer membrane protein on wall cell that serves as the entry and exit channels of the active compound, so that the active compounds in ginger will easily enter and damage the enzyme activity of cells that cause damage to cells of E. coli.[10] Whereas in C. albicans despite belonging to gram-positive bacteria, but the formation of chlamydospores cell structure that forms the walls thicker so difficult to be penetrated by the antimicrobial compound.[11]

SEM examination of the P acnes bacteria exposed by Curcuma xanthorrizaconcentration of 25µg/ml (P3), shows the P acnes bacteria cells undergo morphological changes such as the onset of cell diding rough due to shrinkage as well as their cell walls are destroyed so that the cytoplasm out and looked like a melted. This caused by the content xanthorrizol also caused by the content of curcumindmilikixanthorriza Curcuma Roxb. The results of another study by Tyagi reported that curcumin has antibacterial against all test bacteria from both Gram-positive and Gram-negative and killing power increases with the dose and time of incubation. Curcumin killing power 100% of the test bacteria at a dose of 100 µMcurcumin even when tested on bacteria with a higher density (106 CFU/ml). While looking at the reported observation under a change in the surface roughness and the incidence curve of the cell wall. On incubation with higher doses cause cell wall leakage.[12]

Xanthorriza extract of Curcuma Roxb. has a unique antimicrobial compound that is xanthorrizol not owned by rhizome of Curcuma else though content is only in very small quantities. This is consistent with the statement Hansel[13] are compounds in ginger xhantorrizol ≥6% while turmeric ≥3%. Xanthorrizol compound is the main antibacterial active compounds found in ginger rhizome antibacterial activity of xanthorrizol have good stability to heat, which at high temperatures between 60-121°C. Fatmawati research results also found that that the content xanthorrizol able to inhibit the growth of Streptococcus mutans and S. aureus.[14]

Response inhibition of bacterial growth resulting xanthorrhiza Curcuma Roxb. affected by the active compounds contained therein such as essential oils, alkaloids, flavonoids, tannins, kurkuminoid and terpenoids.[15] Flavonoid compounds capable of destroying the cell wall, causing cell death. Flavonoids can also inhibit the formation of proteins that inhibit

bacterial growth. In addition to flavonoid content of other compounds such as tannin can also damage the cell membrane. Tannin can damage the formation of mildew conidia. The content of other compounds such as alkaloids in the rhizome of Curcuma xanthorriza Roxb. able to denature proteins that damage the activity of the enzyme and cause cell death.[16]

Cikrici et al., adds that curcuminoid antibacterial activity against bacterial activity by inhibiting the activity of the enzyme cyclooxygenase-2 (cox-2) which converts arachidonic acid to prostaglandins that cause taste sakit.Curcuminoid the phenolic compounds can also inhibit the growth of denature and bacteria by damaging the cell membrane so that the cell metabolism will be disturbed.[17]

Conclusions

Giving Curcuma xanthorrhiza Roxb extract. has an antibacterial effect on P.acnes bacteria in vitro which is thought to be due to the content of essential oils (Xanthorrizol), Curcuminoids and Flavonoids. Extract concentration 25 mg/ml is the minimum level that can inhibit (MIC) the growth of P acnes through liquid dilution, while the minimum concentration that can kill (MBC) P acnes is 50 µg/ml. P acnes bacteria were exposed to ethanol extract of *Curcuma xanthorrhiza Roxb.* morphologic change of the emergence of the cell wall due to shrinkage and a rough rough their cell walls are destroyed so that the cytoplasm out and looked like melted

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Role of Quality of Care to the Contraceptive Use in Asia and Africa: A Systematic Literature Review

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Abstract

Background: The modern contraceptive use is decreasing and the prevalence of using Long Acting Contraceptive System (LACS) is low in Indonesia;all Family Planning targets are not achieved. This indicates the low family planning services quality. The purpose of this study is to identify publication results about services quality that could increase the contraceptive use's prevalence in developing and developed countries. **Method**: This study uses Systematic Literature Reviewunder electronic data from ProQuest, Ebsco, PubMed, SpringerLink and Google Scholar. **Results**: The obtained publication of articles is still limited, in terms of number and geographical distribution, namely 9 articles from Africa and 2 articles from Asia. The review results showed the contraceptive user's range from 11.3% to 86.5%. The family planning services quality can increase the contraceptive use. In this study, most of those articles examine the providers' competenceand information provision to clients. The review results explained that training of injection and implant contraceptive services by community health workers had a positive impact on family planning programs. The review also revealed that the low counseling skill by providers is a barrier to the contraceptive services. **Conclusions**: In the last ten years in the world, it was found that the family planning services qualitycancomprehensively improve contraceptive services. In Indonesia, there is no publication on this topic, thus it needs a research to examine the family planning services quality through the midwifery and family planning field workercompetence review as well as the information provision by providers.

Keywords: *Contraception, service quality, choice of method, information, competence, counseling, provider-client relationship, follow-up, program integration.*

Introduction

The world's Maternal Mortality Rate (MMR) in 2015 was 216 per 100,000 live births. The MMR in developed countries is only 12 per 100,000 live births, while in developing countries the MMR reaches 239 per 100,000 live births[1]. The contraceptive use among women with unmet need is estimated to reduce the mortality by almost a third[2]. However, the contraceptive use in developing countries, especially effective method, is still relatively low[3].

MMR in Indonesia reaches 305 per 100,000 live births[4]. It is far from targets under Millennium Development Goals (MDGs). Causes of Indonesia's maternal death dominated by direct causes, such as bleeding, hypertension in pregnancy and infection. Maternal death will not occur if the pregnancy can be prevented and controlled[5].

One main pillar in reducing the MMR is preventing risky pregnancy through Family Planning. However, the success of Indonesia's family planning services is stagnant. The Indonesia's prevalence of

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modern contraception use shifted, where the modern contraception use decreased and conversely, the use of the traditional contraception increased. The 2017 Indonesia Demographic and Health Survey (IDHS) results showed the modern contraceptive use is 57.2% and the use of the traditional contraception is 6.4%[6].

The contraceptive use influenced by the service quality. The service quality is defined through six basic elements: choice of method, information for clients, providers' competence, interpersonal relationship, mechanisms to encourage sustain ability and integrated services[7,8]. It can be measured at the levels of policy, service delivery or client[9]. Thus, it is necessary to examine the quality of contraceptive service elements with the most substantial role in increasing the contraceptive use.

Method

This study uses the Systematic Literature Review method through four stages, namely identification, screening, eligibility and inclusion. The inclusion criteria in this literature search: 1) the subject consists of married women of family planning acceptors; 2) the research outcome is the scope of the contraceptive use; 3) articles in form of research based on keywords;and 4) articles published in 2009-2019; and 5) articles in English and Indonesian. Its keywords are service quality and contraceptive use.

The article search results using Preferred Reporting Items for Systematic Reviews & Meta-Analysis (PRISMA) instrument and a flow chart compiled based on the 2009 PRISMA checklist guidelines for the selected article. Based on the literature search results with systematic literature review techniques, there were 874 articles with keywords of contraception, coverage, quality and sustainable. Through duplicate selection and open access, there were 298 articles, by removing 565 articles (515 were not according to PICOS, 23 in form of systematic review/study protocol and 27 in form of books and reports), thus the remaining 11 articles were in full text which met all requirements to be synthesized.

Results

Characteristics of Articles: The synthesized articles found 11 articles, respectively 9 from Africa and 2 from Asia (India and Pakistan), eligible to be examined. Majority of 7 articles were published in the last 5 years.

Articles obtained using various research method, which 6 with intervention study, 3 with cross-sectional study, 1 with mixed study method and 1 with qualitative study. This systematic literature review traces all types of studies aimed at exploring various aspects of the family planning services quality that can increase the contraceptive use.

Family Planning Services Quality: Systematic literature review results indicated that an important element of the service quality is the providers' competence. of the 11 articles found, 54% of them reviewed the providers' competence. In Ethiopia, health extension workers or Health Extension Workers (HEWs) trained to be able to provide Implanon services to the community, which previously only served as health extension workers and provided non-clinical contraceptive services such as pills and condoms. Review results indicated the transfer of duties to health educators for the improvement contribution of implantable contraceptive services[11]. Likewise in Zambia and Congo, they also provide injection contraceptive services training to the Community Health Workers (CHWs) [12,13].

Efforts to increase competence also carried out by empowering the community through peer education and recruiting community members using the approach of the Community Based Distribution (CBD) to be able to well-inform about the contraception and to make referrals to family planning services at the community level [14,15]. The availability of community health workers at the village level significantly increases the contraceptive use [16].

In this review, it also revealed that the low IUD service occurred because in some countries there are restrictions on the authority of midwives and nurses to perform IUD contraceptive services, brought the reduced demand of IUD services and the loss of skills and confidence of providers[17].

The service quality aspects found in this review are counseling and providing information. The review results revealed that the low IUD request occurred because the officer did not offer IUD as a contraceptive option[17]. It also found that the exposure to messages about family planning at the individual or household levels can significantly increase the modern contraceptive use, but IEC activities at the village level do not affect the same[16].

Peer education programs aimed at dispelling myths and misperceptions about using the Long-Term Contraception Methodcan also increase the use of Long-Term Contraception Method[14]. In Pakistan, dismissal of myths and misconception about IUD can be done in health facilities, but private service sources are not motivated and reluctant to provide IUD services because of lacking counseling skills, Likewise, government programs are not equipped with trained staffs to promote IUDs[18]. Provision of detailed information to users can also have a significant influence on the method continuation rather than by merely providing information about alternative method and group counseling[19].

It also revealed that 6% clients receivedthe assistance in the selection of method prefer using contraception rather than the current contraceptive use. Furthermore, 10% clients treated very well by the providertend to use the contraception now compared to clients treated poorly. Clients who will re-use facilities and or recommend the same to others are 1.2 times tend to become current users compared to clients who will not return or recommend facilities to others [10].

Efforts to integrate family planning service componentswith infant immunization services have a positive effect on the modern contraceptive use in Rwanda[20].

Family planning coverage: Not all of the proportion of the modern contraceptive use in this systematic review found in selected journals. It is because this study also includes articles with qualitative approach that further explain factors or causes for not achieving the expected outcomes. The study results obtained a range of the contraceptive use from 11.3% to 86.5%.

Based on a study in India which analyzed the exposure to family planning messages, 86.5% of women aged 15-44 using family planning consisting of 78.3% with modern birth control and 8.2% the natural birth control[16].

Based on a study in Zambia intervened in CHW by practicing injection service skills, from 1,739 new family planning acceptors: 85% injection, 13% pill and 2% condom[12]. The same study in Congo by training 34 CHWs with a sample of 252 injecting acceptors stated that almost all acceptors were satisfied and would continue having injection with CHW services [13]. A study in Ethiopia which trained extension workers and carried out Implanon service assignments found that from 1,382,318 women who received contraceptive services, 92% used Implanon contraception[11]. Based on a study in Nigeria which recruited community members to become agents of family planning services, the contraceptive use, which was only 16%, increased to 37% after the intervention[15].

A study in Kenya through the study of service quality elements obtained 65% coverage of the use of modern method. Meanwhile a study in Rwanda which integrated components of family planning services with infant immunization found that early modern family planning was 49% and increased to 57% after the intervention[20].

Discussion

This systematic literature review has accessed many literature sources from various accredited journals. However, this review literature is limited to journals that can be accessed through on-line sites and do not access other literature categorized into gray materials.

In Indonesia, publications about the family planning services quality and the family planning use discovered more than 10 years ago. Most publications on this topic are in Africa and in Asia foundin India and Pakistan.

According to family planning coverage, the highest is in India of 86.5% and the lowest is in Lualaba of 11.3%. In Indonesia, the contraceptive use reaches 64%. Those figuresincreased in the use of traditional family planning, while the modern family planning decreased. It is an indicator of low family planning services quality in Indonesia[21].

In this study it was found that increasing the competency of CHWs was able to encourage the use of contraception. The definition of CHW by WHO[22] includes various public health cadres selected, trained and worked in their home communities. In Indonesia, CHW is equivalent to family planning field workerrunning national family planning programs at the village level, which the amount is still limited. Their job is to provide family planning information to the community, while those in charge in providing family planning services, especially injection and long-term contraception are health professionals such as midwives, nurses and doctors. This fact shows that the direction of development and the strategy ofFamily Planning Population in the National Medium Term Development Plan 2015-2019 in Indonesia has not been successful, which one of the strategies is to increase the number and

strengthen the capacity of family planning field workers and health services family planning services[23].

The review findings found limitations on the authority of midwives and nurses in giving IUD services. It is similar to Indonesia's situation that the authority of contraceptive services is governed in the Indonesian Ministerial Regulation of Health, which states that midwives have the authority to provide women's reproductive health and family planning services, limited to counseling on women's reproductive health and family planningand oral contraceptive services, condoms and injections. Midwives have the authority to provide services based on government assignments as needed, one of which is the provision of contraceptive services in the womb and subcutaneous contraceptives, which previously had received training and received certificates[24]. Based on the regulation, not all midwives may carry out IUD and implant services, while most service sources are midwives, especially independent practice midwives.

Other findingsin the family planning services quality in this review are importance of information provision and counselling. Research on efforts to improve the information provision to clients by providers carried out in Indonesia, but in recent times in 2005. The research aims to increase the client participation in family planning through community education and mass media[25].

Based on Indonesian conditions, providing information or counseling by providers is still rarely done. The 2017 IDHS results suggested that method information index is only 29%. This shows that the strategy in National Action Plan for family planning Services in 2014-2015 in Indonesia failed, where the strategy proposed was to increase availability affordability and family planning services quality through Information, Education and Communication (IEC) services and systematic counseling with one main programs is to ensure that the entire population can reach and obtain family planning services[26].

Conclusions

In the last 10 years (2009-2019),researches on the family planning services quality from Asia (India and Pakistan) and Africa are still limited. The findings showed that the comprehensive quality can increase the contraceptive use. The two most common quality are in aspects of providers' competence and information provision to clients.

In Indonesia, there is no publication on this topic, thus it is needed a research to assess the family planning services quality through midwifery and family planning field worker competence studies and the information provision by providers.

Conflict of Interest: The researcher stated that there was no conflict of interest in the implementation of this research.

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Ethical Clearance: This study approved by the Health Research Ethics Commission of Poltekkes Kemenkes Jakarta I,No. 138/KEPK/VIII/2019.

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Prognostic Value of Soluble Vascular Cell Adhesion Molecule-1 (SVCAM-1) in Children with Sepsis

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Abstract

Background: Sepsis is one of the major causes of mortality and morbidity in Children all over the world especially in industrial and developing country. Sepsis is identified by endothelial dysfunction due to excessive stimulation of cytokines and chemical mediator. VCAM-1 is an adhesion molecule which can predict the severity of the disease. This study aimed to identify sVCAM-1 as an outcome predictor (septic shock/not shock sepsis) in children with sepsis.

Method: This prospective cohort study was conducted in Pediatric Intensive Care Unit Wahidin Sudirohusodo hospital from September – December 2016. A total of 70 patients with sepsis were included. Plasma specimens were collected at admission, then the patients were being followed up if the patients get shock or not. The diagnosis of sepsis is using the International Pediatric Sepsis Consensus 2005 criteria. Serum sVCAM-1 was measured using Enzyme Linked Immunosorbent Assay technique.

Result: The initial level of sVCAM-1 was significantly increased in both groups, but higher in the septic shock group. Cut off point ≥100 ng/ml was obtained through the ROC, with sensitivity 100%, specificity 100%, positive predictive value 100% and negative predictive value 100%.

Conclusion: Initial level of sVCAM-1 can be used as an outcome predictor of children patients with sepsis and limit level ≥100 ng/ml is the most optimal cut off point as a prognostic value.

Keywords: *sVCAM-1, Sepsis, predictor, children, pediatrics.*

Introduction

Sepsis is an emergency situation which usually occure in Pediatric Care Unit. If this condition is not detected early and treated promptly, severe complications, including septic shock and multiple organ failure may occur and result in death[1)].

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Sepsis is still one of the primary causes of morbidity and mortality in children around the world especially in industial and developing countries. In Indonesia, death rate caused by sepsis is 50-70% and even reach 80% if septic shock and organ disfunctional were included. In RSCM FKUI Jakarta, sepsis incidence in Pediatric Intensive care Unit (PICU) since January 2009 to March 2010 was 19.3%, with mortality rate approximately 54[2)]. In Wahidin Sudirohusodo Hospital, incidence rate of sepsis in Pediatric Intensive Care Unit since January 2015 to December 2015 was approximately 46% out of total 596 patients, 69% of the cases had septic shock with 35% mortality rate. Some experts believed that the incidence rate of sepsis will increase by 1.5% every year which means there would be 1 million additional cases per year by the end of 2020[3)].

Pathogenesis of sepsis reveals that there is a complex cellular activation, which is the release of

inflammation mediators, namely cytokine production, neutrophil activation, complemen activation, cascade coagulation and fibrinolitic system[2] Various cytokines such as TNF-α, IL-1, IL-6, leucotrien, thromboxane A2 as proinflammatory cytokine and IL-Receptor antagonist (IL-Ra), IL-4, IL-10 as anti-inflammatory cytokine triggered the inflamation process[4].

Increasing concentrations of adhesion molecules in the circulation occurs in patients with SIRS, sepsis and septic shock. sVCAM-1 is one of the adhesion molecules that can predict mortality and the gradual development of multiorgan failure in the lungs, liver and kidneys[5].

Based on the description above, it is necessary to do an approach to identify the influence and prognostic value from the biological parameter, such as VCAM-1, which is related to outcome of patients with sepsis and find the cut off point of sVCAM-1 level in pediatric sepsis patients. Study on the prognostic value of sVCAM-1 in pediatric patients with sepsis was never been done in Indonesia, especially in South Sulawesi. Thus, this study aims to analyze the prognostic value of the sVCAM-1 levels in children patients with sepsis.

Materials and Method

This study is an obsrvational study with prospective cohort approach which was conducted in Dr. Wahidin Sudirohusodo Hospital Makassar from September until Desember 2016 sample was collected. Blood samples were examined in the laboratory of Hasanuddin University Medical Research Center (HUM-RC).

The study population was patients with sepsis aged 1 month to 18 years hospitalized in pediatric intensive care unit (PICU) Dr. Wahidin Sudirohusodo Hospital Makassar. The population was diagnosed using the International Pediatric Sepsis Consensus 2005 and data of age, sex, nutritional status, vital signs (blood pressure, pulse, respiration rate, temperature and consciousness), clinical symptoms and routine laboratory tests was recorded. The samples are population who met the criteria of inclusion and exclusion. Exclusion criteria were including: 1) patient currently on a long term corticosteroids' medication; 2) patients who have trauma; 3) patients with burns; 4) patients with malnutrition; 5) patients with deficiency of immune system; 6) patients with malignancy; 7) patients wit septic shock. The blood sample of patients who met the inclusion criteria were extracted to assess for sVCAM-1 levels. During the treatment, patients were observed if sepsis develop into septic shock or do not develop. The final result of observation is the outcome (septic shock or without septic shock).

All the data obtained are recorded in the research data form and then grouped by the destination and type of data. Appropriate statistical method was used analyse the data, namely: 1) the univariate analysis; and 2) the bivariate analysis which includes: test Student's t, Mann Whitney Test, X2 (Chi square) or Fisher's Exact test, to assess the accuracy limit levels as a predictor, calculating the sensitivity, specificity, positive predictive value and predictive value negative (with CI 95%).

Results

Table 1 showed the characteristic of the sample. In the groups of patients with septic shock there were 56.8% boys and 61.5% girls. In the group of patients with septic shock there were 53% children with good nutritional status and 63.9% with malnutrition. In the group of patients with sepsis without shock there were 47% children with good nutritional status and 36.1% with malnutrition. Statistical analysis showed no significant differences in outcome based on the nutritional status with the value of $p = 0.353$ ($p > 0.05$). Median age of patients in septic shock group was 1.25 years and ranged from 0.08 to 16 years, while the other one was 2.4 years and a ranged from 0.50 to 15.42 years. Mann Whitney test results shows that there was no significant difference between the two groups with $p = 0.497$ ($p > 0.05$). The focus of most infections in this study was respiratory tract infections, followed by infection of the central nervous system, cardiovascular and gastrointestinal.

Median Levels of initial sVCAM-1 in septic shock group was 164.32 ng/ml and range from 101.09 to 520.68 ng/ml, sepsis without shock group median was 84.49 ng/ml and range from 53.34 to 99.39 ng/ml. Mann Whitney test results show that there were a very significant difference between the two groups with $p = 0.000$ ($p < 0.001$). (Table 2).

Comparative analysis of sensitivity, specificity, positive and negative predictive value for the levels of initial sVCAM-1 in every cut off point (98 ng/ml, 99 ng/ml, 100 ng/ml, 101 ng/ml, 102 ng/ml, 103 ng/ml, 104 ng/ml) showed that the cut-off point ≥ 98 ng/ml had a sensitivity 93.1%, specificity 100%, positive predictive value 95.34% and a negative predictive value of 100%. Initial cut-off point of sVCAM-1 ≥ 100 ng/ml and ≥ 101 ng/ml have the same value in terms of sensitivity

100%, specificity 100%, positive predictive value 100% and negative predictive value 100%. At the cut-off point ≥ 102 ng/ml mempunyai 97.56% sensitivity, 100% specificity, positive predictive value of 100% and a negative predictive value of 96.67%. At the cut-off point ≥ 103 ng/ml and ≥ 104 ng/ml had sensitivity 95.12%, specificity 100%, positive predictive value 100% and negative predictive value 93.55%. All of these points are distance from the diagonal line and significantly different, but there were only 2 cut-off point has the highest value; the points are presented on ROC curve (Figure 1).

To assess the the best cut off point levels of initial sVCAM-1 in determining the outcome can be seen on a Receiver Operator Curve (ROC) (figure 1). Sensitivity depicted on ordinate Y, while the 1-specificity depicted on the X axis. The farthest sVCAM-1 value from the diagonal line and approaching the top left corner with the largest area under the curve is the point of intersection on the boundary initial sVCAM-1 value ≥ 100 ng/ml.

Table 1. Sample Characteristic

Characteristics of the sample	Sepsis		P Value
	Shock n=41 (%)	not Shock n=29 (%)	
Sex			
Male	25 (56.8 %)	19(43.2 %)	0.698*
Female	16 (61.5%)	10 (38.5 %)	
Nutritional Status			
Good	18 (53%)	16 (47%)	0.353*
Undernourished	23(63.9%)	13 (36.1%)	
Age			
Mean	4.27	5.84	0.497**
Median	1.25	2.5	
Standar Deviasi	5.10	5.45	
Minimum-maximum	0.08-16	0.50-15.42	
sVCAM-1(ng/ml)			
Mean	228.54	83.49	0.000**
Median	164.32	85.43	
Standar Deviasi	126.05	12.13	
Minimum-maximum	101.09-520.68	53.34-99.39	
Infection Focus			
- Central Nervous System	5 (12.2 %)	5 (17.3 %)	
- Respiration	33 (80.5 %)	18 (62.1 %)	
- cardiovascular	2 (4.9 %)	3 (10.3 %)	
- gastrointestinal	1(2.4%)	3 (10.3 %)	

*Chi-square test, ** Mann-Whitney U test

Table 2. The Mean of Initial Levels of sVCAM-1 in Group of Patients Who Develop Septic Shock and Not Develop Septic Shock

sVCAM-1 (ng/ml)	Sepsis	
	Shock n =41	Without Shock n =29
Mean	228.54	83.49
Median	164.32	85.43
Standard Deviation	126.05	12.13
Minimum-Maximum	101.09-520.68	53.34-99.39

* Mann Whitney Test, p = 0.000 (<0.001)

Table 3. Sensitivity, Spesifisity, Positif Predictive Value, and Negative Predictive Value of Each Initial level ofsVCAM-1

sVCAM-1(ng/ml)	Sensitivity (%)	Spesifisity (%)	Positif Predictive Value(%)	Negative Predictive Value(%)	Under Curve Area	p
≥ 98	100	93.1	95.34	100	0.966	0.00
≥ 99	100	96.55	97.61	100	0.983	0.00
≥ 100	100	100	100	100	1.000	0.00
≥ 101	100	100	100	100	1.000	0.00
≥ 102	97.56	100	100	96.67	0.988	0.00
≥ 103	95.12	100	100	93.55	0.976	0.00
≥ 104	95.12	100	100	93.55	0.976	0.00

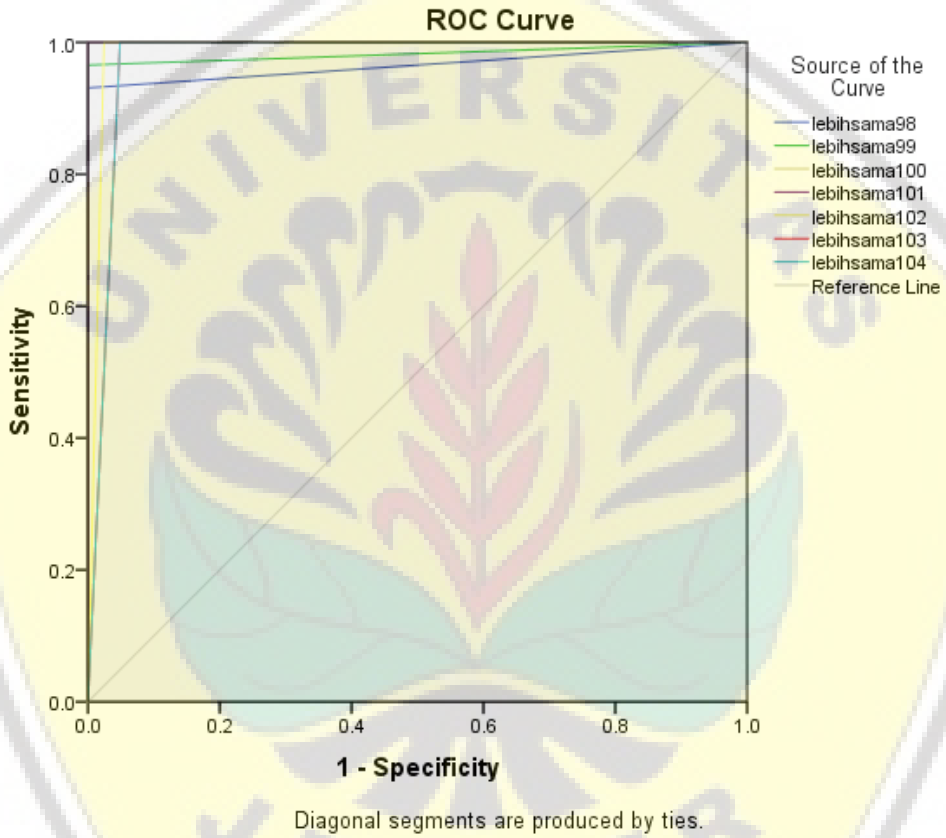

Figure 1. ROC Curve

Discussion

In this study, the relationship of sex with sepsis patient outcome was not significantly different with p value = 0.698, which means sex is not a prognostic factor. Similar results were reported by Hendra et al.[6], that the pediatric sepsis patients did not differ significantly between men and women with p value = 0.138. Similar results were also obtained in studies conducted by Ghuman et al.[7] who reported no differences outcomes based on sex in prepubertal patients with sepsis. Runtunuwu[8] in study conducted in Manado reported to find no significant differences between patients with sepsis and septic shock in children based on sex (P = 0.261).

Based on nutritional status, this study found no significant differences between patients with sepsis (without shock) and septic shock (p = 0.617). However, the number of patients with malnutrition status in septic shock group was higher than the well nourished patients. It is similar with a study reported by Delgado et al.[9] in

Brazil. It was found that there is no significant differences associated with nutritional status between groups of patients with sepsis related to mortality rate, however, patients with malnutrition has a higher mortality rate than well nourished patients. AStudy by Hendra et al[1] also reported there are 51.4% patients with sepsis have malnutrition status.

Similar results were obtained in studies conducted by Runtunuwu[8], which reported no difference in the output based on nutritional status in patients with sepsis and septic shock patients (p = 0.159).

Statistically, there were no significant differences on mean age between the two groups of patients with sepsis. Patients with septic shock mean age were 4.27 years, while patients without shock was 5.84 years (p = 0.497). This is similar to the study conducted by Runtunuwu[8] (P= 0.261) and Pedro et al.[10] which reported on the difference between the age group of 3-12 months, 12-36 months and >36 months in patients who died of sepsis and sepsis survival with p = 0.391, 0.104, and 0.448.

The focus of most infections in this study was respiratory tract infections, followed by infection of the central nervous system, cardiovascular and gastrointestinal. Possibly, the origin of sepsis infection is associated with the prevalence of the disease in children and national health statistics. According to RISKESDAS, pneumonia is still a major cause of morbidity and mortality in infants. Every year more than 2 millions of children in the world die from acute respiratory infections (ARI), especially pneumonia[11]. Origin of infection was reported to have an important role on the outcome of patients with sepsis. Patients who suffer sepsis from respiratory tract infections, gastrointestinal, and central nervous system have been reported to have a higher mortality rate than who suffes sepsis because of urinary tract and soft tissue infections[15]. In this study, respiratory tract infection and increasing level of VCAM-1 more frequently found in patients with septic shock (80.5%) than in patients without septic shock.

A Study conducted by Jaber et al.[13], reported an increase in levels of sVCAM-1 in sepsis patients: 199.88 ± 34.20 ng/ml (156.07-276.07) while the control group 187.45 ± 5.00 ng/ml (180.00 to 193.00) (P <0.05). Meanwhile, a study conducted by Shapiro et al.[5] found that the level of sVCAM-1 more increased in patients with septic shock than in uninfected control subjects (P <0.05). In addition, study conducted by Bavunoglu et al.[14] found significantly higher levels of VCAM-1 in septic patients compared to controled subjects. In control subjects, it was obtained VCAM-1 levels 1.25 ± 0.79 ng/ml, in patients with mild sepsis 4.04 ± 1.64 ng/ml and in patients with severe sepsis was about 3.29 ± 0.75 ng/ml. It is different from this study which found a higher level of sVCAM-1 in patients with sepsis with an average value of 83.49 ng/ml. It is due to gene polymorphism, different basic diseases and also due to local people are often exposed to infections such as skin infections, worm manifestations, respiratory infections, and other infections so, probably the levels of sVCAM-1 in the normal population in Makassar is higher than in other regions.

Based on the highest cut-off point at the 97.5 percentile of initial sVCAM-1 levels in non septic shock group which is on the value of 98 ng/ml and the lowest cut-off point 2.5 percentile of initial VCAM-1 in septic shock group. On the value 104 ng/ml, there are 7 cut-off points which can be used to differentiate between sepsis group with septic shock and without septic shock.

Initial level of sVCAM-1 ≥100 ng/mL has a positive predictive value 100% and a negative predictive value 100%. It means that if the initial levels of sVCAM-1 ≥100 ng/ml, the possibility of sepsis patients to develop septic shock is 100%, whereas when the levels of initial sVCAM-1 <100 ng/ml, the possibility of sepsis patients do not develop septic shock is 100%. In the study conducted by Bavunoglu et al.[14], the cut-off point of VCAM-1 levels in patients with sepsis based on the ROC curve was 2.34 ng/ml with 99% sensitivity, 99% specificity and AUC 1.000. There has never been study on cut point of serum levels of initial sVCAM-1 to determine the prognostic value of septic shock.

Limit of Initial level of sVCAM-1 ≥100 ng/ml showed a highly significant difference in outcomes with p = 0.000 (p <0.01). It means that the initial level of sVCAM-1 ≥100 ng/ml is a prognostic factor on the outcome of patients with sepsis.

It can be concluded that the initial serum levels of sVCAM-1 can be used as a prognostic factor in determining outcome, but noted that sVCAM-1 is not the only prognostic factor in determining the outcome; there are still other proinflammatory cytokines and other inflammatory risk factors. In bivariate analysis, it is observed there is one variable which is a prognostic factor on the outcome of patients with sepsis namely initial serum levels of sVCAM-1.

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Conflict of Interest: There is no conflict of interest that can be reported in this study.

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The Role of Peer Group and Enabling Factor towards the Act of Using E-Cigarettes in Adolescents

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Abstract

E-cigarette has now become a new phenomenon in Indonesian. But the pros and cons of the existence of a vapor at this time is still happening, various studies conducted to find out the actual content is a risk to health or not. Teenagers choose to use vapor with various underlying reasons. This study aims to determine the relationship between enabling factors and the role of peer gorups on the use of e-cigarettes in adolescents in Jember district. This research is an analytic study with a quantitative approach. Data was collected through accidental sampling on 76 adolescent vapor users in Jember, then the data were analyzed using chi-square test. The results of this study indicate that there is a relationship between enabling and the act of using e-cigarettes in adolescents and all the peer group roles which include social reinforcement, social modeling, social comparison and critics and agents of persuasion have a relationship with the use of e-cigarettes in adolescents. The role of government and related agencies is needed to collaborate with educational institutions to conduct research and community service on the impact of the use of vapor from the health side. The government can also collaborate with health workers to carry out promotive actions such as socialization targeting adolescents as an effort to increase knowledge because there are still many assumptions that vapor is safer for health.

Keywords: *Electric Cigarette, Youth, Enabling Factors, Peer Groups, Action.*

Introduction

Very significant industrial progress in the current era of globalization makes the business world experience rapid progress and development in all fields of business. This is also felt in the development of the cigarette industry that is with the innovation of e-cigarettes.[1] The appearance of the vapormade many conventional cigarette users began to switch to using a vapor. Vapor is a device that produces steam from the combustion of chemicals by using electric power and then flowed into the lungs.[2] Awareness about vapor has been known to the public in Indonesia in 2011 to 2013, which amounted to 10.9%. The Global Adults Tobacco Survey (GATS) in 2011 stated that of the 10.9% of people aware the existence of a vapor, 0.3% of the community had used it and continue increase.[3] The Chair Person of Personal Vapor Indonesian Association (APVI) organization, Kartasasmita, said that in 2018 the number of users vapor had reached 1.2 million and it was predicted that it would increase by 1 million in 2019.[4] On 1 July 2018 the Indonesian government imposed an excise tax of 57% as an effort to limit the circulation of vapor and control of consumption because the liquid vapor still contains tobacco. This regulation is regulated in Regulation of the Minister of Finance number 146/PMK0.10/2017.

Pros and cons about vapor still happening, various studies conducted to determine the actual content of whether a risk to health or not. Vapor was originally created as an alternative media in an effort to stop

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smoking but this function shifted to a lifestyle.[5] Vapor is used because it is considered safer, stylish and is an innovation to stop smoking. However, it is proven that e-cigarettes contain harmful substances that can interfere with health such as TSNA, DEG and carbon monoxide, long-term use can significantly increase plasma nicotine. Plasma carbon monoxide levels and the pulse rate can increase significantly, having more adverse effects than conventional cigarettes. According to research from the University of North Carolinavapor it has a worse impact on the lungs. Vapor can trigger asthma, pneumonia and chronic inflammation such as lupus and psoriasis. National Health Service also has the same opinion based on existing research, there are have a negative impact on health.[6]

Teenagers choose to use vapor with various underlying reasons. Park, et.al., explained that teenagers or young adults use vapor as an excuse to try to quit smoking (59%); reduce the habit of consuming conventional cigarettes (58%); and comfort obtained from the vaporindoors because it can be used(47%).[7] Whereas in Blue's research found the factors ofuse vapor among adolescents, namely as an effort to follow the progress of lifestyle; the steam produced can be unique-shaped; reduce effects of addiction on conventional cigarettes; and has a variety of flavors. However, in reality vapor has a negative impact on health so it cannot be said as a substitute for conventional cigarettes.[8]

Research by Aryani,et.al. stated that adolescents use vapor with references from someone they trusted.[9] The development of social life patterns in adolescents who begin to separate themselves from parents generally broadens the relationship by becoming part of members of the same age (peer group).[10] The peer group will influence its members to carry out a habit to meet their needs. Peer group has a role that is social reinforcement, social modeling, social comparison and critics and agents of persuasion.[11]

Based on the records of APVI in Indonesia there are about 3,500 shops that have many young consumers aged 20-30 years. This makes youth access to the vapor easier. The availability of supporting factors in the form of facilities,and infrastructure is a factor that allows someone to take action using the vapor.[12] This research was conducted in Jember because Jember has various tribes, customs and cultures. People who live permanently or temporarily with various diverse characteristics make access to information and behavior changes easier. This can also affect the life style of the community, one of which is about the use of e-cigarettes. Based on this the researcher wants to try to find out the relationship between the role of peer groups and enabling factors with the act of using e-cigarettesin adolescents in Jember Regency. This research uses behavior theory from Lawrence Green. The reason using Lawrence Green theory is that behavior is formed based on three factors namely predisposing factors, enabling factors, and reinforcing factors.

Materials and Method

This study uses analytical research with a quantitative approach. The study was conducted in Jember District through accidental sampling on 76 respondents. Data collected then analyzed using the chi-squaretest. Independent variables are the characteristics of respondents, enabling factors and the role of peer groups, while dependent variable is the act of using vapor. Quantitative data is obtained from respondents by distributing questionnaires.

Results

The results of research on the relationship between the enabling factors to the action using e-cigarettein 76 respondents. The participants with the enabling factors poorly action using e-cigarette by 33 respondents (43.4%). Results of analysis using test chi-square showed that the p-value obtained for 0.044 ($p<\alpha$) which means that H_0 is rejected that there is a relationship between the enabling factors to the action using e-cigarettein adolescents in Jember Regency. This can be shown in Table 1 below:

Table 1. Variable Analysis of Relationship Enabling Factors with the Action Usage E-Cigarettes

No	Enabling Factors	Action Usage E-Cigarettes						p-value
		Good		Bad		Total		
		N	%	N	%	N	%	
1.	Good	22	29	14	18,4	36	47,4	0,044
2.	Bad	33	43,4	7	9,2	40	52,6	
Total		**45**	**72,4**	**21**	**27,6**	**76**	**100**	

Results of research showed that respondents with social reinforcement poorly with action using e-cigarette good as many as 35 respondents (46.1%). The results of the analysis using chi-square test showed that the p-value obtained amounted to 0.069 ($p<\alpha$) which means that H_0 is rejected that there is a relationship between social reinforcement with action electric cigarette use in adolescents in Jember Regency. This can be shown in the following Table 2:

Table 2. Variable Analysis of the Relationship of Social Reinforcement with Actions for the Use of E-Cigarettes

No	Social Reinforcement	Action Usage E-Cigarettes						p-value
		Good		Bad		Total		
		N	%	N	%	N	%	
1.	Good	20	26,3	13	17,1	33	43,4	0,069
2.	Bad	35	46,1	8	10,5	43	56,6	
Total		**55**	**72,4**	**21**	**27,6**	**76**	**100**	

The relationship between social modeling with the act of using e-cigarettes in adolescents shows that respondents with bad social modeling have good acts of using e-cigarettes of 30 respondents (49.5%). Results of analysis using chi-square test showed that the p-value obtained for 0.039 ($p<\alpha$) which means that H_0 is rejected that there is a relationship between social modeling to measure the use of e-cigarette in adolescents in Jember Regency. This can be shown in Table 3.

Table 3. Variable Analysis of the Relationship of Social Modeling with Actions for the Use of E-Cigarettes

No	Social Modeling	Action Usage E-Cigarettes						p-value
		Good		Bad		Total		
		N	%	N	%	N	%	
1.	Good	25	32,9	4	5,3	29	38,2	0,039
2.	Bad	30	39,5	17	22,3	47	61,8	
Total		**60**	**72,4**	**21**	**27,6**	**76**	**100**	

Relationship between social comparison with the act of using e-cigarettes in adolescents shows that research respondents with bad social comparison have good acts of using e-cigarettes as many as 38 respondents (50%). Results of analysis using chi-square test showed that the p-value obtained for 0.076 ($p <\alpha$) which means that H_0 is rejected. There is a relationship between social comparison to measure the use of electric cigarette in adolescents in Jember Regency. This can be shown in Table 4 below:

Table 4. Variable Analysis of Social Comparison with Actions for the Use of E-Cigarettes

No	Social Comparison	Action Usage E-Cigarettes						p-value
		Good		Bad		Total		
		N	%	N	%	N	%	
1.	Good	17	22,4	2	2,6	19	25	0,076
2.	Bad	38	50	19	25	57	75	
Total		**55**	**72,4**	**21**	**27,6**	**76**	**100**	

The relationship between critics and agents of persuasion with the act of using e-cigarettes in adolescents, respondents with critics and agents of persuasion have bad actions of using e-cigarettes good as many as 46 respondents (60.5%). Results of analysis using chi-square test showed that the p-value obtained for 0.056 ($p<\alpha$) which means that H_0 is rejected, namely the relationship between critics and agents of persuasion to measure the use of e-cigarettes in adolescents in Jember Regency. The following Table 5 below:

Table 5. Variables Analysis Critics and Agents of Persuasion with Actions for the Use of E-Cigarettes

No	Critics and agents of persuasion	Action Usage E-Cigarettes						p-value
		Good		Bad		Total		
		N	%	N	%	N	%	
1.	Good	9	11,8	0	0	9	11,8	0,56
2.	Bad	46	60,5	21	27,7	67	88,2	
Total		**55**	**72,3**	**21**	**27,7**	**76**	**100**	

Discussion

Action is an open behavior that can occur if the supporting factors, one of which is enabling factors, regarding facilities, and infrastructure. The relationship between enabling factors and actions of use e-cigarettes based on the analysis showed that there is a relationship between the enabling factors with the use of e-cigarettes in adolescents. The assessment conducted by Damayanti (2016) concerns the availability of facilities and infrastructure such as cost, distance, availability of transportation, and etc.[13] Hart, et.al marketing strategy and the establishment of shops vapor in strategic and easily accessible places so that most (87%) of the research respondents already knew about the existence of vapor. The influence of adolescence is more likely by a variety of strategies and approaches. In addition to their online store, also offline stores.[14]

In addition actions can be realized if supported by people around. Peer groups have a greater influence because teenagers are often in the environment outside the home, the peers have a greater influence in forming attitudes, talks, interests, appearance and behavior. Teenagers need a few time in the process of self discovery by trying all the things that make them comfortable both in terms of social and sexual orientation, especially at the aged of 18 old.[15]This is consistent with the research of Ariyani, et.al in 2018 mentions that teens use vapor with references from someone they trust (personal references) that makes them decide to use friends.[9]Peer groups have four roles namely social reinforcement, social modeling, social comparison and critics and agents of persuasion.

Relationship between social reinforcement with the act of using e-cigarettes,have a bad social reinforcement with an act of using e-cigarettes good. Lorean (2017) research which shows that having friends who have used vapor will be more likely to try using vapor.[16] Teenagers will strengthen, maintain, and eliminate social behavior based on a pleasant reaction or not given by their friendship groups.[11] Other research by Johnston, et.al., states that from an epidemiological perspective, adolescents often feel attracted by new products and based on history as the line front of change in society in

the use of substances that are manifested in the general public.[17]

The relationship between social modeling with the use of e-cigarettes, have bad social modeling with a good use of e-cigarettes. Atmojo (2017) produced that all research subjects had friends who used vapor, roommates, friends hanging out, or campus friends. This shows that the subject of his research used vapor because his friends also used vapor .[18]

Relationship of social comparison with the act of using e-cigarettes in adolescents. According to Shaffer in Nugrahawati (2011) teenagers often draw conclusions from within themselves by comparing the behavior displayed by their peers.[11] According to Stephenson, et.al., in Sutfin, et.al., (2013) looking for sensation is a personal trait owned by someone who then produces stimulation, new experiences and making a decision to use vapor.[19]

The relationship between critics and agents of persuasion with the act of using e-cigarettes. In this study shows that it has poor results with the action of using e-cigarettes with good results. Adolescents peer groups have an important position for adolescents so they tend to follow criticism, persuasion or acts of encouragement given by their friendship groups. Another study conducted by Istiqomah et.al. (2016), said that most of the research respondents, namely individuals who used vapor, received support from the reference group, where some respondents had received at least one vapor freefrom their friends as a start using vapor, and received more than five times refillfluid vapor.[5]

Supervision of the distribution of e-cigarettes in Indonesia is still not regulated in Indonesian law. In Government Regulation No.109/2012 specifically article 59, only regulates the supervision of addictive substances from processed tobacco products.[20] Based on information from employees at shop, some underage teens wanted to try buy vapor. They hire the services of others who are old enough to buy because in some shoponly serve a minimum age of 18 years. Users of e-cigarettes not only have a male gender but also a female. Respondents in this study found thatusers vapor not only male but there were also female. This is in line with research conducted by Arifin (2018)because women assume that they also have ability to use vapor. But many of them do not think about the effects caused by the use of vapor.[1]

Conclusions and Recommendations

The results of this study indicate that there is a relationship between the enabling factors based on availability to the action e-cigarette in adolescents in the Jember. All of role of a peer groups that includes social reinforcement,social modeling, social comparison, and critics and agents of persuasion have a relationship with the act of using e-cigarettes in adolescents. The role of government and related agencies is needed to collaborate with educational institutions to conduct research and community service on the impact of the use of vapor from the health side. The government can also collaborate with health workers to carry outpromotive actions such as socialization targeting adolescents as an effort to increase knowledge because there are still many assumptions that vapor is safer for health.

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Efforts to Improve the Health Status of Junior High School Students through the Development of School Health Programs

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Abstract

One form of health promotion for school students is the school health program in every region in Indonesia. The purpose of School Health according to the Ministry of Education and Culture in 2012 is to improve the quality of education and student achievement by improving the quality of clean and healthy life and health status of students and creating a healthy environment. This research was conducted using qualitative descriptive method with the aim of developing a model of implementing school health programs. Respondents in this study were students from junior high schools managed by the government and junior high schools managed by private parties implementing school health programs. The results of this study are expected to support existing models by improving school health management through a systems approach so that students can improve their performance through improving clean and healthy living behaviors and a healthy environment.

Keywords: *Health promotion, health school, development, junior high schools, systems approach.*

Introduction

School-age children are faced with very complex and diverse health problems. Various kinds of health problems arise in elementary school-age children, but problems that are commonly associated with healthy living behavior (Nugraheni, 2019)[(1)]. While for middle school and high school age children, the problem is related to risky behaviors such as drug abuse (Narcotics, Psychotropic and other addictive substances), unwanted pregnancies, unsafe abortion, sexually transmitted diseases (STDs), including HIV/AIDS adolescent reproductive health accidents and other trauma (MOH, 2004)[(2)].

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Efforts to foster school-age children can be done through the School Health program in every region in Indonesia. The School Health is one vehicle for improving student health status (Nugraheni, 2019)[(1)]. The target is students and other school communities with the aim of improving students healthy life skills. School health services that involve all relevant parties such as students, families and community service providers, school nurses and school doctors play a more complex role to prevent, facilitate and handle health problems to improve the education of all students (Kolbe, 2019) [(3)]. So students can learn, grow and develop optimally and become quality human resources. According to Suliha (2002) the aim of School Health is to improve the ability of healthy living and the health status of students as early as possible and create a healthy school environment so as to enable harmonious and optimal growth and development of children in the context of quality Indonesian human formation[(4)].

Based on the Principles for the Development School Health that have been determined by the government, School Health has three main programs known as

"TRIAS UKS". The three programs include health education, health services and fostering a healthy school environment. School Health activities must be carried out at all levels of education, from the level of kindergarten, elementary school, Junior High School (JHS) to Senior High School (SHS) and vocational education, both under the guidance of the Ministry of National Education and the Ministry of Religion, including Islamic boarding schools and out-of-school education channels (MOH, 2004)[2].

The fundamental problems that occur in the development and development of School Health include: Clean and Healthy Life Behavior has not reached the expected level, the existence of health problems in school-age children, limited human resources available facilities and infrastructure, lack of optimal coordination between agencies, lack of the optimal role of the School Health Advisory Team as well as the limited rules and regulations governing the management of School Health (Ministry of Education and Culture, 2012)[5].

The implementation's problem of School Health in Banyuwangi is not much different from the problems raised by the Ministry of Education and Culture. Strong effort and solid cross-sectoral cooperation are needed to implement the School Health program in accordance with established legislation so that the benefits of implementing the School Health program such as the realization of healthy schools and the creation of the next generation that are physically, mentally and spiritually healthy for a prosperous life.

Based on these conditions, it is necessary to take concrete steps to optimize the implementation of the School Health program, especially in service activities. So the need for innovation in the development model of the School Health program in an effort to improve the health of JHS students in Banyuwangi. The development innovation was carried out by optimizing all elements in the School Health program service and integrated with teaching and learning activities in schools. So as to be able to create personal students who have the ability and awareness of the importance of health.

Material and Method

This research use descriptive qualitative approach. This approach is used with the aim of delving deeply into the knowledge, opinions, opinions and views on the current implementation of the School Health program and exploring more information about the partnerships that have been built in optimizing the implementation of the School Health program. Data collection was carried out in four JHS in Banyuwangi which consisted of two public JHSs and two private JHSs for three months, starting April - June 2016. This study used in-depth interviews and FGD method conducted through several stages, namely situation analysis and primary data collection.

The variables of this study consisted of the characteristics of the informants, the knowledge of the informants, opinions and views of informants about the implementation of School Health, management of School Health implementation, obstacles experienced, strengths possessed, future expectations regarding the implementation and utilization of School Health specifically implementing "TRIAS UKS".

Findings: There are three main activities of the School Health activity that are commonly known as the "TRIAS UKS". School Health is a form of health promotion and education efforts in the school environment. In modern school health programs include 10 interactive components such as health education, physical education and physical activity, environmental and nutritional services, health services, counseling, psychological and social services, physical environment, social and emotional climate, family involvement, community involvement and health employee (Kolbe, 2019)[3]. For this reason, the implementation of School Health is based on the awareness of increasing the welfare of the school community in particular. In terms of this, School Health has an important role in health development in schools to prepare a healthy, smart and prosperous generation.

A. Implementation of the School Health Middle School Program in Banyuwangi Regency: To achieve School Health goals, promotive, preventive, curative and rehabilitative efforts are carried out as early as possible in accordance with the "TRIAS UKS", such as:

1. **Health Education in School:** Health education is a dynamic process of behavior change, where the change is not just the process of transferring material or theory from one person to another and not a set of procedures, but these changes occur because of the awareness of the individual, group, or society itself (Wahid IM & Nurul C, 2009: 9-10)[6]. The health education program must also emphasize behavioral change skills,

such as goal setting and self motivation, to positively impact students' physical activity behavior (Dai, 2019)[7]. The results of the study show that in most of the JHS in Banyuwangi have implemented School Health programs in the field of health education such as:

a. Increase knowledge, behavior attitudes and skills for a clean and healthy life.

b. Planting and habituating clean and healthy life and deterrence of bad influences from outside.

c. Cultivating a healthy lifestyle so that it can be implemented in everyday life.

In addition, health education can be carried out through intracurric and extracurricular activities. The intracurric activity is a part of the school curriculum such as health science subjects, physical education and health subjects or subjects that can be inserted in health sciences. While extracurricular activities are health education that can be included in activities outside of school hours in order to instill student's healthy behavior.

2. **School Health Services:** School Health service activities are minimum standard service activities in schools. Health services can help health education for students (Giri, 2018) [8]. Not only the provision of material and information to students regarding their health, but also practice through relationships with health workers. School health also services include regular health examinations, open-door clinic acute medical care for minor symptoms or injuries, some specialist care as well as the promotion of wellbeing and safety at school (Kivimaki, 2018)[9]. The results of interviews with School Health services can be seen that the information stated that there were services provided by School Health in schools. The implementation of School Health services in Banyuwangi includes:

a. Early Growth and Stimulation Detection and Intervention

b. Health screening and periodic health checks

c. Dental and oral examination and treatment.

d. Development of Clean and Healthy Life Behavior

e. First Aid In Accident/First Aid In Disease

f. Provision of immunization

g. Physical Fitness Test

h. Eradication of Mosquito Nest

i. Adding blood table ts

j. Giving worm medicine

k. Use of the school yard as a family medicine park/live pharmacy.

l. Health education and counseling

m. Guidance and supervision of healthy canteens

n. Nutritional information

o. Post-illness recovery

p. Health referrals for public health center/ hospitals.

3. **Development of a Healthy Environmental Life:** The development of the school environment aims to create a healthy environment in the school that allows every citizen of the school to achieve the highest degree of health in order to support the achievement of a maximum learning process for each student (Ministry of Education and Culture, 2012)[5]. Fostering a healthy school environment includes:

a. Implementation of cleanliness, beauty, comfort, order, security, longing and kinship.

b. Development and maintenance of environmental health including smoke free, pornography, psychotropic narcotics and other addictive substances and violence.

c. Fostering cooperation between school communities.

Based on the explanation above, the "TRIAS UKS" activities have run quite well although not yet as a whole. The School Health implementation team is still focused on the "TRIAS UKS" activities and the fulfillment of School Health facilities and infrastructure, in addition to the rather heavy extracurricular activities in JHS.

B. Model of School Health Program Development in Middle School: The program is a collection of real, systematic and integrated activities, carried

out by one government agency or more or in the framework of cooperation with the community or which is the active participation of the community in order to achieve the goals and objectives that have been set (Pramono, 2011: 45)[10].

One example is the substance of special service management engaged in health at the school scope, namely School Health Unit. This school service management is basically made to facilitate learning and can meet the special needs of students at school. The implementation of School Health activities still refers to the "TRIAS UKS". There has been no development of the middle school health program. The following is the identification of the expectations of the School Health Implementation Team:

1. Obtain School Health guidelines
2. Medication assistance
3. The presence of medical personnel at the School Health
4. Repair of rooms and School Health facilities
5. Training a small doctor
6. Implementation of the School Health Competition as a form of existence and mutual motivation
7. Education about the dangers of free sex, HIV and drugs.
8. The activity of forming the character of independence
9. Involvement of educational institutions

Based on the identification of the above expectations, it can be concluded that the development of School Health at the Implementing Level is strengthening the input components and enriching activities in the process components. While the implementation of School Health activities at the District and District Guidance Team Levels is still focused on organizing and coordinating the Team Builder mechanism. So, the function of fostering and developing School Health has not been implemented optimally.

WHO in Notoatmodjo (2012) launched five (5) health promotion strategies in schools, namely advocacy, cooperation, capacity building, research and partnerships [11]. Thus, the model of developing the JHS School Health in accordance with the conditions of the JHS in Banyuwangi is strengthening the management of School Health with a systems approach. The following is a scheme for strengthening the management of JHS School Health in Banyuwangi Regency.

Caption:

1. **Input:** In the implementation of the School Health program in Banyuwangi Regency, the staff who organized this program were the School Health Implementation Team (headmaster, supervisor of School Health, teacher council, Student Council, School Health administrators), the savings team of the School Health level and the district level supervisors team. For facilities that support the implementation of this program such as the School Health room administration desk, mattress, pillow, bolster, blanket, registration book, cupboard, medicines and so on. The implementing of the School Health program is using manual method. All of these input factors must work together in order to realize behavior change to achieve optimal health status.
2. **Process:** The management function is starting from planning, organizing actuating and controlling.
   a. **Planning:** Planning is the initial stage in the management process. Planning according to Koontz and O'Donnell (1964) is "*involving selecting the objectives and policies, programs and procedures for achieving them-either for the entire enterprise or for any organized part*"[12]. Planning includes decision-making activities because it includes the selection of decision alternatives.

   Implementation of the School Health program planning in Banyuwangi, planning was carried out by the School School Health Implementation Team but was not integrated with the District and District Head of the School Health Development Team because the organizing of the School Health Development Team in Banyuwangi didn't work. This can occur because there is no planning for public health center specifically for School Health at the District Level.

   While the planning of School Health guidance at the District Level is integrated with the Health Office and the majority is joined by the public health center's program. So that the planning of the JHS School Health program in Banyuwangi is only limited to planning by the School Health

Implementation Team itself.

b. Organizing: Organizing can be formulated as an overall management activity in grouping people and assigning tasks, functions authorities and responsibilities of each with the aim of creating useful and effective activities in achieving predetermined goals (Manullang, 2008)[13]. According to Terry (2006) Organizing includes[14]:

1. Divide the components of activities needed to achieve goals into groups
2. Dividing tasks to someone manager to hold the grouping
3. Establish authority between groups or organizational units

The School Health executive team that came from students namely 7th, 8th and 9th grade students fulfilled the requirements after the School Health training. In line with the organization of the School Health program implementation team in schools, it was not balanced with the organization of District and District advisory teams. Because the sub-district advisory did not know about the team implementing this development. Thus, it resulted in the non-implementation of the task of School Health Guidance Teams in conducting the development of School Health in Banyuwangi.

c. Actuating: Activation and Implementation (actuation) is an action to make all group members want to try to achieve organizational goals in accordance with planning (Prayitno, 1997)[15]. In management, other terms will often be encountered for mobilization and implementation functions, namely motivating, directing, influencing, commanding.

The implementation of School Health must be in accordance with the health needs of students. Implementation of these activities can be in the form of "TRIAS UKS". These needs can cover physical, psychological, social and spiritual needs. The implementation of health business activities can be carried out well if all the residents of the school, supporting facilities and infrastructures and various cross-sectoral agencies can contribute to the success of this activity.

d. Controlling: Planning is closely related to the function of supervision or control because it can be said that the plan is a standard or tool of supervision for the work being done. George R Terry (2006) suggested "*control is to determine what is accomplished, evaluate it and apply corrective measures, if need, to insure result in keeping with the plan*". Furthermore, Newman said "*control is the performance that conforms to plan*"[14].

Control of purpose of school health activities includes monitoring and evaluation efforts supported by recording and reporting. Control must be carried out periodically and continuously, one of the method used by the Government (Regional) in monitoring and evaluating the implementation of health activities in schools. The main objective of control is to make what is planned become a reality (Manullang, 2008)[13].

The supervision of the School Health program in Banyuwangi is carried out by the implementation team and the subdistrict and district development team. At the supervisory level, the evaluation is carried out in each semester. However,0020supervision of the sub-district and district supervisors team did not work due to barriers to integration with monitoring programs in the puskesmas.

3. **Output:** The output factor of the implementation of this school health business is the change in behavior from unhealthy habits to clean and healthy living habits and a healthy environment.
4. **Outcome:** The outcome factor of the implementation of this school health effort is the increasing quality and achievement of students both academically and non-academically according to the purpose of education at school.
5. **Impact:** The impact of the results of the implementation of health business is expected to increase the level of health of students so that the growth of students continues to increase and free from sources of disease.

Conclusion

Based on the results and finding of research on the development of the School Health program in JHS in Banyuwangi it can be concluded that the planning of the School Health program is still routine which results in less optimal organization. However, the implementation of the School Health program is in accordance with the "TRIAS UKS" and its supervision is already good at the

level of the implementation team. It's just that the School Health program development has not been implemented optimally.

Therefore it is necessary to make efforts to optimize the implementation of the School Health program in accordance with the Policy Principles for the Development and Development of School Health and the School Health Development Team. With the model of developing a JHS School Health program in Kabupaten Banyuwangi, "*Strengthening School Health Management with a System Approach*" is expected to be able to optimize the implementation of the School Health program.

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Personal and Behavioural Determinants of HIV Transmission among Transgender Women in Indonesia

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Abstract

Purpose: This study aimed to understand determinants of HIV transmission among transgender women also known as *Waria* in Yogyakarta, Indonesia.

Method: One-to-one in-depth interviews with twenty-nine *Waria* living with HIV was conducted. They were recruited using purposive and snowball sampling techniques.

Results: The results indicated that personal factors including the lack of knowledge about HIV and condoms played a supporting role in the transmission of HIV among the participants. Early sexual, being interested in sex partners, engagement in transactional sex and the needfor sexual satisfaction were identified as supporting behavioural factors for HIV transmission.

Conclusions: The study findings indicate the need for HIV/AIDS interventions that address the economic aspect of *Waria* in Yogyakarta and other similar settings. Furthermore, educational programs that would raise awareness of HIV in schools and the need to formulate policies and bylaws that protect children from having sex with adults including their teachers should be instituted in Indonesia.

Keywords: *HIV infection, personal and behavioural factors, transgender women, Waria, Indonesia.*

Introduction

The prevalence of HIV infection among transgender women populations has been documented in copious studies and reports worldwide.[1-3]Available evidence often derived from local studies conducted in Asia and the Pacific region indicates that Indonesia, India, Nepal, Pakistan and Myanmar to be the top five countries with the highest prevalence of HIV infection in transgender women populations.[2] In the Indonesian context, transgender women are also known as *Waria*.[4]

A range of HIV risk factors such as needle sharing, injecting drugsand injection of female hormones have been reported in these populations.[5,6] Other factors supportive of HIV transmission among these populations include having a history of sexually transmitted infection[7], unprotected anal intercourse (UAI) with multiple sex partners[1,6,8] and engagement in commercial sex work.[6,9,10] The lack of knowledge or inadequate information on the ways HIV is transmitted and could be prevented have also been reported to be supportive of risky sexual behaviours for HIV transmission among these populations[10-12].

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Despite the reported high HIV prevalence, there is paucity of evidence on factors supportive of HIV transmission among transgender women in the context of Yogyakarta and in Indonesia in general. The diversity of factors and the mechanisms through which HIV transmission is facilitated among these populations in Indonesia have not been explored[13]. The current study aimed to understand factors associated with HIV transmission among transgender women population in Yogyakarta, Indonesia.

Method

Study design, Recruitment of participants and data collection: A qualitative inquiry was conducted in Yogyakarta, Indonesia from December 2017 to February 2018. The qualitative study design enabled the researchers to have direct interactions with and observe the settings and situations of the study participants[14]. Purposive sampling which was followed by snowball sampling technique were used to recruit the study participants (n=29). Participants were eligible for inclusion based on two criteria: (i) HIV positive *Waria* and (ii) 18^{+} years old[15]. Open ended one-to-one in-depth interviews were carried out by the first (female) and the second (male) authors who are experienced qualitive method researcher, have public health educational background. Each interview was conducted at mutually agreed places and times by both the participants researchers. The interview with each participant took approximately 45 to 90 minutes. Although participants were offered a chance to review their individual transcripts none of them took this offer.

Data Analysis: Data analysis was guided by the thematic framework analysis by Braun and Clarke.[16] The framework analysis involves six steps of qualitative data analysis including data familiarisation, generation of initial codes, the search for themes, the review of themes, defining and naming themes and the production of the report.[15]

Results

Personal Factors: Knowledge of HIV/AIDS and condoms seemed to have been well disseminated among the study participants prior to this study. All the participants had the basic knowledge of HIV transmission and prevention. However, it was obvious from the participants' responses that most of them learnt about HIV/AIDS and condoms after they were diagnosed with HIV infection. They had engaged in UAI for years before HIV diagnosis, which seemed to be one of the significant factors leading to HIV transmission among them:

"I didn't know anything about HIV and condoms prior to the diagnosis. After I was diagnosed with HIV, I received information related to HIV/AIDS, HIV/AIDS-related health services and about condoms. Condom provision here is free of charge …." (P4).

"I did not have information at all about this virus before moving here [Yogyakarta]. I did not know about condoms. Never thought of HIV or condoms before I was diagnosed with HIV. Here, information about HIV or condoms is easy to access…." (P16).

Behavioural factors:

Early sexual debut: Early sexual debut was a common practice among the study participants, which seemed to predispose them to HIV infection. It was indicated that all the participants had engaged in sexual encounters at early age with their friends or school teachers. Coupled with the lack of awareness about the protective effect of condoms for safe sex, such a practice placed them at increased risk of contracting HIV infection:

"If I am not mistaken, I had sex [UAI] for the first time when I was 13 years old. …. Never used condoms back to those days, I was still very young and did not know anything about condoms" (P2).

Participants' personal interests in sex partners, curiosity to experience sexual intercourse sensations and engagement in transactional sex were found to be the supporting factors for early sexual debut. An early engagement in UAI seemed to be a result of the feelings participants had towards their sexual partners and the curiosity to experience sexual sensations. Additionally an early debut in commercial sex work to earn was one of the highlights emerging from the interviews, which may have facilitated their HIV acquisition:

"I fell in love with my senior high school teacher and often went to his place. We were close, so once he asked me to have sex, I could not refuse…." (P17)

When asked whether they would be able to indicate how and when they were infected with HIV, participants seemed unsure of whether their exposure was during an early stage of their engagement in UAI and transactional sex work or after they had been long involved in these practices:

"I may have gotten it [HIV infection] at the early stage of my engagement in sex with partners or clients because none of them used condoms. I did not know about condoms either…. I never used injecting drugs and received blood donor from other people" (P21).

Multiple sex clients per night and sex without condoms: Regular engagement in UAI with multiple sex clients seemed to have playedan important role in the HIV transmission among transgender populations. The interviews revealed that the participants had a sustained engagement in sex work and had multiple sex clients every night, which were strong vulnerability factors supportive of HIV transmission among them:

"…. I used to have more than ten [sex] clients every night. It was tiring but I liked it, so I just enjoyed. Now, sometimes five [sex clients], sometimes less than five …." (P5)

Having multiple sex clients meant that the current study participants had to tolerate to a range of sexual practices set by different clients, including whether or not condoms were used. For example, participants revealed to have been inconsistently using condoms due to clients' demand oftransactional sex without condoms:

"Condom use is dependent upon the clients, if I ask my client to use but he does not want to use then I can't do anything. If I refuse to serve him then I don't get money to survive" (P2).

Inconsistent condom use as acknowledged by all participants, was still a common practice among the study participant even though they have been tested positive for HIV:

"I used condom inconsistently until now. Now it is not because of the lack of condoms as it was but the preference of clients. Clients pay me, so I should indulge their preference to not use condom. This may transmit HIV to them …." (P26).

Engagement in UAI or sex without condoms with multiple sex clients was revealed to be the main route of HIV transmission among the study participants. This was reflected in the following comments provided by the participants during the interviews:

"I am sure some of my clients transmitted the virus to me because I meet [have sex with] clients almost every night and most of them do not prefer to use condoms" (P27).

Hidden HIV status from sex clients: Some participants realised that the concealment of HIV status from sex clients could be a factor for the spread of HIV infection among transgender populations. Some participants appeared to understand that they could transmit the virus to their clients and their clients could also transmit it further to other transgender women as they all drew from the same pool of clients in this study settings:

"I know it is highly likely that I may have spread the virus to some of my clients as well because they often want to do it [have sex] without condoms, but what can I do? I cannot tell them that I have the virus….." (P10).

Among the major reasons for not disclosing their HIV status was the fear of losing clients and income as if found out about the status as a result of disclosure:

"I don't tell any of my clients about my status because I am afraid if they know then no one would want to book me and they [clients] can find and book the others [transgenders]" (P29).

Avoiding discussion on HIV/AIDS topic was revealed to be a strategy used by the participants to conceal the HIV status from their clients:

"I try to avoid any talk related to HIV/AIDS or other sexually transmitted infections because I don't want my clients ask me about my HIV status" (P26).

Sexual need or satisfaction: The engagement of transgender women in transactional sex seemed to extend beyond the obvious economic reasons. Personal sexual need or satisfaction was found to be additional driving factor for transgender women's engagement in transactional sex:

"I like doing this [selling sex] because I get money and sexual satisfaction as well. As a transgender person, dressing up and looking beautiful and getting booked by clients make me feel happy" (P18).

Discussion

At the time of data collection, it appeared that the study participants were better informed about HIV infection and protective effects of condoms than before their diagnosis. Prior to HIV testing, participants lacked knowledge about HIV transmission and prevention. The lack of knowledge and consistent engagement in UAI over the years facilitated the transmission of

HIV infection among them. The study findings are in line with Bandura's concepts in the social cognitive theory (SCT)[17] and previous findings[10,18], which show the influence of perceptions or knowledge (e.g., participants' lack of knowledge about HIV transmission and prevention or condoms) on the sexual behaviours such as engagement in UAI, which made them at risk for acquiring HIV infection.

It was also indicative that in this study behavioural factors were the main contributors for HIV transmission among interviewed *Waria*. It is reasonable to theorise that coupled with the lack of awareness about the existence of HIV, their engagement in UAI practices at early age involving other significant people, such as teachers (adults) could have placed them at a high-risk for HIV transmission. Their engagement in UAI practices at early age was purely driven by their feelings to sex partners, curiosity to experience sexual intercourse sensation and engagement in commercial sex work. These findings support the construct of the SCT and previous findings[6,17,19] indicating the influence that personal factors (e.g., in this study: participants' feelings towards their sex partners and curiosity towards sexual sensation) have on sexual behaviour or engagement in sex including UAI. Additionally, the findings also report consistent and regular engagement of the participants in UAI practice with multiple sex clients as a further high-risk behavioural factor supportive of HIV transmission among *Waria*. This finding supports previous findings[6,9,19] reporting the engagement of transgender women in commercial sex work as the supporting factor for sex without condoms a precursor for HIV transmission and re-infection.

In conformity to prior findings about *Waria* hiding HIV status from their primary and other sexual partners for fear of physical and sexual abuse and the inability to negotiate condom use[6,20], the findings of the current study also reveal that participants hid their HIV status and tried to avoid HIV/AIDS-related conversations with their sex clients, even when they were engaged in UAI. However, the main reason why the current participants failed to disclose about their HIV status and negotiate condom use seemed to be the fear of losing their clients and subsequently, the loss of income. On the other hand, clients who enlisted the service of these *Waria*may have lacked awareness of potential of being infected with HIV infection from the transgenders, which is a serious problem that may need to be addressed to protect both the *Waria* and their clients. These findings support the SCT concept[17] about the influence of personal factors or what people believe or think (e.g., losing sex clients and income) on their behaviour (e.g., engagement in UAI, not negotiating condom use and hiding HIV status). Hiding HIV status and UAI practices between the transgender women and their sex clients seemed to not only support HIV transmission among the study participants but can also bridge the HIV transmission to the general population through their clients who could have other sex partners from the general population.

Conclusions

The present study reports several factors associated with the HIV transmission among the transgender participants. Behavioural factors including early sexual debut, hiding HIV status and having UAI with multiple sex partners were reported to support the HIV transmission among the study participants. Sexual gratification was additional factor that led the study participants to engage in the above high-risk sexual behaviours. Moreover, the study findings indicate the high possibility of HIV transmission and re-infections, not only within *Waria* and their sexual clients, but to the general population due to the fact that *Waria* draw their clients from the same pool of clients who are also members of the general community (who may have sexual engagement with non-*Waria* populations). Educational programs that would raise awareness of HIV in schools and the need to formulate policies and bylaws that protect children from having sex with adults including their teachers should be instituted in Indonesia.

Ethical Clearance: Obtained from Medicine Research Ethics Committee, Duta Wacana Christian University, Indonesia (ref: 558/C.16/FK/2017).

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Conflict of Interest: Nil

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Effect of Epilepsy and Antiepileptic Drugs on Lipid Profile of Epileptic Children

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Abstract

Background: Epilepsy is one of the most common neurological disorders, which required long term therapy or lifelong treatment in some cases. Chronic use of antiepileptic drugs (AEDs) therapy might modify some vascular risk factors, Since atherosclerotic vascular alterations may start early in life, this study focuses on dyslipidemia which is a major atherogenic risk factor among epileptic children.

The aim of this study: Was to evaluate the effect of epilepsy and antiepileptic drugs (AEDs) on lipid profile of children with idiopathic epilepsy.

Method: This study was carried out on 80 children, their age rage (7-16) divided into 20 epileptic children treated with new AED therapy,20 epileptic children treated with old AED therapy (VAP & CBZ namely),20 epileptic children newly diagnosed epileptic (according to ILAE2014 diagnostic criteria of epilepsy) they didn't receive medication till the time of study and 20 healthy children their age and sex matched served as a control . Measurement received for all participant include detailed history, clinical examination,neurological examination and serumfasting lipid profile, while the analysis of seizure (onset, type, frequency and classification of epilepsy according to (ILAE2017)), inter-ictal EEG, history of AEDs administration; daily dose and compliance to medication)were for epileptic patient only.

Result: Serum TC, LDL were significantly higher in epileptic children treated with (old and new generation) AEDs than other groups, TG and VLDL were higher in epileptic children treated with old AEDs than other groups, while newly diagnosed epileptic children have higher LDL than control group, on the other hand there is a significant higher HDL in epileptic children treated with new antiepileptic drugs than newly diagnosed epileptic children and epileptic children treated with old antiepileptic drugs.

Conclusion: Epilepsy and antiepileptic drugs especially old generation antiepileptic drugs are considered risk factors of dyslipidemias & atherosclerosis. We recommend routine monitoring of the serum lipid profile in epileptic children especially they treated with old generation AEDs (VAP and CBZ namely).

Keyword: *Epilepsy antiepileptic drugs AEDs serum lipid profile old AEDs new AEDs.*

Introduction

Epilepsy is one of the most prevalent chronic neurologic disorders[(1)]. Many people with epilepsy receive lifelong prescription treatment.

Older antiepileptic drugs (AEDs), mainly enzyme inducers (EIAEDs), may be associated with more adverse effects than newer AEDs. For example, they alter lipid profile, increasing serum cholesterol levels [(2)]. However, there is a lack of information about the prevalence of dyslipidemia related to the use of AEDs, which would facilitate appropriate management to reduce the risk of

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vascular diseases. Another AED that has been related to vascular risk factors is valproic acid (VPA), which has been associated with metabolic syndrome[3]. For these reasons, some authors have suggested starting new AEDs in newly diagnosed patients or changing EIAEDs if patients experience metabolism-related effects[4]

However, limited data are available especially in children to determine the effects of AED son lipid profile as a vascular risk factor for atherosclerosis .

Materials and Method

- This study was a hospital based cross-sectional study was conducted in Minia university hospital, this study carried out on 80 children above the age of 7 years with age range (7-16), selected subjects divided into 4 groups: the group I included control (n=20), Group II included newly diagnosed epileptic children before starting treatment with AEDs (n=20), group III included epileptic children receive old generation AEDs and lastly group IV included epileptic children receive new AEDs, the epileptic children receive AEDs in group III & IV they receive mono-therapy antiepileptic drugs (old and new)for period not less than 2 months) .
- All participants were evaluated forall measurement including demographic and clinical data and serum lipid profile complete clinical examination and anthropometric measures: weight, height and BMI and complete neurological examination except the analysis of seizure and EEG for diseased patients only.

Measurement for epileptic patient:

- Analysis of seizures includes duration of epilepsy careful history taking from patients or near relative to determine, type of epilepsy according to (ILAE2017) and history of Antiepileptic drugs administration: as regards type, dose and compliance.
- Digitalelectro-encephalogram for all patients in the study:

All patients were submitted to Nihon Koden digital EEG, the EEG was carried out on 16 channels. (the patient hair was washed with water and soaps), crocodile electrodes were applied according to 10-20 mv international system of electrodes placement recording was made using 50mv, calibration, with eye of the patient closed, provocation with hyperventilation and photic stimulation was performed in every record. EEG was reported by double blind separation technique by 2 professional neurophysiologists and discussed with colleagues in the department of clinical neurophysiologyto estimate EEG finding in diseased patient .

Specimen Collection: Sample was collected from study all participants, 5ml of venous blood was collected by trained lab technician under sterile conditions using a disposable syringe between 9.00 to 10.00 a.m. after fasting at least (8-10h) and the sample was tested for TC, HDL-C, LDL-C and TG. The blood was allowed to clot at room temperature and centrifuged at 3000rpm for 10min to separate serum. It was then kept frozen at -20°C to be analyzed later on.

TC was calculated by enzymatic method and expressed in mg/dl. HDL-C was calculated using polyanion precipitation and expressed as mg/dl. LDL-C was calculated using Friedewald's equation and expressed in mg/dl. Triacylglycerol in serum was converted to glycerol and then estimated using glycerol kinase enzyme based kinetic method and expressed in mg/dl.

Ethical Permission: Ethical permission to conduct the hospital based study was obtained as written & verbal consent from all participants.

Exclusion criteria:

1. Patients with secondary epilepsy,
2. Patients with other neurological or psychiatric disorder,
3. Patients with other genetic or medical disorder,
4. Patients with serious illness, malignancy or other complications,
5. Patients on more than one antiepileptic drug.

Statistical Analysis:

- Data obtained from patients with epilepsy and control cases were fed into computer soft were package (SPSSS, version 20) through which, descriptive statistics were calculated descriptive statistics, i.e. .mean ± Standard deviation (SD), Range, median and inter quartile range (IQR).
- One-way ANOVA test for parametric quantitative data between the four groups followed by post Hoc Tukey's analysis between each two groups, Kruskal Wallis test for non-parametric quantitative data

between the four groups followed by Mann Whitney test between each two groups

- Chi square test (if expected values within cell > 5) and Fisher's exact test (if expected value within cell < 5) for qualitative data between the groups

Superscripts with same small letter indicate insignificant difference between each two groups, otherwise there was significant difference between each two groups

*: Significant level at P value < 0.05

Results

The results of this study were summarized and illustrated in the following tables and figures

Table (1): Demographic of all studied groups

		Group I	Group II	Group III	Group IV	P value
		N=20	N=20	N=20	N=20	
Age	Range Mean ± SD	(7-16) [a] 9.9±2.8	(7-16) [a] 10.9±2.1	(8-14) [a] 9.2±1.8	(7-14) [a] 10.8±2.5	0.079
Sex	Male Female	9(45%) [a] 11(55%)	10(50%) [a] 10(50%)	14(70%) [a] 6(30%)	12(60%) [a] 8(40%)	0.392
BMI	Range Mean ± SD	(10.2-21.8) [a] 17.1±3	(15.4-21.5) [a, d] 18.3±1.7	(14.5-24) [b, d] 19.6±3.2	(15.4-21.6) [a, d] 18.7±2.2	0.028*
Residence	Rural Urban	10(50%) [a] 10(50%)	13(65%) [a] 7(35%)	14(70%) [a] 6(30%)	10(50%) [a] 10(50%)	0.452
Education	Elementary Primary Secondary	13(65%) [a, c] 3(15%) 4(20%)	14(70%) [b, c] 5(25%) 1(5%)	18(90%) [a] 0(0%) 2(10%)	10(50%) [b, c] 6(30%) 4(20%)	0.054

Demographic data of all participants shows that no significant differences among all studied groups as regard demographic data except significant higher BMI in epileptic children treated with old antiepileptic drugs than other groups with p value=0.028.(Table 1).

Table (2): Clinical data of epileptic children

		Group II	Group III	Group IV	P value
		N=20	N=20	N=20	
Epilepsy type	Idiopathic generalized Partial epilepsy Epileptic syndromes	17(85%) [a, c] 3(15%) 0(0%)	14(70%) [c, d] 6(30%) 0(0%)	10(50%) [b, d] 8(40%) 2(10%)	0.089
Seizure type	Partial Partial with secondary generalization Generalized with motor element Absence	2(10%) [b] 1(5%) 14(70%) 3(15%)	2(10%) [b] 4(20%) 14(70%) 0(0%)	10(50%) [a] 0(0%) 10(50%) 0(0%)	0.002*
Duration of Epilepsy	Mean ±SD Range	2.2±.52 (1-3)	2.8±0.52 (2-4)	2.8±0.74 (2-4)	<0.001
Compliance	Fair Poor		12(60%) 8(40%)	18(90%) 2(10%)	0.028*
EEG	Normal Focal sharp and slow Generalized sharp and slow Generalized slow 3HZ	7(35%) 3(15%) 7(35%) 0(0%) 3(15%)	2(10%) 6(30%) 12(60%) 0(0%) 0(0%)	2(10%) 6(30%) 10(50%) 2(10%) 0(0%)	0.054

Table 2 represent clinical data of all diseased groups.

Table (3): Serum lipid profile among studied groups

		Group I	Group II	Group III	Group IV	P value
		N=20	N=20	N=20	N=20	
TC	Median IQR	107.5 [a] (90.5-117.8)	117.5 [a] (105.5-134.8)	196.5 [b] (130-236)	147 [b] (115-167)	<0.001*
TG	Median IQR	109.5 [b] (80.8-133.3)	125 [b] (94.5-139.8)	175.5 [a] (152-304)	89.5 [b] (87-128)	<0.001*
LDL	Median IQR	51 [b] (34.5-55)	60.7 [c] (43-76.4)	84.7 [a] (70.4-169.4)	94.6[a, d] (69-108.2)	<0.001*
HDL	Median IQR	31 [a, c] (24-45)	30 [a] (26-37.5)	28.5 [a] (23-41)	39 [b, c] (31.4-49)	0.052
VLDL	Median IQR	21.9 [b] (16.2-26.7)	25 [b] (18.9-28)	35.1 [a] (30.4-60.8)	17.9 [b] (17.4-25.6)	<0.001*

Alsothere are significant differences among studied groups in all lipid profile parameter (except HDL) with p value among groups = (<0.001) for each (Table 3).

Table (4): Differences in lipid profile between each two studied groups

	I vs II	I vs III	I vs IV	II vs III	II vs IV	III vs IV
Serum cholesterol	0.060	<0.001*	<0.001*	<0.001*	0.007*	0.074
Serum triglyceride	0.401	<0.001*	0.787	<0.001*	0.203	<0.001*
Serum LDL	0.030*	<0.001*	0.001*	0.001*	0.011*	0.914
Serum HDL	0.797	0.607	0.098	0.588	0.011*	0.017*
Serum VLDL	0.401	<0.001*	0.787	<0.001*	0.203	<0.001*

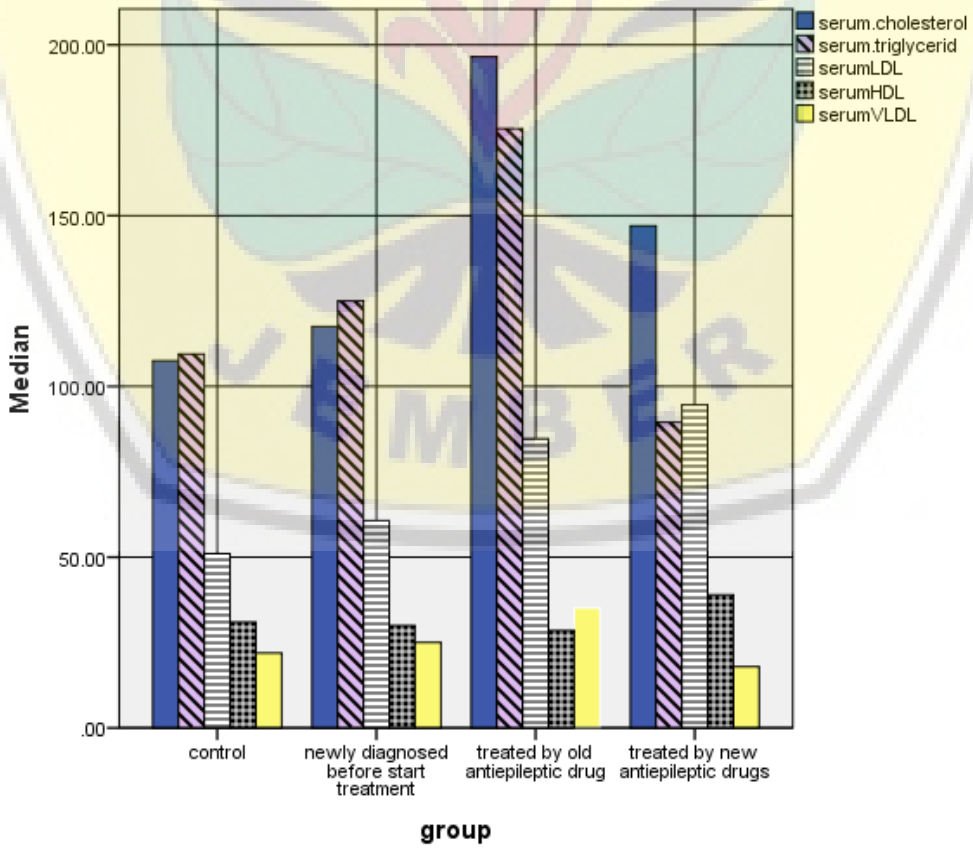

Fig (1): Differences of total lipid profile among studied groups.

There were significantly higher serum TC & LDL in Group III & IV when compared to control children and Group II, with p value (< 0.001 & <0.001) and (<0.01 & .007) for TG and p value (<0.001 & 0.001) and (0.001 & 0.011) for LDL respectively.

As regard triglyceride and VLDL serum levels they are significantly higher in group III than other groups with p value (<0.001) for each.

There is no significant difference between group II and control except in LDL serum level is significantly higher in group II than control with p value (=0.030)

While there is a significantly higher HDL in group IV than group II & III with p value (0.011 & 0.017) respectively (Table 4).

Discussion

This study was designed to evaluate the effect of old and new antiepileptic drugs and the effectepilepsy itself on lipid profile parameter ofepileptic children.

In this study we found a significant higher BMI in epileptic children treated with old antiepileptic drugs (VAP & CBZ) than control group.

This result was in accordance with **Gungor et al,[5].** who found that some drugs such as VPA and to some extend carbamazepine cause weight gain and increase BMI .

In disagreement with this result **Pickrell et al**,[6]who found that LEV was associated with significant weight gain while CBZ was not associated with significant weight gain.

In this study we found significantly higher serum TC & LDL (which is a risk factor for atherosclerosis (in epileptic children treated with antiepileptic drugs (old and new generation) when compared to control and newly diagnosed group with p value (< 0.001 & <0.001) and (<0.01 & .007) for TC and p value (<0.001 & 0.001) and (0.001 & 0.011) for LDL respectively. As regard triglyceride and VLDL serum levels they are significantly higher in epileptic children treated with old antiepileptic drugs than other groups with p value (<0.001) for each.

Similar finding was reported by **El-Farahaty et al** [7] who study the metabolic and atherogenic effects of long-term antiepileptic drugs in a group of adult Egyptian epileptic patients.;He found Significant higher LDL and significantly larger diameter of common carotid artery intima-media thickness in each drug-treated group (old and new)versus control group .and he conclude that long-term monotherapy treatment with valproate, carbamazepine had altered markers of vascular risk that might enhance atherosclerosis, whereas levetiracetam exerted minimal effect.

Also similar finding was reported by **Yamamoto et al,**[8] who found that epileptic patients on VPA or CBZ were associated with a higher non-HDL-C, but he found that an elevated non-HDL-C level was associated with increasing age, increasing BMI and male gender and use of inducer drugs, treatment with levetiracetam had little influence on the lipid profile and he recommend routine monitoring of the non-HDL-C level when using VPA and inducers, especially CBZ. (Yamamoto et al., 2016)

In disagreement with this result was **Nishiyama et al**.,[9] who found that there were no significant changes in total cholesterol, LDL in patient before starting Carbamazepine (as old antiepileptic drug) by 1m and after staring them by 6 m (Nishiyama et al., 2019)

Płonka-Półtorak et al,[10] also found that no significant difference between patients on the valproate (VPA) treatment and controls for total cholesterol (CHOL), low-density-lipoprotein cholesterol (LDL).

We also found that significantly higher HDL (which is considered a protective factor against atherosclerosis, cardiovascular or cerebrovascular disease)in epileptic children treated with new antiepileptic drugs (LEV & OXC) when compared to newly diagnosed epileptic children and children on old antiepileptic drugs with p value (0.011 & 0.017) respectively, while no significant difference was detected between other groups in HDL level.

Attilakos et al [11] also found that LEV increase HDL and the LDL-C/HDL-C ratio was significantly decreased at 12 months of LEV treatment in children and considered LEV as a safer alternative drug for the prevention of antiepileptic drug-induced cardiovascular complications in adult life.

In disagreement with us **Kim et al,**[3] who found that patient treated with (LEV and OXC) after 6-month period of monotherapy not significantly change, HDL-C levels.

We found that there is no significant difference in lipid profile between newly diagnosed epileptic children and control except in significantly higher LDL serum level than control with p value (=0.030).

This result was in accordance with the result of (Arend et al., [12]how found that higher lipid profile levels were observed in the patients with epilepsy than controls

Conclusion

From the present study we can conclude that old generation antiepileptic drugslike VAP and CBZ are strongly associated with dyslipidemia whereas OXCand LEV associated with altered lipid profile and HDL which is a protective factor against atherosclerosis. Therefore, the serum lipid profile level should be regularly monitored in patients undergoing therapy with antiepileptic medicines and we prefer selection of new AEDs in treatment of epileptic children to overcome dyslipidemic side effect occurs with old AEDs.

The Institutional Ethics Committee approved this study of the School of Medicine, Minia University, Egypt and all patients gave informed consent before participation in this study. The study conducted in accordance with the ethical guidelines of the 1975 Declaration of Helsinki and International Conference on Harmonization Guidelines for Good Clinical Practice.

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Determinant of Less than Two Years Birth Interval among Multiparous and Reproductive Age in Kabupaten Tulungagung, East Java, Indonesia

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Abstract

Background: Birth interval is the length of time between two successive live births. Previous research revealed that birth intervals <2 years had a higher risk of low birth weight (LBW) events compared to longer labor intervals (Demelash et al., 2015). Tulunggung is one of the districts in East Java with an increasing LBW incidence, from 2016 about 27.36% and increase in 2017 to 30% of the number of births.

Objective: The aim of this study was to determine the determinants of risk factors for birth intervals <2 years in Tulungagung.

Method: This research is a retrospective case-control observational analytic study and consisted of 80 case and 80 control samples taken with purposive sampling.

Result: Multivariate analysis showed 5 factors as determinants of birth intervals <2 years, namely: not planning a pregnancy (OR = 21.28; 95% CI (0.014-0.155), duration of breastfeeding <16 months (OR = 11.49; 95% CI (95% CI) 0.028-0.270), do not use contraception (OR = 6.33; 95% CI (0.054-0.466), ideal size number of children> 2 (OR = 5.85; 95% CI (0.055-0.533) and family income < UMR (OR = 4.55; 95% CI (0.068-0.717). The highest probability is 81.6%, namely that the probability of the occurrence of birth intervals <2 years in multiparous women of childbearing age in Tulungagung is 81.6% if the mother is in a condition no contraception and breastfeeding duration <16 months.

Conclusion: Planning for pregnancy, duration of breastfeeding, use of contraception, ideal size number of children and family income are determinants of birth interval <2 years in Tulungagung.

Keyword: *Determinant, < 2 years Birth intervals, Tulungagung.*

Introduction

Birth interval is the length of time between two successive live births[2]. Depend on the Indonesia Demographic and Health Survey 2012 showed the birth intervals less than 2 years about 14,9%[15]. Previous research revealed that birth intervals <2 years had a higher risk of low birth weight (LBW) events compared to longer birth intervals[8]. Research by Meihartati (2016) also concluded that birth intervals were associated with LBW, with 75.8% of LBW cases occurring at <2 years birth intervals[16]. One of the health problems caused by the <2 years birth interval is the incidence of low birth weight (LBW). LBW is one of the causes of infant death and other causes including labor trauma asphyxia, tetanus neonatorum (TN) infection, congenital abnormalities and so forth[11].

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We all know that infant mortality is an indicator of the health status of the Indonesian people. Tulunggung is one of the districts in East Java with an increasing BBLR incidence, from 2016 amounting to 27.36% and experiencing an increase in 2017 to 30% of the number of births[3].

Previous research analyzed the determinants of birth distance factors <3 years based on the 2012 IDHS results. The results show determinants of short birth distance (<36 months/3 years) including maternal education, maternal age during last pregnancy <20 years, maternal age at last delivery < 20 years, plans to have more than two children, use simple contraception, not use contraception and the survival of the previous child[1,15]. The results of other studies in Ethiopia added a determinant of birth distance <3 years, including a history of breastfeeding less than 24 months, the sex of the child previously female, poor health index[10,12].

Efforts that can be made to reduce births, reduce health problems, reduce the incidence of LBW and infant mortality are by controlling the risk factors, namely by regulating and optimizing labor intervals.

Material and Method

This research is an observational analytic with case-control design. The population in this study were multiparous women of childbearing age who had a history of recent labor with an interval of <2 years as a case population and a 2-5 year delivery interval for the control population. The research sample consisted of case and control samples. A total of 80 case samples and 80 control samples were taken from 2 puskesmas with purposive sampling. This study uses primary data sources. Data obtained by questionnaire.

The dependent variable is the interval of birth <2 years and the independent variable is the age of the mother at marriage, the age of the mother during previous labor, maternal education, mother's occupation, history of contraception use, history of breastfeeding <16 months, hus Band's age at marriage, hus Band's education, hus Band's occupation, family income, pregnancy planning, parity, history of child mortality, religion, ideal size of the number of children and information education and counseling/IEC) of health workers. The analytical method used include univariate analysis, bivariate with chi square and multivariate with multiple logistic regression. Variables that are stated in the multivariate model are the variables which on the bivariate exam have a value of p <0.25.

Findings: The birth interval <2 years in Tulungagung is influenced by several factors. The proportions of factors related to birth intervals in Tulungagung and the results of the bivariate analysis are shown in Table 1 below:

Table 1. Proportion of influential factors and bivariate analysis results with chi square

Variable	Birth Interval				Total		P
	Case		Control				
	n	%	n	%	N	%	
Maternal age at marriage							
< 25 years	64	80	63	79	127	79,4	0,845
25-35 years	16	20	17	21	33	20,6	
Religion							
Islam/moslem	80	100	80	100	160	100	Can't analyzed
Christian (protestan)	0	0	0	0	0	0	
Christian (katolik)	0	0	0	0	0	0	
Hindu	0	0	0	0	0	0	
Buddha	0	0	0	0	0	0	
Konghuchu	0	0	0	0	0	0	
Mother education							
Low	34	42,5	32	40	66	41,2	0,745
Hight	46	57,5	48	60	94	58,8	
Husband age at marriage							
< 25 years	29	36,3	21	26,3	50	31,3	0,172
≤ 25 years	51	63,7	59	73,7	110	68,7	

Variable	Birth Interval				Total		P
	Case		Control				
	n	%	n	%	N	%	
Husband's education							
Low	35	44	47	59	83	52	0,058
Higth	45	56	33	41	78	48	
Husband's occupation							
Farmer	24	30	28	35	52	32,5	0,500
Non farmer	56	70	52	65	108	67,5	
Family income							
< Minimun wage	45	57	33	43	78	49	0,058
≥ Minimun wage	35	43	47	57	83	52	
Parity							
Primi	43	54	55	69	98	62	0,051
Multi	37	46	25	31	62	38	
History of child mortality							
Yes	0	0	0	0	0	0	Can't analyzed
No	80	100	80	100	160	100	
Mother age during previous labor							
< 25 years	39	48,7	43	53,7	82	51,3	0,527
25-35 years	41	51,3	37	46,3	78	48,7	
Pregnancy planning							
Yes	18	22	70	88	88	55	0,001
No	62	78	10	12	72	45	
Mother's occupation							
Yes	11	13,7	18	22,5	29	18,1	0,151
No	69	86,3	62	77,5	131	81,9	
Breastfeeding							
<16 months	57	71	13	16	70	44	0,001
≥16 months	23	29	67	84	90	56	
Use of contraception							
Yes	16	20	61	76	77	48	0,001
No	64	80	19	24	83	52	
IEC from health worker							
Yes	58	73	74	93	132	83	0,001
No	22	27	6	7	28	17	
Ideal size of children							
Two	34	42	55	69	89	56	0,001
More	46	58	25	31	71	44	

Based on the results of the bivariate analysis shown in table 1, there are five variables associated with birth intervals in Tulungagung with p <0.005 including: planning for pregnancy, duration of breastfeeding, use of contraception, IEC from health workers about planning birth and family planning and ideal size of the number of children.

On the variable of religion and history of child mortality analysis cannot be done because the data is constant, namely all respondents are Muslim and do not have a history of children who died. The independent variable which is a candidate for multivariate analysis is a variable that has a p value <0.25. These variables are: Hus Band's age at marriage, hus Band's education, monthly family income, parity, pregnancy planning, maternal employment status, duration of breastfeeding, use of contraception, IEC officers about planning birth and family planning and the ideal size of the planned number of children.

Table 2: Determinant of < 2 years birth interval, Multivariate analyzed

No.	Variabel	β	p	Odd Rasio	CI 95%
1	**Pregnancy planning** - No - Yes	-3,064	0,001	0,047	0,014-0,155
2	**Breastfeeding** - <16 months - ≥16 months	-2,441	0,001	0.087	0,028-0,270
3	**Use of contraception** - No - Yes	-1,845	0.001	0,158	0,054-0,466
4	**Ideal size of children** - More - Two	-1.769	0.02	0,171	0,055-0,533
5	**Family income** < Minimun wage ≥ Minimun wage	-1,514	0,12	0.220	0,068-0,717
Constanta		4,898	0.001	134,075	

The logistic regression test results as shown in table 2 can be concluded that the determinants of birth interval <2 years in Tulungagung are the use of contraception, duration of breastfeeding, pregnancy planning, ideal size of the number of children and family income. Mothers who do not use contraception 6,33 times ($OR_{risk\ factor}$ = 6,33; 95% CI = 0,054-0,466) are more at risk of giving birth at intervals <2 years compared to mothers who use contraception. Respondents who breastfeed <16 months 11,49 times ($OR_{risk\ factor}$=11,49; 95% CI = 0,028-0,270) are more at risk of giving birth at intervals <2 years than mothers who breastfeed >16 months. Respondents who did not plan for pregnancy 21,28 times ($OR_{risk\ factor}$= 21,28; 95% CI = 0,014-0,155) were more at risk of giving birth at intervals <2 years than mothers who planned their pregnancy. Respondents who planned more than two children 5,85 times ($OR_{risk\ factor}$ = 5,85; 95% CI = 0,055-0,533) were more at risk of giving birth at intervals <2 years than mothers who planned the number of two children. Family respondents who earn <UMR 4,55 times ($OR_{risk\ factor}$ =4,55; 95% CI = 0,068-0,717) are more at risk of giving birth at intervals <2 years than mothers whose family income> UMR. Respondents who did not use contraception 6,33 times more at risk of giving birth with a birth interval <2 years compared with those using contraception. The results of this study are in line with the results of research by Kurniawati & Prasetyo (2014) which states that mothers who use traditional contraception have a 1,47 times higher risk of experiencing short labor intervals compared to women who use modern contraception. Mothers who do not use contraception have a 1.5 times higher risk of experiencing short labor intervals than women who use modern contraception. Apart from that, because one of the objectives of the family planning program is to regulate birth spacing, namely by preventing pregnancy[4]. It is known that non use of family planning and contraceptive failure are among the main causes of unintended pregnancy. It was reported that 78% of unwanted pregnancies were attributable to contraceptive non use, incorrect use, or method failure in Ethiopia[17].

Respondents who breastfeed <16 months 11,49 are more at risk of giving birth at intervals <2 years than mothers who breastfeed >16 months. The results of this study are in line with research by Hailu & Gulte (2016) which states that the duration or duration of breastfeeding a previous child is significantly related to short labor intervals. This is because the hormonal regulatory mechanism experienced by breastfeeding mothers affects the fertility of the mother[6]. Respondents who did not plan for their pregnancy were 21,28 times more at risk of giving birth at intervals of <2 years than mothers who planned their pregnancies. This is in line with previous studies in Denmark that mothers who planned their pregnancies might have longer labor intervals than mothers who did not plan their pregnancies. This is supported by several considerations, namely: maternal health, infant health conditions and family finances[12].

The importance of planning both pregnancy and childbirth, especially the distance between deliveries. Because with good planning, it is expected that the mother and hus Band are really ready to have a baby again. Readiness here is not only readiness in terms of cost but also more in physical and mental readiness.

Respondents who planned more than two children were 5,58 times more at risk of giving birth at intervals <2 years than mothers who planned two children. This is in line with the results of research by Kurniawati & Prasetyo (2014) which states that the ideal size of the number of children is related to the delivery interval.

Couples who want more than two children have a risk (1.34 times) higher for short labor intervals compared with couples who want the number of children less than that or just enough. This shows that indeed the value that is believed, greatly affects the individual making a decision or acting.

Respondents whose family income <UMR 4,55 times more risk of giving birth at intervals <2 years than mothers whose family income> UMR. This is in line with the results of research by Abdel-Fattah., Et al (2007) which states that the economic status of the family is a strong predictor of labor intervals. Research conducted in Saudi Arabia indicates that short labor intervals are independently influenced by low family income.

Conclusion

After analyzing the logistic regression test, it was found five factors which were discriminatory labor intervals <2 years in multiparous women of childbearing age in Tulungagung District, namely pregnancy planning ($OR_{risk\ factor}$ = 21,28; 95% CI = 0,014-0,155), the ideal size of the number of children ($OR_{risk\ factor}$ = 5,85; 95% CI = 0,055-0,533), use of contraception ($OR_{risk\ factor}$ = 6,33; 95% CI = 0,054-0,466), family income ($OR_{risk\ factor}$ = 4,55; 95% CI = 0,068-0,717) and duration of breastfeeding <16 month ($OR_{risk\ factor}$ = 11,49; 95% CI = 0,028-0,270).

The highest probability value is 92.6% and the lowest is 3.4%. From these two extreme values, it can be concluded that the probability of birth interval <2 years in multiparous women of childbearing age in Tulungagung Regency is 92.6% if the mother is in the following conditions: planning Number of children> 2, unplanned pregnancy, breastfeeding <16 month and do not use contraception.

Conflict of Interest: There was no conflict of interest in this study.

Ethical Clearance: This study was received ethical approval from the Health Research Ethics Committee, Faculty of Medicine, Universitas Airlangga.

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The Effect of Top Management Commitment and Environmental Strategy on Environmental Management Accounting Health Institutions in Indonesia

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Abstract

Purpose of this research paper is to report the results of research that explain the relationship between environmental strategies and Top management commitment to the adoption of Environmental management accounting (EMA). In particular, EMA practices in health institutions in Indonesia. The research method of quantitative correlation from the theory of Natural Resouce Base View and identify environmental strategies and Top management commitment influence the rate of adoption of EMA. A total of 100 managers from healthcare institutions in Indonesia participated in the survey.

The result showed that environmental strategy has a strong effect on EMA adoption of T value (2,773)> (1.96) and P value (0.005) <α (0.05), while top management commitment has a strong effect on EMA adoption of T value (4,801))> (1.96) and P value (0,000) <α (0.05). of all these, top management commitment was found to be the most powerful. Practical implications Recognizing the important role of environmental strategies and top management commitment in managing environmental problems in organizations, this study highlights the influence of leadership and the involvement of managers as a determinant of EMA adoption. Originality/ value - This paper offers a preliminary understanding from the perspective of the Natural Resource base view theory about the company's resources, namely the environmental strategy and top management commitment that influences companies in health institutions in Indonesia to adopt EMA.

Keywords: *Environmental management accounting (EMA), environmental strategy, top management commitment, Management accounting, health institutions.*

Introduction

In the current decade industrial development has increased and has brought immeasurable wealth and prosperity while also causing undesirable environmental damage in the long run such as increased pollution, global warming and toxic waste so that it becomes a very important issue for the community. This loss of future resources will undermine the foundations of business enterprises. While the significance and importance of implementing environmental management practices is widely recognized, not all companies are willing to apply environmental management practices in their daily operations management. business[1,2]

Companies need to adopt a strategy that is responsive to the environment even though it is not required by regulations because of the necessity to maintain competitiveness and economic performance. Internal organizational change needs to be done in organizations that are proactive and use environmental responsive strategies[3] . The company is expected to adopt and implement environmental management practices to reduce the negative influence of the company's activities on the natural environment[4]. Therefore environmental

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management issues have become an important consideration for the community and are under pressure. In fact, the application of environmental management practices can reduce pollution levels and as such they are considered an effective method for protecting the natural environment[5,6].

Demands for obtaining different accounting information are also increasing and vice versa where interest in accounting for the environment has also increased[7,8]. However, traditional financial accounting and cost accounting fail to provide environmental information specifically environmental cost information[9]. Some researchers identified that the accounting system lacks recognition of environmental impacts does not identify investment appraisals handling environmental impacts[10]. Further environmental management accounting (EMA) has emerged to respond to these limitations. EMA is a combined approach, which provides data transitions from financial accounting, cost accounting and material flow balances to improve material efficiency, reduce impacts and risks to the environment and reduce environmental costs.

Research concerning the influence of EMA and business strategy at big companies in Australia shows that there is a positive relationship between the application of the company's business strategy EMA andhealth[11]institutions. In the Top Management Commitment research relationship, the company's environmental strategy on environmental performance with EMA as mediation shows that the company's environmental strategy influences EMA as well as the Top Management Commitment also has an influence on EMA. The results of some of these studies illustrate that EMA is a tool that provides information for companies related to the environment[12].

According to EMA research, environmental activities and practices carried out by companies largely depend on management commitment to the environment owned by the company will encourage reliable environmental performance [12]. Testing the effect of environmental strategies and top management commitment on Environmental Management Accounting (EMA) in healthcare institutions in Indonesia is observed by looking at the effect in contingency perspectives using the Natural Resource Based View (NRBV) approach.

The results of this study can be expected to provide benefits, this research adds evidence to clarify the relationship between the Environmental Strategy and Top Management Commitmet to the practice of Environmental Management Accounting (EMA) which is a follow-up study of research that examines the determinants of Environmental Management Accounting (EMA) practices[11,12]

Materials and Method

This study was conducted using a quantitative approach (questionnaire survey), because this enables researchers to obtain comprehensive information about populations and determine the effects of one variable on another. This study aims to test the hypothesis that associative forms produce accurate data based on empirical phenomena that can be measured and to test for doubts related to validity and theory through theoretical testing, building or contradicting facts and data, statistical descriptions, clarity and predictive relationships. Sample selection and data collection. The unit of analysis of this research is a medical institution company. Respondents of this study focused on company leaders or managers. The management of the company is used as respondents to assess the Environmental Strategy, Top Management Commitment and Environmental Management Accounting.

Data analysis in this study uses simple linear regression analysis because the model in this study uses only one independent variable. The following is a linear regression model that is run.

$$EMA = a + b1SL + b3TMC + e$$

Description:
EMA = Environmental management accounting
TMC = Top management commitment
SL = Environmental Strategy

Findings: Analysis of the Effect of Environmental Strategy and Top Management on Environmental management accounting.

Table 1. Results of Regression Analysis Regression

Variables	Coefficient	T value	Significance
(Constant)	0.749	1,776	0.034
SL	0,293	2,773	0.005
TMC	0,483	4,801	0,000
a dependent variable: EMA dependent.			
Test F		30,564	0,000
R Square		0,485	
Cronbach's Alpha		0,834	

The results of the linear regression analysis in the above table can be written systematically the equation is as follows:

EMA = 0.749 + 0.293 SL + 0.483 TMC

Based on the above equation it can be interpreted that the SL regression coefficient, which is an environmental strategy, shows a positive coefficient of 0.293 thus it can be seen that the higher the environmental strategy, the higher the application of EMA. While the TMC regression coefficient, namely top management commitment, shows a positive coefficient of 0.483 thus it can be seen that the higher the top management commitment, the higher the application of EMA.

Discussion

Constants of 0.749 with positive parameters indicate that SL and TMC will increase the application of EMA. The results of this study support previous research which states that the environmental strategy of acompany health institution will encourage the adoption of EMA to be more aligned with the company's goals on environmental issues as well as Top management commitment play a role in EMA adoption. Management that provides support for the impact of company activities on the environment uses EMA to obtain financial information related to environmental costs for use in environmental management decision making.

In accordance with previous studies the results of this study support the argument that there are positive and significant effects of environmental strategy and top management commitment on the adoption of Environmental Management Accounting. The environmental strategy is a guide to achieving environmental management practices such as Environmental Management accounting because the information provided by EMA facilitates the company's environmental management activities. Likewise, the literature on top management commitment states that in the context of EMA[13], while leadership and top management support is very important to ensure the understanding and commitment of the entire organization to environmental issues[14].

The results of this study support research that environmental strategies influence the adoption of EMA Likewise the Top management commitment variable influences EMA in line with research[3,11,12]. Environmental strategy planning as part of an eco-control package can improve the company's environmental and economic performance through the use of EMAIn addition, the environmental strategy motivates companies to adopt eco-design.[15]

From the description above it can be concluded that the adoption of EMA in the company being the research sample has shown optimal results and is influenced by the environmental strategy and top management commitment. Therefore, the environmental strategy and top management commitment as well as the implementation of EMA must be continuously improved[16, 17,18]

Conclusion

Environmental strategy variables influence the implementation of EMA. This is indicated from the significance value of 0.005 <0.05. Top management commitment variable influences EMA. This is indicated from the significance value of 0,000 <0.05.

Conflict of Interest: The Author (s) declare that they have no conflict of interest

Source of Funding: Others source,

Ethical Clearance: This study was approved by the institutional review board of institution of Airlangga University The research received a certificate from Airlangga University

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Comparative Study Using Biomimetic Remineralization Versus Fluoride Varnish in Management of White Spot Lesion in Post Orthodontic Treated Patient: Split Mouth Randomized Clinical Trial

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Abstract

Background: The milky color of white spot lesions impairs dramatically the esthetic appearance thus reducing satisfaction of orthodontic therapy, making their treatment become nowadays mandatory[1]

Objectives: The aim was to compare the effect of color change between remineralizing agent and guided enamel regeneration in treatment of white spot lesion after orthodontic treatments.

Materials and Method: In split mouth design, white spot lesions in anterior teeth of post orthodontic debanding patients received randomly either Curodont Repair or Duraphat Fluoride varnish single dose, both materials were applied according to the manufacturer's instructions. White spot lesions were evaluated before and after 3, 6 months follow up periods by two blinded assessors to assess patient satisfaction using VAS score and color change by Vita Easyhshade.

Results: Friedmann test was used to compare between follow-up periods for visual analogue scale (VAS). The patient satisfaction showed statistically significant difference after application of Curodont Repair for 3 & 6 months follow up periods; in contrast with the results of Duraphat which record patient un satisfaction for color change of white spot lesion. However repeated ANOVA was used to show the effect of materials and follow-up periods. The better color change results using Curodont Repair in treatment of white spot lesion.

Conclusion: Curodont Repair offer a therapeutic option for enamel regeneration, it is designed to deliver a the scaffold for improved remineralization of the lesion body forming new enamel which in turn enhance the masking of white spot lesion.

Keywords: *White spot lesions- Curodont repair-color change.*

Introduction

Cosmetics and esthetics are current trends of our society as more and more patients are demanding for minimally invasive cosmetic enhancement without anesthesia, drilling and less expensive restorations. This technique may be considered as micro invasive treatment of smooth surface white spot lesions and also one that allows for the recovery of natural tooth appearance [1]

Enamel regeneration is however particularly challenging as mature enamel is a cellular and does not resorb or remodel itself unlike bone or dentin Advances in tissue engineering method have yielded biomimetic

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method that have demonstrated a strong potential for regenerating the hierarchical enamel microstructure[2,3].

Due to the limited evidence based information in literature regarding the self-assembling peptide p11-4 in management of white spot lesion[2,] it was found that, it will be purposive to evaluate the clinical performance of this newly introduced biomimetic remineralization material using a randomized clinical trial to test the null hypothesis that self-assembling peptide p11-4 will have the same clinical performance as conventional high fluoride varnish in management of white spot lesion after orthodontic treatment.

The aim of this study

The aim of this study was to compare the effect of color change between remineralising agent and guided enamel regeneration in treatment of white spot lesion after orthodontic treatments.

Materials and Method

Method:

1. **Outcome data collection:**

- **Perimary outcome: assessment of patient satisfaction:** Patient satisfaction was measured using visual analogue score (VAS) scores. The mean and standard deviation for the VAS scores of thepatients recorded preoperatively

  Secondery outcome: assessment of color change of white spot lesions: Visual color assessment was performed using the Vita Easyshade Spectrophotometer Compact (Vita Zahnfabrik, Bad Sa¨ckingen, Germany)[4]. Each white spot lesion was measured by holding the probe tip at a right angle to the surface and the values were reported. To minimize measurement errors, the assessments were repeated three times and the mean values of three consecutive measurements were recorded for each area. Only the L* value was captured in this study. As shown in figure (1)

2. **Material application:**

a. Intervention: Curodont repair was applied according to the manufacturer's instructions. Teeth were swapped with 2% NaOCl for 20 seconds, then rinsed 20 seconds and gently air-dried. Teeth were etched with 35% Phosphoric acid (Dental Technologies, Inc., USA) for 20 seconds and subsequently rinsed with water for 20 seconds and under moisture control[5]. Cuorodont repair applicator unit was activated by pushing the two cylinders together, single white spot lesion was treated by gently pressing the tip directly onto the tooth surface as shown in Solution was allowed for five minutes to diffuse and until the tooth surface appears dry. .as shown in figure (2 a, b, c)

b. Comparator: Colgate® Duraphat ®Varnish Single Dose 5% NaF (Woelm Pharma GmbH, Germany) was applied according to the manufacturer's instructions. Tooth surfaces with white spot lesions were swapped using a miniature cotton brush applicator dabbed repeatedly onto the tooth surfaces without contacting soft tissues as shown in after a few minutes a thin and clear layer is formed.

Findings: Friedmann test used to evaluate the effect of two remineralizing agents application (Curodont Repair and Duraphet) on the patients satisfaction recorded by VAS score values. Median (M) and 95% Confidence Interval (CI) values were calculated and summarized in **(Table 1)** and graphically drawn in **(Figure 3)**. The Highest M and CI values were recorded after application of Curodont Repair by 3 and 6 months whereas the lowest values were recorded before remineralizing agents application.

Data statistically described in terms of mean values and standard deviation (SD). Repeated ANOVA test used to evaluate the effect of two remineralizing agents (Curodont Repair and Duraphet) on the color change of the white spot lesions in 2 different follow-up periods (3 months and 6 months) and compare them to the color change of these white spots before their application. **(Table 2)** and **(Figure4)** showed a comparison of the total L* values (Mean ± SD) as a function of treatment of white spot lesions with 2 remineralizing agents (Duraphate and Curodont).

Discussion

White spot lesion is an optical phenomenon due to subsurface tissue loss. Surface features of active initial enamel carious lesions show widened intercrystalline spaces with lower interprismatic mineral content in the surface layer [4, 6,7].

Based on today's understanding of dental bio mineralization process, new efforts have been developed

to produce synthetic analogs of non-collagenous proteins, which are involved in the events of nucleation and growth of hydroxyapatite crystals in hard tissues[8.4].

Recently a rationally designed self-assembling peptide p11-4 was introduced to the market. It is designed to enhance the remineralization on enamel subsurface lesions [9]. P11-4 is an eleven- amino acid peptide that undergoes well characterized hierarchical self-assembly into three-dimensional fibrillar stable scaffolds in response to specific environmental triggers [10], offering a new generation of well-defined bio polymer[11]. Assembled P11-4 forms scaffold- like structures with negative charge domain on its surface, these domains attract Ca2+and other mediated ions, leading of de novo precipitation of hydroxyapatite crystals [9,12].

The main bulk of available evidence represented controlled clinical trials of using self-assembling peptide P11-4 as a remineralising agent to arrest initial carious lesions (white spot lesions) [13]. On the other hand, clinical trials about the efficacy of self-assembling peptide P11-4 in masking the color of white spot lesions for achieving the patient satisfaction appears to be insufficient for clinical guidance [13].

Active white spot lesions usually have a better prognosis to recover the translucency of the enamel than arrested white spot lesions because of their porosity and therefore easier penetration of calcium phosphate ions [14]. Nearly, half of white spot lesions might be arrested after debanding by 2-6 months, thus additional intervention after this period will mostly result in poorer esthetic [14]. Also participants were selected in this study had no systemic diseases or following concomitant medication reducing the salivary flow rate as it often shows a greater caries risk incidence than those of physiological reduced rates[15].

In this study a high concentration at repeated intervals might have toxic effect although [16] in their study on fluoride varnish, reported minimal risk of acute toxic reactions. The three and six month duration of this study permitted evaluation of demineralization of a single-dose fluoride varnish with high fluoride concentration in vivo Fluoride varnish adheres to the tooth surface in a thin layer and releases fluoride for a period of 5–6 months [17]. Regardless of its high fluoride concentration, rapid setting time can be performed once upon contact with saliva, hence preventing risk of ingestion. Moreover, only a small dosage is used and less the use of a tray, thus shortening the amount of clinical chair time and maximizing application safety[18].

Curodont repair was applied according to the manufacturer's instructions. Teeth were swapped with 2% NaOCl for 20 seconds; the rationale for treating enamel with oxidizing agents as sodium hypochlorite is to remove surface organic pellicle [19] increasing the diffusion of calcium and phosphate ions into the enamel subsurface lesion[20,20,] then subsequently rinsed with water for 20 seconds and under moisture control [5.22].

The superiority of patient satisfaction (VAS score) values after Curodont Repair application might be due using split mouth design, so the patient comparing the contralateral affected teeth. [24/25]considered fluoride deprives the masking of white spot lesions, This was disagreement with [18]who reported a high-concentration of Duraphat fluoride varnish was shown to be effective in reversing the color of white spot lesions at 3-month and 6-month follow-up periods after debonding. But the application of fluoride varnish was every month.

Optically there are two types of scatters in enamel; small enamel crystallite and large enamel prism (uniaxial) they are responsible for translucency appearance of the enamel [25], The translucency of the enamel is determined by the refractive index of the hydroxyapatite and the water accumulates in the intercrystalline spaces [26] Based on these facts it was assumed that the Curodont Repair had the ability to organize enamel rods and arrange the enamel crystals homogeneously with a clear outline and hence Curodont Repair can improve the color change.

This was in agreement with studies done by[9,26,12&16], where they also found P11-4 able to induce biomimetic regeneration of early caries lesion. For these reason it was assumed that the application of Curodont Repair on white spot lesion after orthodontic brackets debanding can improve the color change. Moreover [13] and [22]were in agreement with the results of the current study as the Curodont could mask & reversing the white spot lesions. They measured the colorimetric change (ΔE) using spectrophotometer in artificial white spot lesions. There are no recorded clinical studies evaluated the color change after application of Curodont Repair.

The highest color change results showed highest L* value (low color change). This is may be due to effect of Duraphat varnish limited to the outer 30-40µm of enamel lesion (subclinical) and not effective at deeper level of the body of the lesion.[22]

The demineralized enamel was disorganized, with loss of structural characteristics and after fluoride application amorphous crystal or particles scattered on the surface or lines of remineralization along the prismatic borders. Based on this fact it was assumed that blocking of the surface layer affect the color change of the white spot lesion negatively through alteration of refractive index of enamel. This was in agreement with study done by [7,22], where they also fond Duraphat fluoride varnish, under in-vitro conditions, inhibited further lesion progression but could not mask the unfavorable appearance of white spot lesions considerably. Whereas disagreement with some researchers which conjectured that low doses of fluoride were effective in controlling the regression and remineralization of lesions in order to prevent hyper mineralization and those high doses were recommended to inhibit initial lesion formation and excessive quantities of fluoride may be detrimental to their subsurface remineralization although optimum fluoride doses and delivery mechanisms have yet to be established.[26]

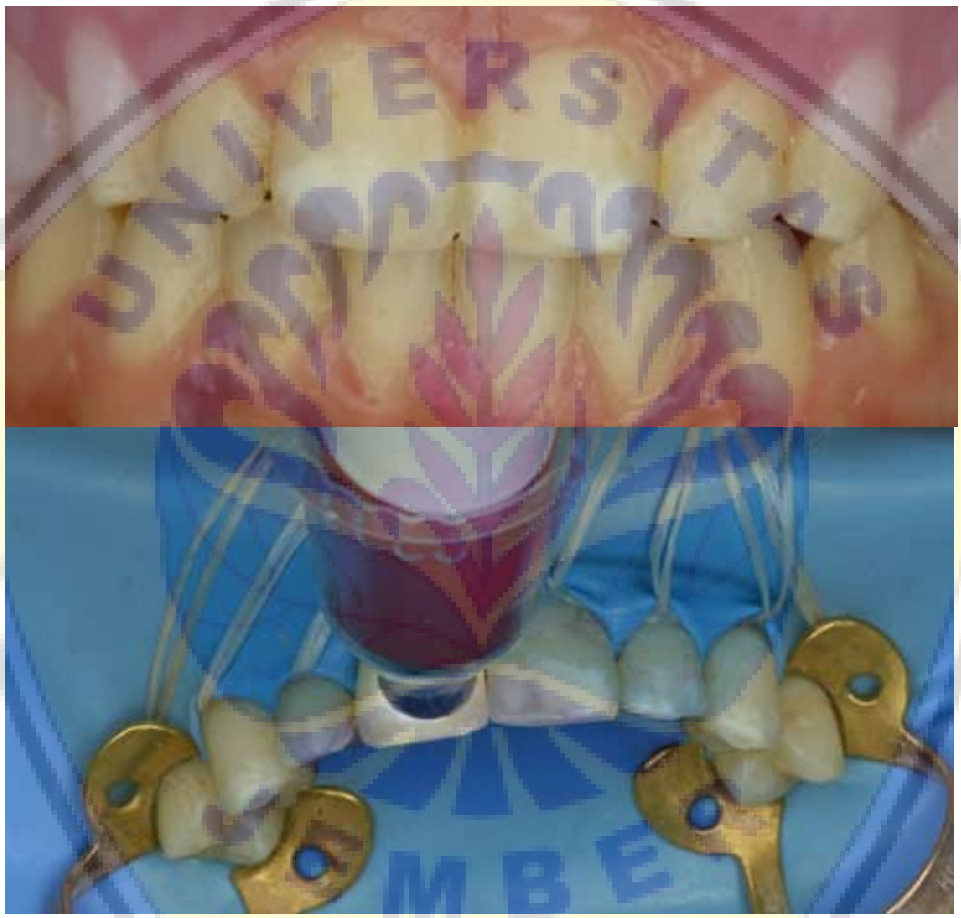


Figure (1): Calibration of L* Value:

Figure 2a, b, c: Etching with 35% Phosphoric acid., Cuorodont repair applicator unit activation., Application of Cuorodont repair.

Table 1: Median and 95% CI Values for different tested remineralizing agents within each follow-up period:

		Before			3 Months			6 Months			p-value
		Median	95.0% Lower CL	95.0% Upper CL	Median	95.0% Lower CL	95.0% Upper CL	Median	95.0% Lower CL	95.0% Upper CL	
VAS	Curodont	20.00[a]	10.00	30.00	80.00[b]	70.00	90.00	80.00[b]	80.00	90.00	0.001*
	Duraphate	20.00	10.00	30.00	20.00	10.00	30.00	20.00	20.00	30.00	0.051 NS

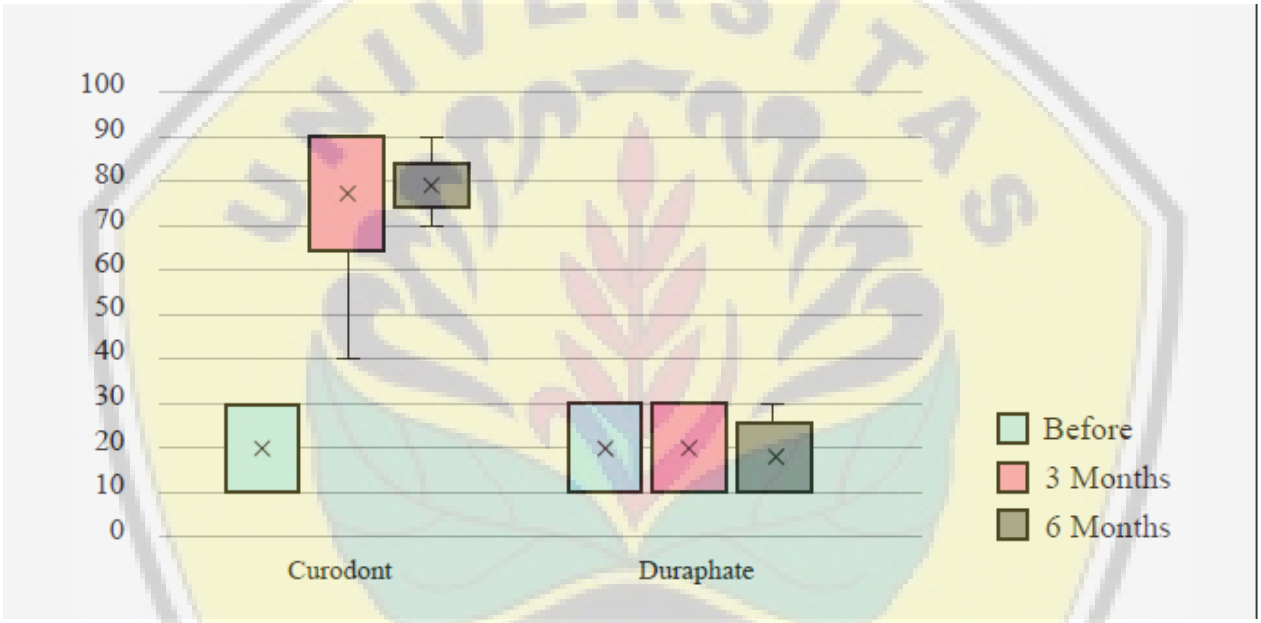
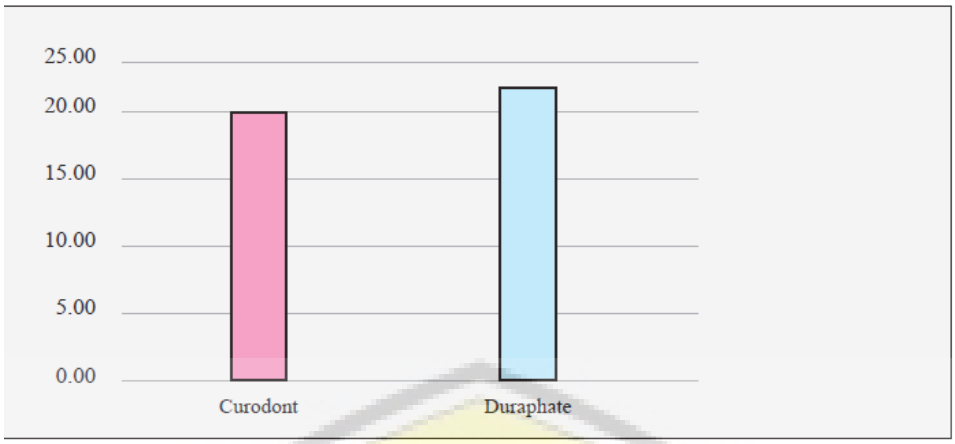


Figure 3: Box plot of Median and 95% CI Values for different tested remineralizing agents within each follow-up period.

Table 2

Variable		Mean ± SD	P-value
Type of Remineralizing Agent	Duraphate	22.55± 2.46	≤0.001*
	Curodont	20.08± 3.17	



NS; non-significant (p>0.05), *; significant (p<0.05), different letter in same column indicating significance (p<0.05).

Figure (4): Bar chart representing total L* values (Mean ± SD) as a function of treatment of white spot lesions with 2 remineralizing agents (Duraphate and Curodont).

Conclusion

Under the limitations of the current investigation, the following Conclusions were evident: 1- Curodont Repair (self- assembling peptide P11-4) act as a biomimetic remineralization and offer a therapeutic option for enamel regeneration, it is designed to deliver a the scaffold for improved remineralization of the lesion body forming new enamel which in turn enhance the masking of white spot lesion.

Duraphat fluoride varnish considered as a remineralizing agent and very low efficacy on masking of white spot lesion.

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Complications of Intralesional Steroids in Management of Infantile Hemangioma

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Abstract

Objective: Infantile Hemangiomas can result in severe functional and aesthetic disorders. Many treatment options are available for such condition. In this study, we present our center experience with intralesional steroids injection in the management of infantile hemangioma. Method: This study is a retrospective review of a cohort of 25 patients who were presented with IHs to our center from January 2014 to January 2015. A standardized set of data for each patient was recorded in a sheet including clinical history, patients' demographic data, clinical response, side effects and follow up visits. Colored photographs were taken for each patient at the first visit, throughout the treatment course and after finishing treatment. All the cases were treated with intralesional injection of Triamcinolone acetatein dose of 0.5mg/kg/dose once every 4-6 weeks, for 6 cycles By the same operator. Results: Twenty-five patients were managed with serial injections of intralesional Triamcinolone acetate with a mean age of 11 months. The average number of sessions was 5.2 ±0.79. Eighteen (72%) out of the 25 patients showed >50% response complete response. The adverse effects recorded; two cases (8%) showed signs of infection, bleeding from the puncture site occurred in 1 case (4%), 2 cases showed subcutaneous fat atrophy (8%), 3 cases showed hypopigmentation of the skin surrounding the lesion (12%).

Conclusion: Intralesional corticosteroids injection is an effective and safe modality for treating IHs; yet, we do recommend that we should use them in bulky, isolated lesions away from the face and bony prominences.

Keywords: Steroids; Intralesional injection; Infantile Hemangioma.

Introduction

Infantile hemangiomas (IHs) are the most common soft tissue tumors of infancy, occurring in 4% to 10% of children under 1 year of age, female infants are three to four times more likely to suffer from IH as male infants.[1]

Within the first weeks of life, they enter a phase of rapid growth lasting for 3 to 6 months which may go on for 24 months. A period of stabilization for a few months follows with spontaneous involution usually occurring in several years.[2]

However, problematic hemangiomas occur when they ulcerate, have massive growth, cause disfigurement, or impact normal function or cosmetic development. Common locations for problematic hemangiomas include the face, ear, orbit and airway. These hemangiomas subsequently require early and aggressive treatment for ideal functional and cosmetic outcomes. Moreover, ulcerated IHs usually requires treatment. Corticosteroids have been considered the first-line therapy for sever or complicated IHs.[3]

Other treatments including interferon alpha, Vincristine, laser therapy, topical Imiquimod and surgical excision have been reported to be effective

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alternatives However; all have potential side effects or unknown long-term safety.[4]

In this study, we present our center experience with intralesional steroids injection in the management of infantile hemangioma, focusing on post injection complications.

Material and Method

This study is a retrospective review of a cohort of 25 patients who were presented with IHs to the vascular anomalies' clinic at the department of Paediatric Surgery of a tertiary referral university-based children's hospital from January 2014 to January 2015.

A standardized set of data for each patient was recorded in a sheet including age, sex, site and size of the lesion, clinical history, dosage and timing of injections, clinical response, side effects and follow up visits.

Colored photographs were taken for each patient at the first visit, throughout the treatment course and after finishing treatment. The diagnosis was established as an IHs after clinical evaluation by a pediatric surgery consultant and confirmed by radiological studies in the form of doppler ultrasonography (US) and magnetic resonance imaging (MRI).

The treatment protocol was: All the cases were treated with intralesional injection of Triamcinolone acetatein dose of 0.5mg/kg/dose once every 4-6 weeks, for 6 cycles. We injected the drug under complete aseptic conditions, slowly at a low pressure with a 3-mL syringe and 25-gauge needle. Before injection aspiration was done all the cases were injected by the same operator.

Clinical response was evaluated according to the following criteria: complete response (complete disappearance of vascular tissue), marked improvement (>70% disappearance of tissue), moderate improvement (40–70% of vascular tissue), slight improvement (<40% disappearance of vascular tissue) and no response. [5] Complications were recorded as well.

Findings: Twenty-five patients were managed with serial injections of intralesional Triamcinolone acetatein dose of 0.5mg/kg/dose once every 4-6 weeks, for 6 cycles. with a mean age of 11 months (range from 6 months to 24 months). Ninemales and 16 females were included in the study. Regarding the site of the lesions, twelve out of 25(48%) occurred in the head and neck region, six cases (24%) in the lower extremities, seven cases (28%) in the trunk. The mean follow-up was 7 months (range from 3 to 12 months). The average number of sessions was 5.2 ±0.79.

Regarding the clinical response; ten (40%) out of the 25 patients showed a complete response. Marked improvement was detected in 8/13 (32%). Four cases (16%) showed moderate improvement and 2 case (8%) recorded a slight response. Only one case (4%) showed no response to treatment.

The adverse effects recorded; two cases (8%) showed signs ofinfection in the form of epithelial sloughing and ulceration with purulent discharge, bleeding from the puncture site occurred in 1 case (4%), 2 cases showed subcutaneous fat atrophy (8%), 3 cases showed hypopigmentation of the skin surrounding the lesion (12%)(Fig. 1), while 17 patients tolerated the drug adequately (68%).

Discussion

Despite being self-limited and benign lesions in children, IHs may result in psychosocial stress for parents because the duration of the spontaneous regression is unpredictable. For decades systemic corticosteroids were the mainstay for treating IHs and currently Propranolol is the accepted first line of management for proliferating capillary hemangiomas. However, reported side effects of systemic propranolol encourages us to search for other treatment modalities. [6] In 1982, Kushner used local steroids for treating hemangiomas for the first time ever.[7]

In our study, we demonstrated 72% (18/25) more than 50% response and an overall response 96% (24/25) which is comparable to other studies, Gangopadhyay et al. reported that overall response rate was 88.6% with administration of intralesional triamcinolone.[8] Another two studies also showed response rates of up to 90% with intralesional corticosteroid treatment. [9, 10]

Local complications of Intralesional corticosteroids include fat and/or dermal atrophy, hypopigmentation and a more serious but rare complication of intralesional corticosteroid therapy occurs in lesions of the upper eyelid, is retinal artery or vein occlusion. This complication likely results from a combination of high injection pressures (causing retrograde flow of the drug from the eyelid toward the apex of the orbit) and excessive injection volume.[11]

In our series the adverse effects recorded were; 1 case had bleeding post injection (4%), it was from the puncture site of the needle and it was controlled by compression. 2 cases developed infection (8%), that was spontaneously drained, we did a swap culture and gave antibiotics accordingly and repeated irrigation with saline. 2 cases showed subcutaneous fat atrophy (8%), 3 cases showed hypopigmentation of the skin surrounding the lesion (11%) and for the last couple of complications we reassured the parents and just followed them up and there was gradual improvement in the degree of fat atrophy. while 17 patients tolerated the drug adequately (68%).

Concerning subcutaneous fat atrophy pathogenesis; steroids directly arrest proliferating keratinocytes and fibroblasts and alter skin lipids synthesis andproteins metabolism. Furthermore, steroids can cause local vasoconstriction, with possible thrombosis, hypoxia and consequently atrophy. Regarding the hypopigmentation, steroids probably reduce the number or activity of melanocytes. In general, treatments are not necessary and complete resolution isfrequent but requires several months. However, it can raise cosmeticand psychological problems if atrophy and hypopigmentation persist.[12]

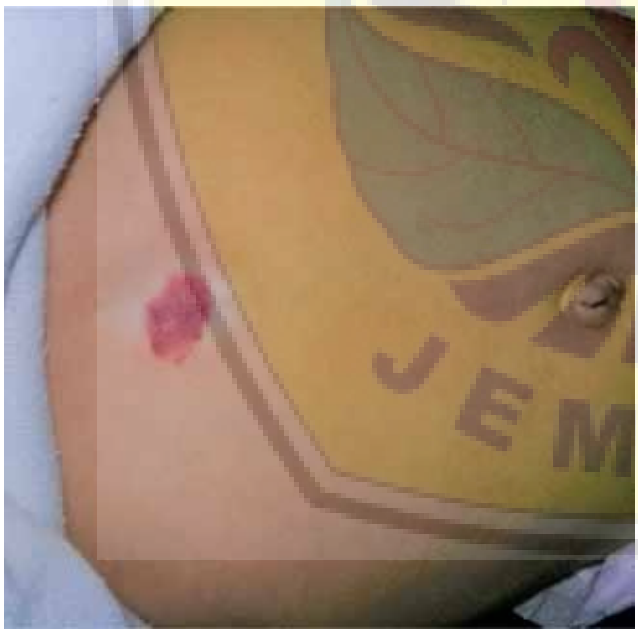

Figure (1): 10 months old male with anterior abdominal wall IH showing area of hypopigmentation post-injection

Conclusion

Intralesional corticosteroids injection is an effective and safe modality for treating IHs; yet, we do recommend that we should use them in bulky, isolated lesions away from the face and bony prominences.

Ethical Clearance: Taken from Cairo University Ethical Committee via departmental research ethics and scientific committee.

Source of Funding: Self-funding.

Conflict of Interest: Nil.

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Escherichia Coli Contamination in Elementary School Snacks: A Cross-sectional Study

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Abstract

Background: Some of elementary school snacks in Indonesia are not qualified (23.82%) due to bacterial and addictive, such as prohibited preservatives and dye and 33% of the snacks were contaminated by *Escherichia coli* (*E. coli*). Many food handlers have not performed a proper hand-washing habit, only 48.3% of food handlers used soap to wash and rub their hands, including washing fingers, fingertips and wrist. There are 42.1% that do not have a good quality of cookware and cutlery and 42.1% do not have a good food-processing place.

Objective: This study aimed to observe individual characteristics of food handlers, hygiene sanitation of food handlers at elementary school canteen, quality of snacks with bacteria parameters (*Coliform* and *E. coli*) and to find out variables related to *E. coli* contamination on snacks at the canteen.

Method: The researcher applied a cross-sectional study and analysis by logistic regression multivariable supported by analysis statistic software for interview data although the quality of snack samples was analyzed in laboratory.

Findings: The samples consisted of 18 males (24.3%) and 56 females (75.7%). Most of them never attended training on hygiene sanitation and food safety (n= 59; 75.7%), showed a poor food processing and preparation (67.6%), 67.6% (n=50) of respondents performed hand-washing habit and many of them did not use gloves (n=68; 91.9%) while handling food. In months ago, some food handlers suffered from digestive tract disorder (n=15; 20.3%). Snacks with *E. coli* contamination were shown at 9.5% (n=7) and many snacks were contaminated with *Coliform* and *E. coli* used chicken in their presentation.

Conclusion: The high-risk snacks (p value = 0.024) and poor food-processing and preparation (p=0.073) have significance results with a likelihood of *E. coli* contamination on elementary school snacks.

Keywords: *E. coli, elementary school snack, high-risk snacks, hand-washing, food processing and preparation.*

Introduction

Food is an essential and important thing for humans because it contains many nutrition (protein, carbohydrate, vitamin, etc.) that can make human's body working, growing and repairing body cell[(1)]. However, food can harm humans because it is a medium for microorganism growth. Centers for Disease Control and Prevention (CDC) estimates that every year, 48 million people get sick of foodborne illnesses, 128,000 of them are hospitalized and 3,000 die. Researchers have identified more than 250 foodborne illness due to food contamination by a variety of bacteria, viruses and parasites[(2)]. *Escherichia coli* (*E. coli*) is the most founded bacteria in food[(3)] and it is an indicator for fecal

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contamination in foods [4]. *E. coli* is transmitted through fecal or oral route and existing in any food[4]. Anyone can get a foodborne illness, but some people are more likely to develop one, one of them is young children[2].

There are many factors related to microbial contamination. They are unsafe sources, poor personal hygiene of food handlers, improper cooking, unqualified holding temperatures and contaminated equipment[5,6]. In addition, bacteria such as *E. coli* needs three important stuff to grow and multiply itself, that are nutrition such as protein, moisture and warmth [7,8]. Therefore, control on every factor can avoid bacterial contamination.

In 2014, 23.82% of elementary school snacks in Indonesia are not qualified cause bacterial and addictive, such as prohibited preservative and dye [9]. In 2015, 33% of elementary school snacks in Pancoran Mas District, Depok City, West Java Province were contaminated by *E. coli* [10]. Many food handlers do not perform proper hand-washing habit, only 48.3% of food handlers used soap to wash and rub their hands including washing fingers, fingertips and wrist [11]. There is 42.1% have not good quality of cookware and cutlery and 42.1% have not good food processing place [12].

Based on this condition, the objective of the study was to observe the individual characteristics of food handlers, the hygiene sanitation of food handlers at elementary school canteen, the quality of snacks with bacteria parameters (*Coliform* and *E. coli*) and to find out variables related to *E. coli* contamination on elementary school canteen's snacks.

Material and Method

Study design: This study used cross-sectional design carried out on December 2018 to April 2019. Analysis units were food handlers and canteen's snacks at elementary school in Pancoran Mas District, Depok City, Indonesia. The number of samples were calculated from the proportion estimated by Lemeshow formula with 90% CI, 10% precision and 0.33 proportion for *E. coli* contamination on elementary school snacks. Thus, final samples were 74 food handlers and snack samples taken using simple random sampling method.

Inclusion criteria for food handlers were permanent food handlers selling snacks at the school canteen and the sample snacks were the children's most favorite ones and the not-registered snacks. Besides, researcher interviewed respondents to gather information on training records of hygiene sanitation and food safety, hand-washing habit, food processing and preparation, quality of cookware and cutlery and sanitation of the location and the food-preparing place. Data about food quality were analysis from Environmental Health Laboratory, Faculty of Public Health, Universitas Indonesia although the researcher also counted the fly density by Scudder Method.

Collection of samples: The researcher had collected 74 snack samples. We had taken 30 gram or milligram and put them in sterile bag, then place it into cool box and transported it to the laboratory for analysis to avoid contamination[13].

Preparation and dilution of sample: This study used modification method from Bacterial Analytical Manual Chapter 4: Enumeration of *E. coli* and the *Coliform* bacteria and Regulation of National Standardization Agency of Indonesia Number 3554:2015 for analysis *Coliform* and *E. coli*. We did homogenate 10 gram or 10 ml of samples into 90 ml sterilized distillated water. Three-fold serial dilutions of homogenized samples were performed using sterilized distillated water as diluent. One milliliter of each dilution was inoculated into sterilized petri dish and pour the media. The content in the petri dish was swirled gently to mix sample with media. The plates were incubated at 35°C for 24 hours[13–15].

Enumeration for Coliform and E. coli: ChromoCult® Coliform Agar (Merck KGa A, Germany) was employed for enumeration of *E. coli*. The colonies of *E. coli* appeared purple or dark blue on petri dishes after incubation at 35°C for 24 hours [16].

Statistical analysis: We analyzed all of the data by using analysis software and described statistical measures, such as frequency, percentage, standard deviation and odds ratio after analysis logistic regression multivariable. Level of significance was $p > 0.1$ with 90% Confident Interval.

Findings: The respondents consisted of male (24.3%) and female (75.7%). The interview results showed many food handlers never attended training on hygiene sanitation and food safety (79.7%), poor food processing and preparation (67.6%), poor quality of location and food preparation place (83.4%), good quality of cookware and cutlery (50%) and many respondents performed hand-washing habit (67.6%), but many of them did not use gloves (91.9%) while handling

food. In months ago, some food handlers suffered from digestive tract disorder (20.3%) but it was related to *E. coli* contamination. Individual characteristics of food handlers are shown in Table 1.

Table 1. Individual characteristics of food handlers (n=74)

	n (%)
Sex	
Male	18 (24.3)
Female	56(75.7)
Records of training on hygiene sanitation and food safety	
Attend	15 (20.3)
Not attend	59 (79.7)
Hand-washing	
Yes	50 (67.6)
No	24 (32.4)
Using gloves	
Yes	6(8.1)
No	68 (91.9)
Food processing and preparation	
Good	24 (32.4)
Poor	50 (67.6)
Location and food-preparing place	
Good	12 (16.2)
Poor	62 (83.8)
Cookware and cutlery	
Good	37 (50.0)
Poor	37 (50.0)
Suffering from digestive tract disorder	
Yes	59 (79.7)
No	15 (20.3)
Variety of digestive tract disorders	
Gastritis	11 (73.3)
Diarrhea	3 (20.0)
Stomachache	1 (6.7)

Table 2. Quality of food samples (n=74)

	n (%)
Risk of samples	
Low	44(59.5)
High	30(40.5)
Coliform	
Negative	44(59.5)
Positive	30(40.5)
Escherichia coli	
Negative	67(90.5)
Positive	7(9.5)

Most samples were food with a high-risk contamination (40.5%) and some samples were contaminated by *E. coli* (8.1%) (Table 2). The high-risk food contain a high nutrient content and are not being served immediately after being cooked. This study also found that many snacks were contaminated with *Coliform* and *E. coli* used chicken in their presentation (Table 3).

After we analyzed all variables with *E. coli* contamination in snacks using logistic regression multivariate, we found that food with a high nutrient content and not being served immediately (high risk) had 21 times likelihood to get contaminated by *E. coli*, compared to food with a low nutrient content and being served immediately to students (p value= 0.024) after being controlled for the quality of food processing and preparation and hand-washing habit. The data is presented in Table 4.

Table 3. Contamination Bacteria in food sample (n=74)

Made of or Contain with	Coliform		E. coli	
	Positive n (%)	Negative n (%)	Positive n (%)	Negative n (%)
Chicken (n=4)	4 (100)	0 (0)	2 (50)	2 (50)
Egg (n=8)	3 (37.5)	5 (62.5)	2 (25)	6(75)
Ice (n=16)	12 (75)	4 (25)	2 (12.5)	14 (87.5)
Meat (n=9)	2 (22.2)	7 (77.8)	1 (11.1)	8 (88.9)
Grains (n=21)	5 (23.8)	16(76.2)	0 (0)	21 (100)
Vegetable and fruit (n=6)	2 (33.3)	4 (66.7)	0 (0)	6(100)
Fish (n=5)	2 (40)	3 (60)	0 (0)	5 (100)
Peanut (n=4)	0 (0)	4 (100)	0 (0)	4 (100)
Jelly (n=1)	0 (0)	1 (100)	0 (0)	1 (100)

Table 4. Association of E. coli contamination with other variables

	OR	90% CI	p-value
High risk	21.419	2.300 – 199.443	0.024*
Having hand-washing habit	6.251	0.818 – 47.762	0.138
Poor food processing and preparation	8.869	1.198 – 65.662	0.073*

*significant (p-value < 0.1), OR: Odds Ratio, CI: Confident Interval

Discussion

This study found that food with a high nutrient content and not being served immediately (high risk) were at risk for *E. coli* contamination (p=0.024). It is in line with literature which explains that bacteria need three important stuff to multiply itself, they are nutrients such as protein, moisture and warmth [7]; hence, temperature must be considered to keep food remain safe. Most bacteria do not like to be at cold or hot temperature, so that the range is in between the called "Danger Zone". Danger zone begins at 41°F and ends at below 135°F[7,8,17]. This is where bacteria can growth and multiply itself rapidly and cause any foodborne illness[2,7,8], then food must be served immediately if temperature is still hot or not kept in danger zone before serving them to customers.

In addition, there are other factors related to microbial contamination. They are unsafe sources, poor personal hygiene of food handler, improper cooking, unqualified holding temperatures and contaminated equipment [5]. This condition was called cross contamination.

Another microbial-related factor such as *E. coli* contamination is food preparation [5,6]. This study found that poor food processing and preparation had 8 times likelihood (p=0.073) of being contaminated by *E. coli*, compared to foods with good food processing and preparation.

Cooking foods, combining food served on the same plate and uncovered food for a long time can increase risk for microbial contamination [6]. Many preparation activities at kitchen such as cooking, washing, shredding, mixing and using several equipment that are common to both processing and preparation can be contaminated the food. Most of bacteria such as *E. coli* are destructed with a high temperature. Food must be cooked at 165°F, but some foods only need to be cooked to 155°F for at least 15 seconds as it is called cooking by adequate heating [7]. Step to prevent the entry of *E. coli* on food is by maintaining the hygiene of food handlers by washing hand after using bathroom and cooking food thoroughly (155-165°F) [6–8].

Food handlers also become a vehicle for spreading bacteria or microorganism directly by their hands [5,6,8,18]. In the United States, hygiene practices of food handlers are one of five most important risk factors for food poisoning and 89% of the illness outbreaks [5]. Hand-washing habit can reduce microbial contamination from the food handler's hands to the food they serve[5,8,19,20]. The principles for hand-washing depends on following considerations, that are using water power, having good length of time for washing (15 – 30 seconds), using soap, washing fingers, palms, back, wrists, nails and subungual region and rubbing fingers and palms during rinsing frequently and intensely [8,19]. However, there is a research explaining that only 48.3% food handlers used soap to wash their hands and rubbed hands including washing fingers, fingertips and wrist. They are also washing their hands in less than 10 seconds (41.4%) and the research highlights that the important stuff is that rubbing hands and increasing frequency of hand-washing can remove microbial load such as *E. coli* [19]. That theory supports this study because this study do not have significance result (p = 0.138) about hand-washing and *E. coli* contamination. When collecting data, the researcher only gave questions about hand-washing habit, but did not observe the food handlers' hand-washing practice, so that we did not know whether their habit was proper.

Conclusion

This study found that the foods not being served immediately (high risk) and the poor food processing and preparation increase the *E. coli* contamination on snacks sold at elementary school canteen.

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Conflict of Interest: There is no conflict of interest.

Ethical Clearance: Ethical Clearance taken from The Research and Community Engagement Ethical Committee Faculty of Public Health University of Indonesia.

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The Effect of Development and Treatment Group Counselling on The Self-Concept of Delinquent Students

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Abstract

This experimental study was conducted based on two main objectives. First, to measure the effect of Development and Treatment Group Counseling (KKPR) on self-concept between treatment groups and control groups. Second, to measure the impact of Development and Treatment Group Counseling (KKPR) on self-concept between marathon treatment groups, weekly treatment groups and control groups. A total of 60 subjects were divided into three groups consists of weekly treatment group, Marathon treatment group and control group. Pre-test and post-test data were collected through Multidimensional Self Concept Scale and analyzed descriptively and inferentially through statistical test of mean, MANCOVA and Post-Hoc Tukey at the significance level of 0.05. The results showed that first, was significantly effective in increasing self-concept of subjects in treatment group compared to the subjects in control group. Second, KKPR more effective on the weekly treatment group compared to the marathon treatment group. As a conclusion, KKPR is effective to improve self-concept among the subjects in treatment group. Overall, the outcomes of this study give a new perspective theoretically and practically in the field of counseling and psychology in order to address the delinquent behavior among students.

Keywords: *Group counseling, self-concept, treatment groups, control groups.*

Introduction

The process of identity and personality development can be fostered through a structured education system starting from the primary school to the highest education institution. According to Bakar[1], our current education system needs to be functional and community building oriented. In order to optimize the diversity of talent, capabilities, skills and interests among students, the Ministry of Education (MOE) has established several types of schools to meet these needs including National Religious Secondary School (SMKA). The diversity of secondary schools established has its own goals, rules and norms, but ultimately upholds the National Education Philosophy in order tohave a generation that is spiritually and physically balanced[2].

As a well-established educational institution, SMKA consists of students who came from early to middle adolescence stage and here, they have outlined and several key goals which are to educate students with Islamic beliefs, providing knowledge that meets the demands of the world and hereafter and develop students' potential in terms of interest, creativity, personality and leadership. SMKA is an important institution for empowering students to have a strong sense of identity, strong religious beliefs as well as being excel in academic, personal and disciplinary by not gettinginvolved in any delinquent behavior[1].

However, despite the planning and strategy set by the Ministry of Education (MOE), issues regarding to delinquent behavior among students has spread to students at SMKA. Moreover, this study involved a group of students at National Islamic Secondary School (SMKA) who are excel in academic and co-curricular, but some of them were involved in delinquent behavior. Students who had been selected to study in SMKA were chosen based on the excellent results obtained in the Primary School Evaluation Test (UPSR) for admission to Standard 1 and the Form 3 Assessment (PT3) for entry into Standard 4 in SMKA.

The differences and unique identities of SMKAs have always been respected by the community but on the other hand, the community is very sensitive to what

is happening to these students at SMKA[3]. Despite attending SMKA, it is possible that this delinquent and behavioral problem is still present as not the whole time the student is in the hostel especially during the school holidays[4].

Therefore, in this study a development and treatment group counselling (KKPR) module has been developed as an intervention treatment on psychological aspect which is self-concept by focusing on the process of development and treatment. The approach that being used for this study purpose is Rationale Emotive Behavior Therapy (REBT).

Literature Review: There are many factors that can lead to adolescent delinquency and one of the significant factors is self-concept[5]. Rosenberg [6] said that the self-concept has been conceptualized traditionally as containing both cognitive and affective components (totality of the individual's thoughts and feelings having reference to himself as an object of evaluation). Herson[7] defined self-concept as a self-belief, self-attitude and self-perception that one feels true about himself or herself.

Levey et al. [5] in their study found that adolescents who have low level of self-concept reported higher levels of delinquency and he suggested that future research need to examine the protective role of self-concept in preventing adolescent delinquent behavior. Research conducted by Kõiv[8] found that among juvenile delinquents analysis shows that there is negative significant correlation between self-concept and negative behavior (aggressiveness anger, contempt, disappointment, disgust, fear, remorse, sadness, submission). Finding from another study by Blakely-McClure et al. [9] revealed that having higher levels of self-concept lead todecreases in relational aggression across the transition toadolescence.

The above finding also parallel with the finding from the study by Gupta et al [10] as they found that there was significant positive relationship found between prosocialbehavior and self-concept of adolescents. Analysis through Hierarchical Linear Regression analyses suggested that the combination of low self-esteem (fragile self-concept) with high narcissism (grandiose self-view) may contribute to the continuation of both bullying and victimization[11].

Although the associations between self-concept and delinquent behavior have not much been directly examined by the past research, research on identity development and adjustment suggests that questioning and rethinking one's sense of self is associated with higher delinquency[5]. Higher reconsideration of identity commitments has been related to higher delinquency[12] and more externalizing problems[13]. Besides, self-concept is also related to several indices of psychosocial functioning, such as anxiety and depression[14-16]. In a study conducted by Hehsan et al.[17] at one SMKA in Kelantan, they found there were five significant factors contribute to students' delinquency which were environment, self-awareness, family, teachers and school.

Research Objective: There are two main objectives in this study that listed as below:

i) To measure the effect of Development and Treatment Group Counseling (KKPR) on self-concept between treatment groups and control groups.

ii) To measure the impact of Development and Treatment Group Counseling (KKPR) on self-concept between marathon treatment groups, weekly treatment groups and control groups.

Methodology

This study involved 60 male students who had low level of self-concept at one National Islamic Secondary School in Perak, Malaysia. In order to measure their self-concept, they need to filled up a questionnaire known as Multidimensional Self-Concept Scale (MSCS) [18] before being choose as subject in the experimental study.

Subjects in this quasi-experimental study were divided into two major groups which were treatment (R) and control groups (K) by using pair random sampling method. For treatment group, this group consists of two groups which were marathon treatment group (R1) and weekly treatment group (R2). Subjects participated in the treatment session through Development and Treatment Group Counselling (KKPR) that adapted from a Development and Treatment Group Counselling (KKPR) on self-concept by Mohammad Nasir [19].

Findings:

Descriptive analysis to see KKPR's impact on the self-concept for treatment and control group: Table 1 shows the results that has been analyzedto see the difference between the pre-test and post-test mean score between treatment (R1 and R2) and control (K) group.

Overall, KKPR module able to improve the self-concept of subjects in both treatment groups, R2 (+20.25) followed by R1 (+.8.4). However, the mean score for control group has reduced by -1.75. As the conclusion, KKPR module successfully increase the self-concept of subjects in treatment group and more effective on weekly treatment group compare to marathon treatment group.

Table 1: A summary of descriptive analysis of pre-test and post-test on self-concept of the treatment and control group

Variable	Groups	Mean		
		Pre-test	Post-test	Difference Between Pre and Post Test
Self-Concept	R1	61.25	69.65	8.40
	R2	59.60	79.85	20.25
	K	60.65	58.90	- 1.75

*Note: R1 (marathon treatment group); R2 (weekly treatment group); K (control group)

MANCOVA analysis to see KKPR's impact on the self-concept for treatment and control group: A multivariate analysis of covariance (MANCOVA) was conducted to compare the effectiveness of KKPR to improve subjects' self-concept between marathon treatment group (R1), weekly treatment group (R2) and control group (K). According to Table 2, it shows that there was a significant difference of the mean scores, $F = 113.27$ ($p = .00$). The result also demonstrates that there is a significant difference of the mean scores for separate groups ($p = .00$). Analysis also revealed that there is a significant difference in the measurement of pre-test and post-test on self-concept between the treatment group and the control group.

Table 2: MANCOVA analysis on the effect of KKPR on mean scores of pre-test and post-test on self-concept (SC) among the subjects

Sources	Control Variables	df	Mean Square	F	Sig.
SC pre-test	SC post-test	1	3274.11	113.27	.00
Groups	SC post-test	2	2123.90	73.48	.00

*p< .05

As there is a significance difference between groups, therefore a Post-hoc Tukey analysis has to be conducted to identify the effect of KKPRon the different group types (R1, R2 and K). Table 3 shows that there is a significant difference of self-concept between R1 and R2 ($p = .01$), between the R1 and K ($p = .01$) and between R2 and K ($p = .00$) on self-concept as a whole. KKPR is more effective to improve self-concept level among subjects in weekly treatment group compare to marathon treatment group.

Table 3: A summary of Post-Hoc Tukey Analysis on min score difference between marathon treatment groups, weekly treatment groups and control groups on self-concept (SC) among the study samples.

Variable	Types of Groups		Mean Difference (I – J)	Sig.
	I	J		
SC	R1	R2	- 10.20	.01
	R1	K	10.75	.01
	R2	K	20.95	.00

*p< .05, *Note: R1 (marathon treatment group); R2 (weekly treatment group); K (control group)

Discussion

The KKPR module that being used in this study was a developmental and treatment-based intervention. This structural module was developed according to counselling approach, Rationale Emotive Behavior Therapy (REBT). The result of the study shows that KKPR is effective in providing a developmental and treatment intervention on self-concept among National Islamic Secondary School (SMKA) students who are delinquent whereas the effectiveness of this module has been proved through the analysis that had been conducted. Results revealed that there is a significant different of the mean score for pre-test and post-test between the self-concept of subject from the treatment and control group.

In reality, it is important for every party to cooperate and working together to identify the factors that lead adolescents getting involve in delinquent behavior at early stage. By understanding the characteristic of adolescents who are involving in delinquent behavior, it can lead to the next stage which is by conducting an intervention step to prevent them from getting involve in more serious crime behavior in future[20]. The development and treatment intervention emphasis on the process to improve the individual developmental aspects by identified and change the current delinquent behavior that lead them to involve in various problematic behavior, to a more positive behavior especially when they face a stressful situation.

In Malaysia, many studies [21-23] suggested that issues related to delinquent behavior among students or adolescents need to be solved through early treatment and suitable intervention program such as counselling or psycho educational cognitive program to constrain these issues from become more severe in the future.

Conclusion

This development and treatment study have been carried out on a group of delinquent National Islamic Secondary School (SMKA) students as an enforcement to the existing program, specifically to overcome students' delinquent behavior. Implementation of the KKPR intervention in this study was able to improve the psychological aspects of students who are delinquent. The psychological aspect includes various aspects which are thinking, feeling and behavior was assessed through the self-concept score. Emphasis on this psychological aspect is not a straightforward solution to delinquent behavior, but it does play a role in improving the internal aspects that are the main factors to the involvement in delinquent behavior. By treating the cause of the problems at the early stage, this group of students can control their behavior from involving in delinquent behavior.

Conflict of Interest: There is no conflict of interest in this research.

Ethical Clearance: Taken from Research Management and Invocation Centre of Sultan Idris Education University committee and approved by the Educational Planning and Research Division, Ministry of Education Malaysia.

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Relationship between Screen Time Towards Physical Activity, Sleep Disorders, Prosocial Behavior and Emotions of Children 4-6 Years

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Abstract

The current use of screen media in preschoolers exceeds the recommended level. Parents have a major role in growth and development and provide the most influence on the behavior of their children. This study aims to determine the relationship between screen time to physical activity, sleep disturbance, prosocial behavior and emotions of children aged 4-6 years.

The research method is a cross sectional study with primary data through interviews using a standardized questionnaire to parents (n=397) for assess screen time, physical activity, sleep disturbance, prosocial behavior and emotions.

The results showed a significant relationship between screen time with physical activity (*P=0,000)*, sleep disturbance (*P=0,000)*, prosocial behavior (*P=0,*047) and emotions (*P=*0,004) of children aged 4-6 years. The higher duration increases the risk of less physical activity, sleep disturbance, borderline status and abnormal for prosocial and emotional behavior.

Conclusion: there is a significant relationship between screen time with physical activity, sleep disturbance, prosocial behavior and emotions of children aged 4-6 years. The duration of use of screen media in children should be <1 hour/day to reduce the negative effects that can be caused.

Keywords: *Screen time, Physical Activity, Sleep Disorders, Prosocial Behavior and Emotions.*

Introduction

In the digital era, various types of communication media are increasing rapidly and their use is increasingly widespread in everyday life in preschoolers in the world. Preschool age is a critical period in the development of health behaviors such as regular physical activity and minimal sedentary behavior. Sedentary behavior in children of this age is the time of exposure which includes the use of television, DVD/video, computers, electronic games and portable smart media devices. Recent studies have found that sedentary behavior using screen media has a detrimental effect on health on a variety of physical, cognitive and psychosocial indicators. The longer duration of use of screen media can affect the status of body weight, blood pressure, bone mineral content, social development and increased behavior problems.(1)

Based on the results of research conducted by The Asian Parent Insights in November 2014 as many as 98 percent of 2,714 parents in Southeast Asia who took part in this study allowed their children to access technology in the form of computers, smartphones or table ts. This study was conducted on 2,714 parents in Southeast Asia who have children aged 3-8 years. The parents of the study participants came from Singapore, Malaysia,

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Thailand, Indonesia and the Philippines. From the survey results, most parents allow their children to play gadgets for educational purposes. But in reality according to the survey results most of their children use these gadgets/ table ts for entertainment purposes such as games.[2]

Nowadays the time spent by children to use screen media every day is more. The time spent watching television is on average 3 hours on weekdays and 7.4 hours on holidays, the time playing electronic games is 3.8 hours and the time spent on internet playing is an average of 2.1 hours. Data from Nielsen Media shows that one out of every four television viewers in Indonesia is a child and the time spent by children watching television is an average of three hours/day.[3]

Current conditions, the use of screen media in the majority of preschool children still exceeds the recommended level so it is important to identify factors associated with behavior while using preschool children screen media to inform the development of behavior reduction strategies. Parents have a major role in growth and development and provide the most influence on the behavior of their preschool children.[4] This study aims to determine the relationship of screen time with physical activity, sleep disorders, prosocial behavior and emotions of children aged 4-6 years.

Method

This cross sectional study was conducted to determine the relationship between screen time with physical activity, sleep disturbance, prosocial behavior and emotions of children aged 4-6 years.

This research was conducted at several kindergarten institutions in Tambaksari District, Surabaya City. Tambaksari Subdistrict, Surabaya City was chosen because it has the largest Kindergarten institutions in all of Surabaya, with 96 institutions. the number of 5197 students from 96 institutions.

In this study the sample is parents of students who are members of kindergarten institutions in Tambaksari Subdistrict, Surabaya who meet the criteria of children having 4-6 years of age, have been exposed to screen media in the past 1 year and are not children with congenital abnormalities, paralysis, blindness, deafness and special needs. The sampling technique used in this study is probability sampling type of simple random sampling. Based on the sample calculation a minimum sample of 397 students was obtained. In this study the independent variables are screen time and dependent variable is physical activity, sleep disturbance, prosocial behavior and emotions.

Data collection techniques in this study were Early Year Physical Activity Questionnaire (EY PAQ) to assess pre-school children's activities. Children Sleep Habit Questionnaire (CSHQ) is used to assess sleep disorders. Strength and Difficulty Questionnaire (SDQ) to assess the status of a child's prosocial and emotional behavior.

Data analysis used nonparametic statistical test namely chi-square to find out whether there was a relationship between the two variables studied. Significance test is done by comparing the significance value obtained with α, if $p < \alpha$ ($\alpha = 0.05$) there is a significant relationship.

Results

Table 1 showed a tendency for the higher duration of screen time were increase the number of children with less physical activity. Nearly half the children who use screen media 1-2 hours/day have less physical activity and are increasing in number with children who use screen media> 2 hours/day. Statistical test results show a significant relationship between screen time with physical activity of children aged 4-6 years.

Table 1. Relationship between Screen time with Physical Activity

Screen time	Physical Activity				Total (n = 397)		P value
	Enough		Less				
	N	%	n	%	n	%	
<1 hour/day	61	79.2	16	20.8	77	100	0,000
1-2 hours/day	101	53.2	89	46.8	190	100	
> 2 hours/day	35	26.9	95	73.1	130	100	
Total	**197**	**49.6**	**200**	**50.4**	**397**	**100**	

Table 2. Relationship between Screen time with Sleep Disorders

Screen time	Sleep Disorders				Total (n = 397)		P value
	Sleep Disorders		Normal				
	N	%	n	%	n	%	
<1 hour/day	54	70.1	23	29.9	77	100	0,000
1-2 hours/day	164	86.3	26	13.7	190	100	
> 2 hours/day	124	95.4	6	4,6	130	100	
Total	342	86.1	55	13.9	397	100	

Table 2 showed the higher duration of screen time has a tendency to increase sleep disorders in children. Almost all children with sleep disorders have a duration of screen use behavior > 2 hours/day. Statistical test results show a significant relationship between screen time with sleep disorders in children aged 4-6 years.

Table 3. Relationship between Screen time with Prosocial Behavior

Screen time	Prosocial Behavior						Total		P value
	Normal		Borderline		Abnormal				
	n	%	n	%	n	%	n	%	
<1 hour/day	70	90.9	2	2.6	5	6.5	77	100	0.047
1-2 hours/day	170	89.5	11	5.8	9	4.7	190	100	
> 2 hours/day	103	79.2	14	10.8	13	10	130	100	
Total	343	86.4	27	6.8	27	6.8	397	100	

Based on table 3 shows the higher duration of screen time increasingly increases the number of prosocial behavior with borderline and abnormal statuses. This is supported by the results of statistical tests that show a significant relationship between screen time with prosocial behavior of children aged 4-6 years. The higher duration of use of screen media results in prosocial behavior becoming borderline and abnormal.

Table 4. Relationship between Screen time with Emotional Behavior

Screen time	Emotional Behavior						Total		P value
	Normal		Borderline		Abnormal				
	n	%	n	%	n	%	n	%	
<1 hour/day	72	93.5	3	3,9	2	2.6	77	100	0.004
1-2 hours/day	175	92.1	12	6.3	3	1.6	190	100	
> 2 hours/day	103	79.2	20	15.4	7	5,4	130	100	
Total	**350**	**88.2**	**35**	**8.8**	**12**	**3**	**397**	**100**	

Based on table 4 shows the higher duration of use of screen media increasingly increases the amount of emotional behavior with borderline and abnormal statuses. Statistical test results show a significant relationship between screen time with emotional behavior of children aged 4-6 years.

Discussion

Relationship between Screen time with Physical Activity: Physical activity is defined as any body movement produced by skeletal muscles and results in a significant increase in resting energy expenditure. Physical activity can also be defined as a physical movement that causes muscle contraction.[5]

In line with previous research that the more time children spend in front of the screen, the less they spend in physical activity. The physical activity of children who do not use the game increases 3.8 minutes per day. Children who spend a lot of time playing video games can also spend sufficient time in physical activity and children who do not play video games can also refrain from physical activity if their activity preferences settle

(for example, reading, music art). Modification of the type of game by providing active input is not effective to maintain an increase in physical activity over time.[5,6]

Thus parents should reduce the duration of use of screen media in children <1 hour/day, do not provide screen media facilities in a child's bedroom and provide policies to limit the use of screen media in children.

Relationship between Screen time with Sleep Disorders: The results of this study are in accordance with previous studies the use of television in a child's bedroom can ruin healthy sleep. Light Emitting Diodes (LEDs) are found in most screen media used by children.[7] The light emitted by LEDs contains more blue wavelength light than ordinary incandescent light bulbs. Blue wavelength light is found naturally in the morning and is important for regulating the circadian system. This type of light stimulates the suprachiasmatic nucleus to suppress the production of melatonin a hormone that encourages sleep. Thus, blue light waves at night can disturb sleep. Prolonged contact with screen media before going to sleep is associated with poor sleep patterns.[8]

Relationship between Screen time with Prosocial Behavior and Emotions: In line with other study that showed higher duration screen time is associated with problems with prosocial behavior and emotional behavior of children. Parents of socioeconomic status, different education allows their children to engage with digital media and many believe that it can enhance children's creativity and academics.[9] The duration of screen time which is higher can affect the behavior and emotions of children. A number of studies have concluded that the addictive behavior of screen media results in changes in the structure of the frontal lobes of the brain. These structural changes are related to the ability to filter out irrelevant information and not deal with complex task demands. Frontal lobes are also associated with empathy, difficult to adapt to the environment.[10] Another longitudinal study of a 2-year-old child states that only one hour of daily TV exposure is associated with expressions of aggression, social difficulties and increased violence in peers at the age of 13 years.[11]

Other studies found that media content influences children's behavior and emotions. With more exposure to children's film behavior and emotions better than exposure to children's TV programs. This can happen because the film provides more opportunities for discussion and mental management than television, while watching television children are often solitary activities.[12]

The game media content is much in the lives of children so there is great potential to improve children's performance in many fields, including the development of social emotions. Other research showed that almost all the games in the research sample give children the opportunity to learn social-emotional skills from a level of basic complexity (exploration level); half of the games have higher assignments, develop and build complexity levels, but only one fifth of the games allow children to pass to the most challenging tasks of integrating online game complexity levels for preschoolers thus providing little opportunity to improve in many tasks and mastering social-emotional. Many educational games that make children trapped at the same level of complexity and do not increase challenges so that it can cause children to lose interest in learning social-emotional skills through games.[13]

Conclusion

There are significant relationship between screen time with physical activity, sleep disturbance, prosocial behavior and emotions of children aged 4-6 years. The higher duration of screen time can reduce the risk of having physical activity, experiencing sleep disturbances, problems with prosocial behavior and children's emotions.

Suggestion: Parents need to monitor and limit the screen time in children 1 hour/day with age-appropriate recommendations.

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Anti-infective Activity of *Bignonia Binata* Leaves

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Abstract

Objective: Evaluation of the antitrypanosmal, antileishmanial, antimicrobial and antimalarial activities of the total ethanol extract and different fractions of *Bignonia binata* leaves.

Method: The antitrypanosomal activity was evaluated *in vitro* on blood stage forms of *Trypanosomabrucei*and the antileishmanial activity was tested against *Leishmaniadonovani*. The antimicrobialeffect was performed against *Candida albicans* ATCC 90028, *Cryptococcus neoformans* ATCC 90113 and *Aspergillusfumigatus* ATCC 90906,*Staphylococcus aureus* ATCC 43300 (MRS), *Escherichia coli* ATCC 35218, *Pseudomonas aeruginosa* ATCC 27853 and *Mycobacterium intracellulare* ATCC 23068. While, the antimalarial activity was examined onchloroquine-sensitive (D6, Sierra Leone) and the chloroquine-resistant (W_2) strains of *Plasmodium falciparum* protozoan.

Results: The ethyl acetate fraction exhibited 90% inhibition against *Trypanosomabrucei*, with IC_{50} value of 16.59 µg/mL. While,the aqueous fraction showed mild antimicrobial activity with inhibition 32% aginst *Pseudomonas aerogenosa* and 27% against methicillin resistance *Staphylococcus aureus* (MRS). On the other hand, all tested fractions showed no antimalarial activity at the tested concentration.

Conclusion: The present study revealed the antitrypanosomal potency of *B. binata* leaves

Keywords: *Bignoniaceae, B.binata, antitrypanosomal, antileishmanial,antimicrobial, antimalarial.*

Introduction

Bignoniaceae is a flowering plants family, comprising of about 110 genera and 650 speciese and commonly known as the Trumpet Creeper family, Jacaranda family, Bignonia family, or the Catalpa family[1,2]. Bignoniaceaespecies are distributed over the world, but most of them occur in the tropical and sub-tropical countries. However, a number of temperate species grow in North America and East Asia. Additionally, they are reported to have bioactive secondary metabolites and diverse pharmacological activities. They are widely used in traditional medicinal systems of a number of countries for treatment of ailments like cancer, snake bite, skin disorders, gastrointestinal disorders, respiratory tract disorders, hepatic disorders, epilepsy, cholera, pain, urinary problems, malaria, heart problems, and sexually transmitted diseases[1]. Although, Bignoniaceae are a relatively large family, only a limited number of species has been studied chemically[3].

Bignonia L. is the fifth largest genus in the tribe *Bignonieae (Bignoniaceae*), with 31 lianas species distributed from Argentina to USA [4, 5].Most species are used in folk medicine for treating a wide range of ailments as skin ailments like fungal infections, boils,

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psoriasis and eczema, dysentery, ringworm, tapeworm, malaria, diabetes and pneumonia, treat venereal diseases and treat ulcer[6,7]. *B. binata* Thunb. (syn: *Clytostomabinatum* Thunb.) is a liana and distributed from Mexico to Argentina[4]. There are no previous reports about *B. binata*, encouraged us to evaluate the antitrypanosmal, antileishmanial, antimicrobial and antimalarial activities of the total ethanol extract and different fractions of *B. binata* leaves

Materials and Method

Plant Material: The leaves of *B. binata* were collected in December 2015, from El-Zohria botanical garden, Giza, Egypt. Authentication of the plant was identified by Prof. Dr. Nasser Barakat, Professor of Botany, Faculty of Science, Minia University. A voucher specimen (Mn-ph-Cog-033) has been depoted in the Herbarium of Pharmacognosy Department, Faculty of Pharmacy, Minia University, Minia, Egypt.

Extraction and fractionation: The air dried, powdered leaves (2.7 kg) of *B. binata* were extracted by maceration with 95% ethanol and concentrated under reduced pressure to give solvent-free residue (420 g), which was then suspended in 400 ml of distilled water, and defatted with pet. ether, followed by partitioning with EtOAc (300 ml each x 6) and then the solvents were separately evaporated under vacuum, affording pet. ether (75 g) and EtOAc fractions (125 g). Finally, the remaining mother liquor was concentrated under reduced pressure to afford aqueous fraction (200 g).

Evaluation of antitrypanosomal activity: Blood stage forms of *Trypanosomabrucei* were grown in IMDM medium supplemented with 10 % fetal bovine serum. The assays were set up in clear 96 well microplates. A two days old culture of *T. brucei* in the exponential phase was diluted with IMDM to 5000 parasites/mL.The examined samples were tested at final concentration of 20 mg/mL. Each well received 4 ml of diluted sample (1 mg/mL) and 196 ml of the culture volume (total culture volume 200 ml). The plates were incubated at 37 °C in 5% CO_2 for 48 h. Alamar blue (10 mL) (ABD Serotec, catalog number BUF012B) was added to each well and the plates were further incubated overnight.

Standard fluorescence was measured on a Fluostar Galaxy fluorometer (BMG LabTechnologies) at 544 nm excitation, 590 nm emission. α-difluoromethyl ornithine (DFMO) was tested as standard. IC_{50} values were computed from dose-response curves[8].

Evaluation of antileishmanial activity: The antileishmanial activity of the investigated samples was tested against *Leishmaniadonovani,* a fly-borne protozoan, the main cause of visceral leishmaniasis. The promastigotes were grown in RPMI 1640 medium supplemented with 10% fetal calf serum (GibcoChem. Co.)at 26 °C. A three-day-old culture was diluted to $5x10^5$ promastigotes/ml. Dilution of the investigated samples were prepared directly in cell suspension in 96-well plates then incubated at 26°C for 48 h and the growth of *Leishmania* promastigotes was detected by the Alamar B1ue™ assay. Standard fluorescence was measured on a Fluostar Galaxy plate reader (BMG Lab Technologies) at a wavelength excitation 544 nm and an emission wavelength of 590 nm. Amphotericin B was used as standard antileishmanial agents. IC_{50} values were computed from dose-response curves[9].

Evaluation of antimicrobial activity: The biological evaluation of the Total ethanolic extract and different fractions was performed against different organisms obtained from the American Type Culture Collection (Manassas, VA) and included the following fungi, *Candida albicans* ATCC 90028, *Cryptococcus neoformans* ATCC 90113 and *Aspergillusfumigatus* ATCC 90906 and the followirig bacteria, *Staphylococcus aureus* ATCC 43300 (MRS), *Escherichia coli* ATCC 35218, *Pseudomonas aeruginosa* ATCC 27853 and *Mycobacterium intracellulare* ATCC 23068. Susceptibility testing was performed using a modified version of the CLSI method. The investigated samples were serially diluted in 20% DMSO/saline and transferred in duplicate to 96-well flat-bottom microplates.

Microbial inocula were prepared by correcting the OD630 of microbe suspensions in incubation broth to afford final target inocula. Amphotericin B (ICN Biomedicals, Ohio) for fungi and ciprofloxacin (ICN Biomedicals, Ohio) for bacteria are provided as positive controls in each assay. All organisms were read at either 630 nm using the EL-340 Biokinetics Reader (Bio-Tek Instruments, Vermont) or 544ex590em (*M.* intracellulare and *A.* fumigatus) using the Polarstar Galaxy plate reader (BMG LabTechnologies, Germany) prior to and after incubation. Percentage growth was plotted versus test concentration to afford the IC_{50}[10].

Evaluation of antimalarial activity: According to Makler and Hinrichs, 1993 the TEEs and different fractions were evaluated for *in vitro* antimalarial and inhibition properties to the chloroquine-sensitive

(D6, Sierra Leone) and the chloroquine-resistant (W_2) strains of *Plasmodium falciparum* protozoan. The tested samples were screened against a suspension of red blood cells infected with *P. falciparum.* Two hundred µl, with 2% parasitemia and 2% hematocrit in RPMI-1640 medium supplemented with 10% human serum and 60 µg/ml amikacin was added to the wells of a 96-well plate containing 10 µl of test samples at 15.867 µg/ml in duplicates and the percentage of inhibition was calculated relative to the negative and positive controls. The sample that showed % inhibition ≥ 50% were further proceeded to the second phase assay. In the second phase assay, the tested samples examined at 47.6, 15.867 and 5.289 µg/ml and the tested concentrations that afforded 50% inhibition of the protozoan relative to positive and negative controls (IC_{50}) against the chloroquine-sensitive (D6) and the chloroquine-resistant (W2) strains were reported. Concurrently, all samples were tested against the VERO mammalian cell lines as an indicator of general cytotoxicity.

The selectivity indices (SI) and ratio of VERO IC_{50} to (D6 or W2) were calculated. The standard antimalarial drug chloroquine(79 ng/ml) was used as the positive control while DMSO 0.25% was used as a vehicle. All IC_{50} are calculated using the XLSit curve[11].

Results and Discussion

Many of Bignoniaceae plants had been reported to have antitrypanosomal activity [12]. Likewise, our results of the biological screening of *B. binata* leaves total ethanol extract and fractions revealed the potent activity of the ethyl acetate fraction against *T. brucei*. Whereas, it was the most active one, exhibited 90% inhibition against *T. brucei*, with IC_{50} value of 16.59 µg/mL (Table 1). Likewise, the aqueous fraction showed mild antimicrobial activity in which, it exhibited percentage of inhibition 32% aginst *P. aerogenosa* and 27% against MRS. While, the other fractions exhibited weak or no antimicrobial activity (Table 2). On the other hand, all tested fractions showed weak or no antileishmanialactivity against *L. donovani*at concentration 20 µg/mL in primary phase (Table 1). Additionally, the tested samples showed no activity at concentration 15.87 µg/ml against *P. falciparum.*

Table 1: The antileishmanial and antitrypanosomal activities of the total ethanolic extract and different fractions of *B. binata*.

Strains / Tested drugs	Inhibition Percentage (%)			
	L. donovani-Pinh	*L. donovani* AMAST-Pinh	*L. donovani* AMASTTHP-Pinh	*T. brucei*_Pinh
Amphotericin B	100	96	97	-
α-Difluoromethyl ornithine	-	-	-	100
Total ethanolic extract	3	0	0	3
Petroleum ether fraction	5	0	12	2
Ethyl acetate fraction	2	0	13	90
Aqueous fraction	0	1	16	1

All (20 µg/ml) except Amphotericin B (2 µg /m1).

Table 2: Antimicrobial activity of *B.binata* leaves.

Strains / Tested drugs	Inhibition Percentage (%)							
	C. albicans	A. fumigatus	C. neoformans	MRS	E. coli	P. aerogenosa	K. pneumonia	VRE
Total ethanolic extract	0	7	21	0	18	5	0	6
Petroleum ether fraction	0	2	7	0	18	0	0	3
Ethyl acetate fraction	0	5	16	0	0	2	0	7
Aqueous fraction	0	9	0	27	4	32	8	10

Conclusion

The findings of the present study revealed the potent antitrypanosomal activity of the ethyl acetate fraction against *T. brucei* and the mild antimicrobial of the aqueous fraction. On the other hand the other fractions exhibited weak or no activity on the tested concentration.

Conflict of Interest: The authors declare that there is no any conflict of interests

Ethical Clearance: Taken from research committee

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Attitude to Conserve Mangroves and Coral Reefs in Environmental Education: Survey and Analysis in Community

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Abstract

The destruction of coral reefs and mangroves is an urgent problem to be solved together. The purpose of this study was to describe profile of community attitudes in conserve coral reefs and mangroves. The research method used was descriptive method with survey techniques. The study was conducted on July 2019. This research used 214 samples were selected by simple random sampling, which is a community that lives in the city of Jakarta, Bogor, Depok, Tangerang, and Bekasi (*Jabodetabek*) and other cities. The instrument used 18 items that measure attitudes. The results showed that the attitude score of the community was 82.40 which is categorized very high. In addition, other findings were that most respondents were from the age range of 16-20 and 21-25 years. High attitude score has not yet determined that their behavior also have a high score. Various efforts to improve indicators that are still low such as regarding community participation in seminars on coral reefs and mangroves that can be done with the Environmental Education Community Network (EECN). The conclusion was that the attitude of the community was already in the very high category, but further efforts need to be made to improve that attitude through environmental education.

Keywords: *Attitude, community, environmental education, profile.*

Introduction

Pollution in big cities has been a discussion of a various researcher in recent years. Starting from air pollution caused by motor vehicle to factory activities[1–3]. In addition, pollution also occurs water in big cities. Many rivers have pollution so the water is not suitable for consumption. However, no less important is the destruction of coral reefs and mangroves on the coast[4–6]. The damage to mangroves and coral reefs makes it necessary for efforts from the community to overcome them. Damage to coral reefs and mangroves caused by several parties who are not responsible.

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People who live in big cities cannot stay silent with the damage to mangroves and coral reefs that occur. They must participate in overcoming these environmental problems. Problem-solving these environmental problems need an attitude and awareness of the community in protecting the environment [7,8]. All components of society must participate, both among students, housewives, traders, employees, and others. Start from people who are young to old, must take part in protecting the environment, for this reason community attitudes are needed in protecting the environment especially about coral reef and mangroves. The attitude of the community in protecting the environment can be defined as a person's tendency to act in protecting the environment[9,10]. Attitudes are different from the behavior when someone who has a good attitude is not necessarily directly proportional to his behavior[11,12]. This attitude must be instilled in the community in big cities through environmental education. The problem is that many studies have not been able to reveal how much the community's attitude in protecting coral reefs and mangroves.

The research that has been done has a lot to discuss students' attitude profiles[13,14]. In addition, many are also researching about what factors affect a person's attitude[8,15,16]. All of these studies usually only describe one or only community groups. Especially the problem of damage to coral reefs and mangroves, many aspects that have not been seen both in terms of age and city of residence. This research becomes urgent because it is to overcome the damage of coral reefs and mangroves and prevent the damage becoming more widespread. Based on this, the purpose of this study was to describe the profile of community attitudes in big cities to conserve mangroves and coral reefs.

Method

This research was conducted on July 2019. The research method used was a descriptive method. The selected sample was from various regions in Jakarta, Bogor, Depok, Tangerang, Bekasi (*Jabodetabek*) and other cities. Samples were randomly selected, 214 respondent were selected as samples. The instrument used in the form of a questionnaire amounted to 18 items. The instrument was given to the community through Google Form. The indicator of instrument can be seen in Table 1 below.

Table 1. Indicator of instrument

No.	Indicator	Item
1	Support extension services and seminars on mangroves	1,2,3,11,12
2	Encourage the role of the community in protecting mangroves	4,5,6,16
3	Stop using coral reefs as building and decorative materials	7,8,9,10,13
4	Support community participation in coral reef conservation	14, 15,17,18

After the community fills in the attitude instrument then the attitude category will be seen according to the criteria that have been made. The interpretation, if a score> 81.28 can be interpreted that the categorical attitude is very high. Meanwhile, if the attitude score ≤ 38.72 can be said to be very low. More can be seen in table 2.

Table 2. Category of community attitudes

Category	Interval Score
Very High	$X > 81.28$
High	$70.64 < X \leq 81.28$
Moderate	$49.36 < X \leq 70.64$
Low	$38.72 < X \leq 49.36$
Very Low	$X \leq 38.72$

Findings and Discussion

The results showed that the average score was 82.40, which means the category was very high. Then more detailed descriptive data can be seen in table 3. Note for item with negative statements, the higher score means more contrary to the statement. It appears that the highest score is in item 14, which is about supporting conservation efforts by the conservation center. While the lowest is in item 9, which is the habit of using coral reefs as decoration.

Table 3. Average attitude score of the community in each item

No	Item	Average Score
1	Following seminars on mangroves will increase knowledge about mangrove conservation	4.47
2	I do not like to take counseling about mangrove conservation because it is a boring thing*	3.85
3	I am willing to supply information to the community about coral reef conservation.	3.74
4	The community must take part in fighting for the implementation of mangrove conservation	4.54
5	I like the people who carry out coral reef conservation activities	4.59
6	I will take part in activities related to mangrove conservation	3.86
7	I like to collect home displays made from coral reefs*	3.50
8	Coral reefs can continue to be used as building materials even though the population is declining*	4.18
9	Coral reefs are very beautiful if used as decoration*	3.21
10	Destruction of coral reefs will not disturb the balance of the ecosystem*	4.40
11	I will not care about the latest issues about mangrove*	4.05

No	Item	Average Score
12	I like to see mangroves being used as tourist attractions	3.67
13	If there is an opportunity, I will break the coral reefs in the sea to collect*	4.64
14	I am happy if the conservation center really strives for the conservation of mangroves and coral reefs	4.68
15	Coral reefs will be abundant if there is development in the coastal area*	4.02
16	The destruction of mangrove areas on a large scale will have an impact on the imbalance of the coastal ecosystem	4.50
17	I feel satisfied if something damages the coral reefs is punished legally	4.20
18	I will report to the authorities if there are tourists who damage the coral reef	4.03
	Average score	4.12
	Average score (0-100)	82.40

Note: *Item with negative statements, the higher score means more contrary to the statement.

After a detailed breakdown, a review of each indicator is then carried out. It is clearly seen that the indicator with the highest score is the second indicator which is encouraging the role of community in protecting mangroves. While the lowest item is seen in indicator 1, namely support extension services and seminars on mangroves. More details can be seen in table 4.

Table 4. Average attitude score based on indicators

No	Indicator	Score
1	Support extension services and seminars on mangroves	3.96
2	Encourage the role of the community in protecting mangroves	4.37
3	Stop using coral reefs as building and decorative materials	3.98
4	Support community participation in coral reef conservation	4.23

Meanwhile, when filling in the instrument respondents were asked to complete data on their age and city of residence. Most of the respondents came from the age group of 16-20 and 21-25 years. While there is only one respondent who is over 60 years old. More details can be seen in table 5.

Table 5. Distribution of respondents by age

Age interval (year)	Total respondent
10 - 15	23
16 - 20	67
21 - 25	67
26 - 30	17
31 - 35	12
36 - 40	10
41 - 45	3
46 - 50	6
51 - 55	8
>60	1

After that, when viewed from the respondent's residence, the highest number of respondents living in Bekasi. While those who live in Pandeglang at least. This city of residence showed that respondents living in various cities so that the results were more representative. More details can be seen in table 6.

Table 6. Distribution of respondents by residence

City of residence	Total respondent
Bekasi	57
Bogor	23
Depok	18
West Jakarta	23
Center Jakarta	5
South Jakarta	12
East Jakarta	25
North Jakarta	20
Tangerang	9
South Tangerang	4
Serang	5
Pandeglang	2
Another city	11

The results showed that the attitude of the community was very high. However, there are several important points (1) high score of attitudes may not necessarily have a high score of behavior (2) there is

still low score on the use of coral reefs (3) indicators of habits following the seminar are still low. The first point is that high attitudes do not necessarily determine high behavior. It can be seen that in big cities there is still a lot of pollution and pollution that occurs. Starting from the pollution of air, water, and soil. This is due to many people who have high score of attitudes but low score of behavior[17,18]. Likewise in the context of the preservation of coral reefs and mangroves.

The second point is the frequent use of coral reefs as decoration. This is very dangerous considering that if a coral reef is continuously taken it will cause damage to coral reefs. Then, coral reef extinction will occur later. Environmental organizations must do a lot of education for the community to stop taking coral reefs[19–21]. In addition, strict rules must be made for those who damage coral reefs. If caught catching coral reefs, punishment must be imposed.

The third point is the low number of people who support seminar activities on mangroves and coral reefs. People are sometimes lazy to take part in seminar activities. That is because the seminar activities are one-way and monotonous. The community prefers if the activity is carried out actively and directly goes to the field[22,23]. Environmental education community network (EECN) is one solution that can be done to overcome the low desire of the community to attend the seminar. That is because EECN has activities that are not boring, many field activities that can be followed by community[24].

Activities that can be carried out to socialize the importance of protecting coral reefs can use social media such as Twitter, Instagram, and Facebook[25–27]. That is because the millennial generation is the dominant respondent. They tend to easily access information about coral reefs and mangroves with digital technology. These technology advances make it easier to convey information to the public. The cost required is also not too large, different from using print media that requires costs to print [28,29].Efforts to improve community attitudes must be enhanced by environmental education. There must be a change in mindset in the community regarding environmental education [30,31].

Conclusion

Based on this research, it can be concluded that the attitude score of the community has been categorized as very high. Meanwhile, the age range of most respondents who filled the instrument was in the age range of 16-20 and 21-25 years. Respondents live in various big cities such as Jakarta, Bogor, Depok, Tangerang, and Bekasi, and other cities. Further efforts that need to be made are conducting more interesting seminars so that the community participates. One of them can use EECN.

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The Effect of Wuluh Starfruit Leaf Extract (Averrhoabilimbi. L) on Malondialdehyde (MDA) Levels in Male Rats (Rattus Norvegicus) Hyperglycemia Model

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Abstract

Starfruit leaf extract (*Averrhoabilimbi. L*) contains flavonoids as antioxidants that can prevent increased levels of Malondialdehyde (MDA) in hyperglycemia. Starfruit leaf extract can reduce oxidative stress conditions that trigger an increase in MDA levels. This study wanted to determine the effect of giving starfruit leaf extract on MDA levels in hyperglycemia rats from Wistar strain. This study was a completely randomized experimental design using 30 Wistar hyperglycemia rats for 14 days. The treatment group was given starfruit leaves extract of 200 (P1), 400 (P2) and 800 mg per kg of body weight (mg/kg bw) (P3) per day. Furthermore, on the 15th day, MDA levels were measured using a spectrophotometer. The results showed that there was an effect of giving starfruit leaf extract with various doses on MDA levels ($p = 0.001$), with an effective dose of P1 because it could prevent an increase in MDA levels.

Keywords: *Hyperglycemia, Malondialdehyde (MDA), starfruit leaf extract.*

Introduction

Diabetes mellitus (DM) is a metabolic disease with several etiologies characterized by chronic hyperglycemia due to impaired carbohydrate, fat and protein metabolism. This condition occurs because of abnormalities in insulin secretion, insulin acting on cell receptors, or both that causes an increase in blood sugar levels[1]. Patients are declared to have diabetes if blood glucose levels during fasting are more or equal to 126 mg/dL, or blood sugar levels for two hours fasting of more or equal to 200 mg/dL. The number of DM sufferers in 2015 of 425 million will increase to 629 million by 2035, which is almost 80% of the population of developing countries in the age range 29-79 years[2]. Indonesia, as one of the developing countries, is ranked 4th with the highest DM in the world after India, China and the United States.

Hyperglycemia as a sign of diabetes mellitus can be a cause of the formation of Reactive Oxygen Species (ROS) so that it can increase oxidative stress and also various complications in patients with diabetes mellitus[3]. Interaction of ROS with lipid bilayer will produce lipid peroxidation. Malondialdehyde (MDA) as one of the most significant lipid peroxidation reactions that can be used as a biomarker of the degree of oxidative stress in hyperglycemia[4].

Treatment of DM requires a long time-even a lifetime. Various DM treatments can be done, among others, by replacing insulin through multiple subcutaneous, as well as pancreatic cell transplant therapy, but this does not give good results[5]. The use of chemical drugs in oral antidiabetic groups of sulfonylurea, meglitinide and biguanide haveside effects - besides curing DM. Treatment of DM by utilizing natural ingredients is now beginning to be used and developed because natural ingredients are considered not to cause adverse effects

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to the body when compared to the use of chemical drugs. Also, the use of traditional medicinal plants has increased because traditional medicines are safe, effective, efficacious and have minimal side effects[4].

One of the plants that can be used as antidiabetic and antioxidant medicinal plants is Wuluhstarfruit (*Averrhoabilimbi L.*). This plant contains flavonoid substances that can be used in the treatment of DM. Research that has been done on this plant states that Wuluhstarfruit leaf is reported to have antidiabetic and antioxidant properties, where the extract of starfruit leaf extract contains flavonoids, saponins, vitamin C and tannins[6]. Other studies also mentioned that starfruit leaves contain active substances, one of which is flavonoids as antidiabetic and antioxidant[7]. Wuluhstarfruit is widely known by the people of Indonesia because they consumed it as sweets and vegetables.

In patients with hyperglycemia, levels of free radicals in the body usually increase. This condition happens due to oxidative stress as one of the triggers for increased lipid peroxide in the cell membrane that produces Malondialdehyde (MDA). This study aims to determine the effect of Wuluhstarfruit leaf extract in reducing MDA levels in male hyperglycemia models.

Materials and Method

This type of research is an experimental study with a post-test only control group design research design using a completely randomized design (CRD) in 30 Wistar strain male rats, 2-3 months old, healthy without blemishes with 150-200 body weight gram obtained from the Faculty of Medicine, Airlangga University. Rats were randomly divided into five groups and then recited for seven days, after which they treated for 14 days. The negative control group (K (-)) was given distilled water and standard feed without alloxan induction; control group (K (+)) given aquades + standard feed + alloxan; P1 treatment group was given standard feed + alloxan + starfruit leaf extract dose of 200 mg/kg bw (body weight); P2 treatment group was given standard feed + alloxan + starfruit leaf extract dose of 400 mg/kg bw; P3 treatment group was given standard feed + alloxan + starfruit leaf extract dose of 800 mg/kg bw. The material of this research is the extract of fresh starfruit leaves.

The instruments used in this study were spectrophotometer (Tuner SP-870), vortex mixer (Thermolyne), centrifuges (Biofuge 15 series, HeracusSepatech), blood glucose test meters (GlucoDr), hemocytometers, digital scales, minor surgical sets, water baths, gastric-sonde, micropipettes, test tubes, glass objects, sterile syringes, Petri dishes, watch glasses and mouse cages equipped with eating and drinking utensils. The ingredients used are alloxan, starfruit leaf extract, 70% alcohol, 10% chloroform, 0.3% Na Cl solution, 0.9% Na Cl solution, distilled water, HCL IN, Na-Thio and 0.67% TBA.

Ethanol extract of starfruit leaves made by drying and extracting the leaves using the method of Maseri, namely leaves of starfruit leaves used as powder sifted using a mesh sieve number 40, weighed 200gr then extracted using 96% ethanol solvent as much as 5 L by means of Maseri 3 x 24 hours protected from sunlight by tightly stirring. Starfruit leaf extract then filtered using filter paper and then obtained the filtrate. Furthermore, evaporated or separated by using a Rotary Vaccum Evaporator at 60ºC, obtained a concentrated extract, then evaporated using a water bath at 60ºC until a thick starfruit leaf extract obtained. The extraction process of starfruit leaves was carried out in the biochemistry laboratory of the Faculty of Medicine, Airlangga University. Starfruit leaf extract (*Averrhoabilimbi L.*) is given one time a day for 14 days with the alloxan dose given to rats was 125 mg/kg BW intraperitoneally. The effects of hyperglycemia will appear after 72 hours. A rat was declared to have hyperglycemia if the blood glucose level examination was equal to or more than 200 mg/dL. After experiencing hyperglycemia, rats treated with starfruit leaf extract (*Averrhoabilimbi L.*) for 14 days. On the 15th day, malondialdehyde (MDA) levels measured.

On day 15, rat MDA levels examined at the Nutrition Laboratory of the Faculty of Public Health, Airlangga University, Surabaya. MDA levels were measured using the Thiobarbituric Acid Reactive Substance (TBARS) method by taking rat blood serum. The test was started by adding 100 µL of serum with 1 ml of Na Cl 0.9%, then centrifuged at 8,000rpm for 20 minutes. Then 550 µL of distilled water and 100 µL TBA were added. After homogeneous with vortex, added 250 µL HCL IN and re-vortex. Then 100 µL Na-Thio was added, homogenized by centrifuge at 500 rpm for 15 minutes. The supernatant formed is transferred to the new microtube then heated in a 100oC water bath for 30 minutes — absorbance measured with a UV-1601 spectrophotometer at a wavelength of 535 nm[3]. MDA examination using a spectrophotometer and the results of the examination were analyzed using SPSS 21 with a

significance level of 0.05 and a confidence level of 95% (α = 0.05).

Results

This research was conducted to test the effect of Wuluhstarfruit leaf extract (*Averrhoabilimbi L.*) in reducing Malondialdehyde (MDA) levels using 30 male Wistar strain rats, which divided into five groups. The results of measurements of rat MDA levels showed in Table 1.

Table 1. Malondialdehyde (MDA) levels in rats

Parameter	K(-)	K(+)	P1	P2	P3
The average of MDA levels in rats (ug/ml)	89.00±8.03	148.80±32.56	88.80±18.185	99.40±21.69	90.40±21.69

It explained that there were significant differences in mean serum MDA levels between treatment groups ($p < 0.05$). The highest group in the K group (+) was 148.80 ± 32.56 (ug/ml) and the lowest in the P1 group was 88.80 ± 18.185 (ug/ml). The results of normality and homogeneity tests ($p > 0.05$) showed that MDA levels were normally distributed ($p = 0.192$) and homogeneous ($p = 0.085$). Based on the results of Tukey HSD, there were significant differences in the mean MDA levels in the five treatment groups with a value of p = 0,000 (α = 0.05).

MDA levels in the group of rats without giving starfruit K(+) leaf extract significantly increased $p = 0.011$ ($p < 0.05$) compared to MDA levels in normal K (-) rats. MDA levels of the rat treatment group with oral administration of starfruit leaf extract dose of 200mg/kg BW (P1), 400mg/kg bw (P2), 800mg/kg bw (P3), decreased compared with control group K(+) which evidenced by the p-value <0.05 which means there is a significant difference in the serum MDA levels of experimental animals in the three treatment groups P1, P2, P3 compared with the positive control group K(+). MDA levels of treatment group P2 increased when compared with treatment group P1 showed a significant difference, evidenced by the value of $p = 0.001$. MDA levels of the P3 group approached the P2 group, evidenced a significant difference between the MDA levels of the P2 and P3 groups, with a value of $p = 0.016$ ($p > 0.05$). These results indicate that administration of Wuluhstarfruit leaf extract can reduce serum MDA levels in hyperglycemic mouse models in the P2 and P3 groups. Star fruit leaf extract with an effective dose of P1 200 mg/kg bw could reduce the serum MDA levels of rats because P1 was close to normal in group K(-).

Discussion

Malondialdehyde (MDA) is a lipid peroxide product and is used as an indicator to measure the presence of oxidative stress in the body while showing the number of free radicals in the body. Increased free radicals in the body can be suppressed and prevented by antioxidants.

Hyperglycemia causes an increase in oxidative stress through glucose auto-oxidation producing α-hydroxy-aldehyde, which will form radical reactive oxygen species (ROS) namely superoxide (O_2), hydroxyl radical (OH) and hydrogen peroxide (H_2O_2)[8]. Second, hyperglycemia caused accumulation of sorbitol and fructose due to increased aldose reductase activity and decreased intracellular NADPH and it will cause a decrease in endogenous antioxidants namely glutathione reductase (GSH) and increase in NO-ROS[8]. Third, hyperglycemia will increase glucose binding to amino and protein and this results in the formation of Advanced Glycation end Product (AGE) and ROS in vascular cells. Fourth, hyperglycemia increases the synthesis of Produced Glycerol (DAG) and protein kinase C (PKC) which causes an increase in intracellular radicals (superoxide and peroxide) due to an increase in NADPH oxidation[9]. If ROS meets PUFA, it will form lipid radicals, peroxyl radicals and various aldehyde compounds[10].

Oxidative stress due to high ROS due to chronic hyperglycemia triggers DNA damage and cell membrane damage. Hyperglycemia has a significant increase in MDA levels and lipid peroxidation because it is not matched by an increase in the body's endogenous antioxidants such as glutathione, glutathione reductase, glutathione peroxidase which have decreased levels[11].

The results of this study explain that the MDA levels

in the hyperglycemia group without starfruit leaf extract (K) showed an increase of 148.80 ± 32.56 (µg/ml) when compared with other groups. This study shows the results that the average MDA levels of rats significantly decreased in all three groups of hyperglycemic rats given starfruit leaf extract P1 dose 200 mg/kg bw, P2 dose 400 mg/kg bw, P3 dose 800 mg/kg bw, compared to the group K (+). The dose of P1 (200 mg/kg bw) as an effective dose in reducing serum MDA levels in rats because of the role of the active substance flavonoids and vitamin C contained in the extract of starfruit leaves that play an active role as antioxidants in preventing lipid peroxide in cell membranes and this result is supported by previous research[7].

The mechanism of starfruit leaf extract in reducing hyperglycemia and oxidative stress is inseparable from the active ingredient of flavonoid compounds that function as antidiabetic and antioxidant substances. Flavonoids work to protect lipid membranes from oxidative damage, so they can inhibit lipid peroxidation so that there is no increase in MDA levels in the body[6]. Also, if there is an excess production of reactive oxygen species (ROS), it can cause oxidative imbalances in the body. Flavonoids work to prevent plasma membrane damage from free radicals and also reduce MDA levels[7].

The content of flavonoids in starfruit leaf extract has the ability as an antioxidant and prevent damage from free radicals. Flavonoids act as scavenger free radicals directly (flavonoids-OH), can also be a scavenger of free radicals peroxyl (ROO *) which will be regenerated into ROOH. Flavonoids can also act as hydroxyl radical scavenger (OH *), which will be regenerated into H_2O. Peroxyl radical and hydroxyl radical regeneration compounds are more stable, while phenoxyl radicals that formed (flavonoids-O *) become less reactive to carry out the propagation reaction[12]. The stability of phenoxyl radicals is reported to reduce the rate of propagation reaction in the process of lipid autoxidation[12].

Conclusion

The results of this study indicate that the administration of Wuluh starfruit leaf extract (*Averrhoabilimbi L*) can reduce the levels of Malondialdehyde (MDA) in male rats (*Rattus Norvegicus* Wistar strain) hyperglycemia model. Giving starfruit leaf extract with a dose of P1 200 mg/kg bw for 14 days is an effective dose that can reduce MDA levels in experimental rats.

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Factors Related Towards Patient Length of Stay in Emergency Department City of Batu, East Java, Indonesia

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Abstract

Introduction: Patient LOS in the emergency department is affected by various factors. This study aimed to investigate the correlation among three factors related to patient LOS in the emergency department, which are: waiting time for laboratory test results;drug services in pharmacy department; and patients transfer time to inpatient room.

Method: This study employed an observational analytic method using a prospective cohort study approach. Samples were chosen by means of consecutive sampling with total of 44 patients within 14 days. The instruments used were observation notes detecting patient LOS and a wristwatch. Spearman's correlation rank was used to analyze correlation among the factors affecting the patient LOS in the emergency department.

Results: Spearman's test showed that the waiting time for laboratory test results (p = 0.830; r = 0.033) and drug services (p = 0.703; r = 0.059) were not significant, whereas patients transfer time to the inpatient room was statistically significant (p = 0.000; r = -0.699). Thus, among the three factors investigated, there was a significant correlation between patient transfer times to the inpatient room and patient LOS in emergency department.

Conclusions: It can be concluded that patient LOS are affected by patient transfer flow. Therefore, it is necessary to evaluate patient transfer flow along with the additional number of available beds.

Keywords: *Length of stay (LOS); transfer time; cohort-prospective study; East Java-Indonesia.*

Introduction

The emergency department (ED) is one of pivotal units in a hospital that provides early treatment for patients suffering from illnesses and wounds that potentially threaten their life. The ED offers immediate, accurate and meticulous aids to prevent death and body impairment (time-saving is life-saving)[1,2]. Morbidity and mortality rates were fairly high,especially for trauma cases[3]. Therefore, it is strongly required to improve and enhance both quantity and quality of ED services.

There are three indicators to measure healthcare performance in the ED; namely door to doctor (Dt D), length of stay (LOS) and holistic service satisfaction. Among these three indicators, LOS plays a crucial role. LOS is the embodiment of a hospital's commitment to providing better services[4]. LOS is defined as time explaining patient from being admitted to a triage room and time they are allowed to discharge [5]. LOS has been set by international standards to last ≤ 8 h[6]. The National Emergency Access Target (NEAT), Australia, has recommended that starting from 2016, LOS in the EDhas been set at a maximum of 4 h and similarly its happened in the UK in 2004[7].

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Most EDs in Indonesian hospitals are still basing their criteria on the regulation by Ministry of Health (MoH) Number 129/Menkes/SK/II/2008, stated that patient LOS is 8 h; and when its compared to other standards set internationally, LOS in Indonesia is longer. LOS is affected by several factors; among of these are laboratory tests, examination, final decision of physical tests, response to final decision, period of consultation and management of critical patient [8]. In addition, LOS is affected by triage status, the limited number of available beds in the inpatient care room and the limited number of health care practitioners [9-14].

In most Indonesian hospitals it has found that patient age, triage status and administrative matters affect LOS. Triage status often requires patients to stay longer in the ED as it correlates with some necessary treatments [15, 16]. The prolonged period of LOS in the ED affects patient satisfaction, service effectiveness, patient safety, as well as patients' mortality and morbidity rates[12,17]. While in the emergency department of Karsa Husada Public Hospital Batu, LOS is affected by several factors which are patients transfer time to the inpatient room, limited number of health care personnel, waiting time for laboratory test results and drug services from the pharmacy department. Therefore, a study about the correlation among those of three factors which are waiting time for laboratory test results;drug services in pharmacy department; and patients transfer time to inpatient room are of essential to conduct in regard to examine whether three of mentioned factors contribute to patient LOS in the emergency department.

Material and Method

Our research investigated factors that affected patient LOS included waiting time for laboratory test results, drug services from the pharmacy department and patients transfer time to the inpatient room; and length of stay patients in the ED. Waiting time for laboratory test results, drug services from the pharmacy department and patients transfer time to the inpatient room were stated as time using to deliver each of services. In addition, length of stay was defined as time used by patient from being admitted to triage room and to the time where patient are allowed to transfer into inpatient room.

This prospective cohort study was employed to investigate the correlation between waiting times for laboratory test results; drug services from the pharmacy department and patients transfer time to the inpatient room with patient LOS. A non-probability sampling method by means of consecutive sampling was used. Samples were obtained during 2 weeks (14 days) of observation resulted in total of 44 investigated patients.

This study was conducted in the ED of Karsa Husada Public Hospital, Batu, on 6 February to 19 February 2017. Data were taken during morning, afternoon and night shifts. The instruments used to collect data were observation notes detecting patient LOS and a wristwatch. The time standards taken as the basis for this current study were as follows: ≤ 140 min for the waiting time for laboratory test results, ≤ 30 min for off-the-shelf drugs and ≤ 60 min for compound drugs as the waiting time for the medicine service in the pharmacy department and ≤ 2 h for the transfer of patients to the inpatient care room. Data collected by noting down the waiting time for each patient for each variable and checking whether it fitted the set time standard in the hospital. Statistical tests were made on the collected data to investigate the correlation among factors that affecting patient LOS in the ED.

Findings:

Table 1. Descriptive statistics of all variables

Variable	n	(%)
Total respondents	44	100
Gender		
Male	26	59.1
Female	18	40.9
Age		
Infants	2	4.6
Children	7	15.9
Adults	17	36.6
Elderly	18	40.9
Triage Category		
Red	11	25
Yellow	17	38.6
Green	16	25
Number of patients per shift		
Morning shift	24	54.6
Afternoon shift	10	22.7
Night shift	10	22.7
Number of relatives/persons for accompanying patients		
Accompanied by one person	16	36.4
Accompanied by more than one person	28	63.6

Variable	n	(%)
Number of health personnel in the emergency department per shift		
Morning shift	4 - 10	
Afternoon shift	3 - 6	
Night shift	3 - 5	
Distribution patient LOS in the ED		
Normal	42	95.5
Prolonged	2	4.5

Sources: Primary data (2017), N = 44

The distribution of patient demographics and all other variables are outlined in Table 1 of the 44 investigated patients 40.91% were female and 59.09% were male and there were 40.91% elderly, 38.64% adults, 15.91% children and 4.55% infants. For triage category, 38.64% of patients were in the category of triage P2 (yellow), 36.36% of patients were in the category of triage P3 (green) and 25.00% of patients were in the category of triage P1 (red). Regarding the number of people who accompanying patients, 63.64% of patients accompanied with two people and 36.36% were accompanied by one person. Based on data distribution in term of number of patients per shift, there were 24 patients during morning shift, 10 patients for afternoon shift and 10 patients in the night shift. Whereas, the number of health personnel in the ED per shift were 4–10 personnel (morning shift), 3–6 personnel (afternoon shift) and 3–5 personnel during night shift. The distribution of patient LOS in the ED showed a majority was in normal category (95.5%), while a prolonged LOS was only seen in 4.5% among all the respondents.

Table 2. Factors affecting patient length of stay in the emergency department

	Variable	n (%)
1.	Waiting time for laboratory test result	
	Meet standard	43 (97.7)
	Did not meet standard	1 (2.3)
2.	Waiting time for drug services in the pharmacy department	
	Meet standard	41 (93.2)
	Did not meet standard	3 (6.8)
3.	Waiting time for the availability of beds in inpatient care room	
	Meet standard	43 (97.7)
	Did not meet standard	1 (2.3)

Sources: Primary Data (2017), N = 44

Table 2 presents an overview of factors affecting patient LOS in the ED including waiting time for laboratory test results, waiting time for drug services from the pharmacy department and waiting time for the availability of a bed in inpatient care. The results showed that among of these three factors had reached standard with percentages of 97.7%, 93.2% and 97.7%, respectively.

Table 3. Results for factors affecting patient length of stay (LOS) in the emergency department

Factor	Category	LOS			Spearman correlation rank	
		Normal	Prolonged	Total	r	p
Waiting time for laboratory test results	Standard	41	2	43	0.033	0.830
	Non-standard	1	-	1		
Waiting time for drug services	Standard	39	2	41	0.059	0.703
	Non-standard	3	-	3		
Waiting time for bed available into inpatient room	Standard	1	42	43	-0.699	0.000

Sources: Primary Data (2017), N = 44

Table 3 describes analysis using Spearman's correlation rank for each subvariable against LOS. The tests resulted in a correlational probability value p= 0.830(r = 0.033) on the subvariable of waiting time for laboratory test results and a correlational probability value p= 0.703 (r = 0.059) on the waiting time for drug services. This shows that there was no significant correlation between the waiting time for laboratory test results and the waiting time for drug services and patient LOS. This implies that the waiting time for the laboratory

test results and drug services in the ED is based on the set standard without any effect on patient LOS. In contrast, the statistical test was different for the subvariable of the waiting time for available beds in the inpatient room. The correlational probability value was $p = 0.000$ ($r = –0.699$), implying that there is a correlation between waiting time for available beds in the inpatient room and patient LOS. The correlation value was negative and significant; and it can be inferred that the longer the patients have to wait for available beds in the inpatient care room, the more prolonged was patient LOS.

The current study has found that majority of patients (97.7%)met standard time for getting laboratory test results. This is happened due to the fact that patients who accompanied by two people or more were relatively experienced shorter waiting time for laboratory test resultswith an average time of 63.03 min compared to only one person accompanying patient with time average of 72.37 min.Also, laboratory tests were highly correlated with triage status. The more severe patients condition, the more complex laboratory tests they must undergo. Patients in P1 category took on average 72.5 min to receive laboratory test results, while the time was 71.47 min for those in the P2 category and 53.307 min for category of P3. A previous study found that type of laboratory test affected of waiting time for laboratory test results [18]. The prolonged waiting time would cause a delay in immediate diagnosis and treatment.

Similarly, time needed for drug services is also found satisfactory with most of patients (93.2%) experienced met standard. An average times used to drug services was ranging from 17.92 min (patients accompanied by two people/more) to 19.87 min (patients accompanied by only one person/relative). However, patients are requiring more time towards drug services within morning shifts. It's resulted that non-standard required waiting times for drug services was still found in the morning and sometime afternoon shifts. This situation is in line with a previous study that showed overcrowding patient in ED and referral status of patientis associated with a prolonged waiting time during drug services[19].

Waiting time to transfer patient from the ED to the inpatient room was considered satisfactory, as 97% cases met set of standard in term of transfer time. The investigated transfer time from ED to inpatient room was considered fairly fast, ranging from 0–80 min. Data in this current study has shown that there was differences in term of average waiting times for transferring patients who accompanied by one person and/or more than one. An average LOS of patient with one person accompanied was about 242.750 min and it was shorter as compared to those who do accompany by two people/relatives, which is 121.17 min. This is occurred due to the fact that relatives are required to help immediately processes room registrations and administrations. Also, paper-based medical records can cause prolonged waiting time since it takes time to manually filled.

In addition, triage status is affected by time wait in terms of transfer patient to the inpatient room. There was on average 193.57 min LOS for patients with P1 category, 157.94 min for P2 and 144.76 min for P3 category. The most severe patient, the more time its required. This implies that the higher emergency status of patient, the more prolonged was their LOS [16]. It is in line with study done in Dr.T.C. Hillerrs Maumere Hospital stated that 41% of patients experienced LOS more than or equal to 6 h and factors that are contributed included triage status and administrative matters[22]. In addition, overcrowding patient causing long queues for assessing examination by health care personnel, which also affects patient LOS [23].

Conclusion

Factor affecting patient LOS in the ED of Karsa Husada Public Hospital was varied, however, the most relevant factor that contribute is patient's waiting time to get transfer to the inpatient room. Effort to prevent a prolonged LOS is urgent and need to be done throughout evaluating patient transfer flow from the ED to the inpatient room and improving beds capacity in room/units.

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Apoptosis Index of Cerebrum and Cerebellum Neuronal Cells in Rattus Norvegicus Neonates Born from Mother Treated with Mozart, Javanesegamelan, Sundanesegamelan and Balinesegamelan During Gestation

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Abstract

Background: Newborn *Rattus norvegicus* expose to Mozart's music prove lower than those expose to Javanese, Sundanese and Balinese music. Exposure to classical music such as Mozart, Javanese, Sundanese and Balinese gamelan can increase waves of brain activity. Mozart's music during pregnancy proved to reduce neuronal cell apoptosis.

Objective: The purpose of this study was to analyze differences in the index of neuronal apoptosis in the *cerebrum* and the newly born Rattus norvegicus *cerebellum* between those exposed to Mozart music, Javanese, Sundanese, Balinese and those who were not exposed to music during pregnancy.

Method: The female subjects of pregnant *Rattus norvegicus* were divided into 5 groups randomly each with 5 samples, 1 control group and 4 treatment groups. after the 10th day of pregnancy music was played for 1 hour in a dark soundproof box with a intensity of 65dB. The 19th day of the parent was sacrificed and *sectio caesarea* was taken, 3 newborn *Rattus norvegicus* children were taken with the heaviest, moderate and mildest and brain tissue was taken for preparation.

Result: The ANNOVA test results showed significant differences between groups with p = 0.01 in the *cerebrum* and p = 0.000 in the *cerebellum*.Conclusion: It can be concluded that the apoptosis index of *cerebrum* neuron cells and the newly born *Rattus norvegicus cerebellum* exposed to Mozart's music proved to be lower than those exposed to Javanese, Sundanese and Balinese gamelan music.

Keywords: *Mozart, Javanese gamelan, Sundanese gamelan, Balinese gamelan music Stimulation; neuronal apoptotic index; Rattus norvegicus.*

Introduction

During pregnancy there is an organogenesis process in which the first formed is hearing, vision and heart. The organogenesis process occurs in the formation of the brain where brain cells undergo proliferation, migration, differentiation, synaptogenesis, myelinization and apoptosis[2]. Stimulation that is easy to do is by sound, a harmonious sound will be more easily accepted by the fetus, a harmonious sound is called music[1].

Indonesia has a lot of traditional music including Balinese, Javanese and Sundanese gamelan music, Indonesian music is certainly better known by the Indonesian people and is easily enjoyed by all Indonesian

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people. States that gamelan music has a character similar to classical music[3]. The results of the study, namely classical music, has a structure of amplitude that is higher and slightly decreases at the upper hearing threshold frequency (20 kHz). The dominant frequency is at 4-7 kHz bandwidth and the vocal frequency (800-1500 Hz) is not dominant, traditional Javanese songs, Sundanese and Balinese have a higher amplitude structure and slightly lower at the upper hearing threshold frequency (20 kHz), the dominant frequency is at 4-7 kHz bandwidth and vocal frequency (800-1500 Hz) is not dominant. Third, based on the results of the study, traditional Sundanese, Javanese and Balinese songs have identical values with classical music (Mozart's Symphony 40) of 71.34% in terms of the level of identification of frequency dominance and 71.31% seen from the level of identification of frequency occurrence[4].

This music stimulation is given at 20 weeks' gestation, for 1 hour, at night. Music is given in the mother's stomach, in the womb the wave is attenuated[6].

The scientific basis of the above process is that sound stimulation or music can reduce the number of physiological brain nerve cell death processes (apoptosis) and improve the relationship between brain nerve cells including morphological changes that are influenced by stimulation regularly so that babies at birth can have nerve cells and sinap more than those who did not get enrichment[5].

This study aims to determine the differences in the apoptotic index of cerebrum neuron cells and the newly born Rattus norvegicus cerebellum between those exposed to Mozart's music with Balinese, Javanese and Sundanese gamelan during pregnancy.

Material And Method

This research was Pathology Laboratory of the Faculty of Veterinary Medicine, Airlangga University, Surabaya. This study received an ethical feasibility permit based on the Ethics Commission The results of this study were using experimental laboratory research method, *posttest-only control group design*, obtained from laboratory experimental studies using 25 samples of *Rattus norvegicus* mothers. *Pregnant Rattus norvegicus* was given exposure to Mozart's music, Javanese gamelan music, Sundanese gamelan music and Balinese gamelan music for one hour with an intensity of 65 db in a soundproof box and without all the exposure after the 10th day of pregnancy. In this study all *Rattus norvegicus* mothers used birth with adequate pregnancy, namely between gestational age 19-20 days. There is no *Rattus norvegicus* mother who experiences preterm birth, abortion or death. Wistar strain *Rattus norvegicus* parent with a range of 110-120 grams after acclimatization. When pregnant, the parent body weight of *Rattus norvegicus* ranges from 130 - 180 grams, then randomization into 5 groups - each of the 5 parents. After 9 days of treatment with exposure to music, Music is presented by using Windows media player program with 65 dB intensity using Sound level meter, then all pregnant mother *Rattus norvegicus* was weighed before sacrifice. This is done to reduce weight bias. Then three newborn *Rattus norvegicus* children were selected with heavy, moderate and light weights and after that were immediately sacrificed by decapitation. Selected the heaviest, moderate and light weight. The cell apoptosis index of cerebrum neurons is known and calculated through immunohistochemistry which is characterized by brown cells,viewed with 5x visual field with 400 magnification after the sample counted the apoptotic index of neuron cells.To simplify statistical calculations, researchers used SPSS device aids using the ANOVA test followed by LSD to see differences in all groups.

Result

Subject Characteristics: This study used the Wistar strain *Rattus norvegicus* parent with a range of 110-120 grams after acclimatization. When pregnant, the parent body weight of Rattus norvegicus ranges from 130 - 180 grams, then randomization into 5 groups - each of the 5 parents. After 9 days of treatment with music exposure, then all pregnant mother's Rattus norvegicus is carried out weighing before sacrificing.The Shapiro-Wilk test showed a normal distribution of *Rattus norvegicus* mother weight data in groups with exposure to Mozart's composition and controls ($p > 0.05$).

Table 1 Mean body weight Rattus norvegicus mothers and offspring.

Group	BW Mothers			BW offspring		
	Mean	SD	p	Mean	SD	p
Control	119,8	3,34	0,211	0,49	0,03	0,561
Mozart	121,8	3,49		1,74	0,82	
Java	121,2	4,65		1,56	0,92	
Sunda	121,2	4,08		1,51	0,97	
Bali	120,2	4,14		1,30	0,66	

From the results of table 1, the data showed that the average body weight of the largest *Rattus norvegicus*

mothers came from Mozart's music group, which was 175.40 ± 5.98 grams, the lowest mean weight of *Rattus norvegicus* children came from groups without music exposure. While the weight of *Rattus norvegicus* children in the group without music exposure had a mean of 0.49 ± 0.03 grams. Main body weight data (p = 0.211) and children (p = 0.561) are normally distributed.

Table 2 The mean and standard deviation of neuronal apoptosis index in the new *Rattus norvegicus* cerebrum and cerebellum born from the mother exposed to Mozart music, Javanese gamelan, Sundanese gamelan, Balinese gamelan and not exposed to music

Group	Cerebrum			Cerebellum		
	Mean	SD	p	Mean	SD	p
Contrl	4,68	1,00	0,795	4,03	0,67	0,747
Mozart	2,28	0,60	0,549	2,04	0,55	0,656
Java	3,40	0,46	0,103	3,24	0,47	0,294
Sunda	3,48	0,72	0,884	3,28	0,48	0,071
Bali	3,56	0,77	0,375	3,35	0,53	0,581

Table 2 showed a mean index of neuronal apoptosis per 5x field of view in the newly born *Rattus norvegicus cerebrum*and *cerebellum*. The lowest average value was obtained in the Mozart music treatment group when compared to the Javanese gamelan music treatment group, Sundanese gamelan, Balinese gamelan and controls. Data on the number of neuron cells in all groups are normally distributed with p> 0.05.

Analysis of the results on cerebrum the results of the normality test showed that the apoptotic index data of cerebral neuron cells in all groups were normally distributed (p> 0.05). Therefore, to see the differences in all groups, the oneway Anova test was used.If the ANOVA test found a significant difference (p <0.05) then it was followed by the LSD (Least Significant Difference) test.

Table 3 Anova test results on neuron cell apoptosis index in the new *Rattus norvegicus* cerebrum born from mothers exposed to Mozart music, Javanese gamelan, Sundanese gamelan, Balinese gamelan and not exposed to music.

Neuron cell apoptosis index	p
	0,001

Based on table 3 shows the value of p = 0.001 which means there are significant differences in the index of neuronal cell apoptosis in the newborn *Rattus norvegicus* cerebrum.

Table 4 Post Hoc LSD test results The apoptosis index of cerebrum neuronal cells of *Rattus norvegicus* children was born from mothers exposed to Mozart's music, Javanese gamelan, Sundanese gamelan, Balinese gamelan and not exposed to music.

Group	p			
	Mozart	Java	Sunda	Bali
Control	0,000	0,013	0,019	0,027
Mozart		0,027	0,019	0,013
Java			0,866	0,736
Sunda				0,866

Table 4 shows the results of the LSD Post-Hoc test. The apoptotic index of cerebrum neuron cells in newborn *Rattus norvegicus* children in all comparisons of each group has significant differences.

Analysis of the results on cerebellum the results of the normality test showed that the apoptotic index data of cerebral neuron cells in all groups were normally distributed (p> 0.05). Therefore, to see the differences in all groups, the oneway Anova test was used. If the ANOVA test found a significant difference (p <0.05) then it was followed by the LSD test

Table 5 Anova test results on neuron cell apoptosis index in the new *Rattus norvegicus* cerebellum born from mothers exposed to Mozart music, Javanese gamelan, Sundanese gamelan, Balinese gamelan and not exposed to music.

Neuron cell apoptosis index	p
	0,000

Based on table 5 shows the value of p = 0.000 which means there are significant differences in the index of neuronal cell apoptosis in the newborn *Rattus norvegicus* cerebellum.

Table 6 Post Hoc LSD test results The apoptosis index of cerebellum neuronal cells of *Rattus norvegicus* children was born from mothers exposed to Mozart's music, Javanese gamelan, Sundanese gamelan, Balinese gamelan and not exposed to music.

Group	p			
	Mozart	Java	Sunda	Bali
Control	0,000	0,034	0,043	0,064
Mozart		0,002	0,002	0,001
Java			0,909	0,754
Sunda				0,842

Table 6 shows the results of the LSD Post-Hoc test. The apoptotic index of cerebellum neuron cells in newborn *Rattus norvegicus* children in all comparisons of each group has significant differences.

Discussion

There is a significant or significant difference in the neuron apoptosis index in the cerebrum and the newly born *Rattus norvegicus* cerebellum between the Mozart music group and the group not exposed to music. Mozart's music group and the group not exposed to music found that the average apoptotic index of Mozart's music group was lower than that of the group not exposed to music. This is consistent with research conducted on *Rattus norvegicus* given exposure to Mozart music during pregnancy compared to *Rattus norvegicus* who were not exposed to Mozart's music and obtained significant differences in the apoptotic index of the brains of children born to *Rattus norvegicus*. who received Mozart's music exposure had a lower apoptosis index than those who did not receive exposure[6].

The results of the study of music exposure to the Javanese gamelan music group at the age of 10-20 days for 1 hour with an intensity of 65 db in the soundproof box found that the index of apoptosis in the cerebrum and cerebellum of the Javanese gamelan music group was lower than the group not exposed to music. there was a significant or significant difference in the apoptosis index of neuron cells in the cerebellum and the new Rattus norvegicus cerebellum. Javanese gamelan music produces soothing alpha waves that can stimulate the limbic system of brain neurons. Javanese gamelan music can improve the concentration of memory and spatial perception[8].

Research on the cerebrum and cerebellum found that the average apoptotic index of the Sundanese gamelan music group was lower than the group not exposed to music, found a significant difference in the index of neuronal apoptosis in the cerebrum and the newborn *Rattus norvegicus* cerebellum in Sundanese gamelan music groups and groups not exposed to music. Gamelan music produces soothing alpha waves that can stimulate the limbic system of brain neurons. Gamelan music can improve memory concentration and spatial perception[10]. The musicality of the Sundanese gamelan degung is so soft that when you hear it the mind becomes more relaxed. Likewise repetitive music structures and cycles make it easy to learn. The lack of conductors emphasizes the need to listen to others, which may be the developmental skills handled in music therapy. Instruments, which have been previously set, meet a variety of abilities and levels of experience, which are also important in therapeutic settings and tone and sound waves may have therapeutic relevance[11].

This is according to the theory revealed, the brain needs energy. The best energy is sound. The type of music that can increase the number of brain cells, is Mozart's classical music that can be used with a frequency of 5000-8000 Hz which is dominated by a major tone and a slight minor tone. With this frequency, the intensity is not too high and is considered appropriate for the fetal environment during pregnancy[7].

The results showed that the average index of apoptosis in the cerebrum and cerebellum in the Mozart music group was lower than the Javanese gamelan music group, Sundanese gamelan music, Balinese gamelan music and not exposed to music. Although the frequency possessed by Gamelan music is higher than Mozart's music, which is 15,000 Hz, but in this music there are more minor tones. Minor tones compared to the major tones activate the amygdala, retrosplenal cortex, brain stem and cerebellum[19] . Music Mozart has a melodic rhythm and frequency that can stimulate creative and motivational areas in the brain[15].

Conclusion

Apoptosis index of cerebrum neuron cells and the new *Rattus norvegicus* cerebellum exposed to Mozart's music proved to be lower than those exposed to Javanese, Sundanese and Balinese gamelan music.

Conflict of Interest: None

Ethical Clearance: This study received an ethical feasibility permit based on the Ethics Commission of the Faculty of Dentistry, Airlangga University

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Relationship between Intention and Motivation Pregnant Women of High Risk to Decision Making of Referral at Sidotopo Wetan Health Center of Surabaya, Indonesia

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Abstract

Background: One of the main obstacles to the slow decline in MMR in Indonesia is the obstacle to making referral decisions for high-risk pregnant women. This referral decision making is an illustration of the process of improving maternal and fetal health conditions as well as a complex process involving stages such as understanding the existence of a problem, finding alternative solutions to problems and evaluating alternatives that ultimately to decide on referrals to high-risk pregnant women can be done own mother quickly and precisely. Determining the health of high-risk pregnant women is the mother herself, not someone else. If the individual has strength and confidence, then motivation and intention will be formed in carrying out an action even when faced with obstacles.

Material and Method: The study used a quantitative approach with observational analytic type using cross sectional design. In this study the sample was pregnant women who had an indication to be referred to the hospital at the Sidotopo Wetan Health Center in Surabaya

Result: The results of the analysis show intention (p = 0,000) and motivation (p = 0,000) have a significant relationship to decision making referrals in pregnant women at the Sidotopo health center in Surabaya.

Conclusion: Pregnant women who have high intention and motivation have a tendency to be willing to make well referral decisions to realize their goals.

Keyword: *Motivation, intention, referral.*

Introduction

Around 830 women die from complications related to pregnancy or childbirth around the world every day. Almost all of these deaths occur in low-resource settings and most can be prevented. 99% of all maternal deaths occur in developing countries. Maternal mortality is higher in women who live in rural areas and among poor communities[1].

The maternal mortality rate in ASEAN tends to vary, overall the MMR in ASEAN in 2015 amounted to 197 per 100,000 live births [2] . The trend of maternal mortality in Surabaya in 2013 was 119.15 per 100,000 live births, in 2014 it was 90.19 per 100,000 live births, in 2015 it was 87.35 live births and in 2016 it was 85.72 per 100,000 live births[3].

This is based on the fact that one of the main obstacles to the slow decline in MMR in Indonesia is

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the obstacle to decision making referrals to high-risk pregnant women. This referral decision making is an illustration of the process of improving maternal and fetal health conditions as well as a complex process involving stages such as understanding the existence of a problem, finding alternative solutions to problems and evaluating alternatives that ultimately to decide on referrals to high-risk pregnant women can be done own mother quickly and precisely. Determining the health of high-risk pregnant women is the mother herself, not someone else [4] .If the individual has strength and confidence, then motivation and intention will be formed in carrying out an action even when faced with obstacles[5].

Based on the above background, the researcher wants to conduct a study entitled the relationship between intention and motivation of pregnant women with high risk for decision making referrals at the Sidotopo Wetan Heatlh Center Surabaya

Materials and Method

The study used a quantitative approach with observational analytic type using cross sectional design. In this study the sample was pregnant women who had an indication to be referred to the hospital at the Sidotopo Wetan Health Center in Surabaya . The sampling is done by simple random sampling. Measurement scale to see independent variables using Likert scales. Scores are grouped in two categories . Data analysis was carried out using nonparametic statistical tests namely logistic regression analysis using SPSS.

Result

Table 1. Intention and Motivation on Referral Decision Making in the Sidotopo Wetan Health Center in 2019

Variable	Referral Decision Making				Total
	Ready	(%)	Not willing	(%)	N
Intention					
High	40	87.0	6	13.0	46
Low	14	56.0	11	44.0	25
Total	54	76.1	17	23.9	71
Motivation					
High	33	89.2	4	10.8	37
Low	21	61.8	13	38.2	34
Total	54	76.1	17	23.9	71

Table 1 . shows the results that pregnant women who have high intention and low tend to be willing to take referral decisions. While pregnant women have a motivation high and low also tend to be willing to take the referral decision

Table 2. Effect of Intention and Motivation on Referral Decision Making in the Sidotopo Wetan Health Center in 2019.

Variable	Referral Decision Making		Information
	p-value	Exp (B)	
Intention	0,000	6,667	Significant
Motivation	0,000	8,250	Significant

Table 2 shows the results of nominal logistic regression analysis. The intention and motivation variables are statistically proven to significantly influence referral decision making .

Discussion

Intention indicates that someone intentionally tried and planned to display the behavior. Intention is a very important foundation or basis for every behavior/action, even a barometer of every behavior/action. The value of a behavior is very dependent on intentions, if good intentions then the behavior will be good. Conversely, if bad intentions then the behavior becomes bad. Intention as a way to achieve a goal. Intention is a mental process that is realized and arises from the human will itself, which includes cognition (feeling and receiving), konasi (effort, willingness, desire, desire) and feelings (loving, hating). So it can be concluded that intention is the likelihood of someone to bring up the behavior and how strong an effort is made to display the behavior[6].

Statistical test results on the effect of intention on referral decision making found that intention affects the referral decision making. The results of this study are in line with previous studies. Sheeran (2012) in a meta-analysis of the relationship between intention and behavior explains that intention is the key to one's readiness to perform a behavior[7].

Motivation is a condition in a person that drives an individual's desire to carry out certain activities in order to achieve a goal. The existence of desires and needs in individuals, motivating these individuals to fulfill them. Efforts of pregnant women to implement more adequate health service referrals can be achieved when individuals are motivated to look for needs at a higher stage, so that individuals will have the ability to solve problems[8].

Statistical test results of the effect of motivation on referral decision making found that motivation affects the referral decision making. The results of this study are in accordance with the theories that have been explained and are in line with previous research conducted by Sigit Prasojo (2015) which explains the results of the descriptive study showed 63% of respondents with high motivation and 37% of respondents with low motivation. High motivation on respondents is indicated by good antenatal care visits while low motivation on respondents is indicated by poor antenatal care visits[9].

Conclusion

Intention and motivation variables affect the referral decision making. Pregnant women have a high intention to have a tendency willing to take the referral decision by 6.667 times compared with pregnant women who have low intention. Pregnant women who have high motivation have a tendency to take referral decisions by 8,250 times compared to pregnant women who have low motivation. So that in a decision making referral by pregnant women requires intention and motivation.

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Efficacy of Local Food-Based Tabaro dange Against Weight of Gain and Levels of Hemoglobin (Hb) White Rats (Rattus Norvegicus Strain Wistar)

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Abstract

Disasters can cause blocked logistical access locations. This causes special disaster victims for children to be difficult to get food, as a result, the nutritional intake for the growth and development of infants cannot be met according to their needs. Utilization of local food can be an alternative in providing emergency food that is rich in energy needs to prevent the expenditure of malnutrition. This study aims to determine the effectiveness of the administration of Tabaro on body weight and levels of white rats (rattus norvegicus). This research is experimental with a randomized design post-test only control group design. Randomly selected samples (CRD) were divided into 4 groups, as much as 4 g/rat/day, each maintained by individuals for 14 (fourteen) days. The sample used was 24 male white rats (Rattus norvegicus). Statistical test results showed an increase in body weight in each group with a p-value <0.05 ($\alpha = 0.054$) and a significant increase in Hb levels in each group that managed a p-value <0.05 ($\alpha = 0.001$). Giving Tabaro dange snacks based on local food can increase body weight and hemoglobin levels in male white rats (Rattus norvegicus). Obtained from further research to learn about the acceptability of the Tabaro dange can be used as a rationed product in an emergency.

Keyword: *Body weight, hemoglobin (Hb) levels, local food, tabaro dange.*

Introduction

Most of Indonesia's territory is in disaster-prone locations. This can lead to blocked access to food so that the impact of disaster victims has decreased nutritional status due to lack of energy for quality food.() Not all regions in Indonesia have good infrastructure and make it easy for people to access good and healthy food.

Foods not only contain macronutrients such as carbohydrates, fats and proteins that can produce energy but also contain micronutrients such as vitamins and minerals.() Lack of food intake, in the long run, will also cause a lack of micronutrient intake or micronutrient deficiencies. The condition that often accompanies protein and micronutrient energy malnutrition is anemia. Anemia is a state of decreased levels of hemoglobin (Hb), hematocrit (Ht) and red blood cells below normal values. () Contain nutritional needs to meet the daily consumption requirements for toddlers (1125-1600 kcal/day) in order to avoid new disasters after natural disasters, such as the emergence of hunger, so that emergency food must be given at least meet the additional food needs of 10-15% of the nutritional adequacy rate (RDA) for infants.()

Emergency food is given aiming to prevent disease and even death due to starvation during disasters.() One alternative to deal with cases of malnutrition in an emergency is to use Moringa leaves as an alternative

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food. One of the uses of Moringa leaves is processed into a traditional snack based on local food. Tabaro dange is a typical hammer food based on local food that can be used as food "ready to use food". Tabaro dange is made from a mixture of sago flour, cassava flour and grated coconut served with additional contents in it, such as brown sugar and anchovies.() Because tabaro dange is made from sago flour and cassava flour so it is rich in carbohydrates which can contribute energy to meet calorie needs in an emergency.

Various types of emergency food have been developed using local food. Based on the background description, this study aims to prove whether the administration of tabaro dange can increase body weight and hemoglobin levels during the treatment process of body weight of rats (Rattus norvegicus).

Method

The study was conducted in the biochemistry laboratory of the Faculty of Medicine, Airlangga University on July 11 to August 7, 2019. The type of research used was a randomized post-test only control group design where randomly selected samples (CRD) were divided into 4 groups, consisting of 1 control group, namely the control (K) and 3 treatment groups namely P1, P2 and P3. The giving of Tabaro dange starts on the 1st day after the adaptation period for one week until the 14th day. The research design is presented in Figure 1.

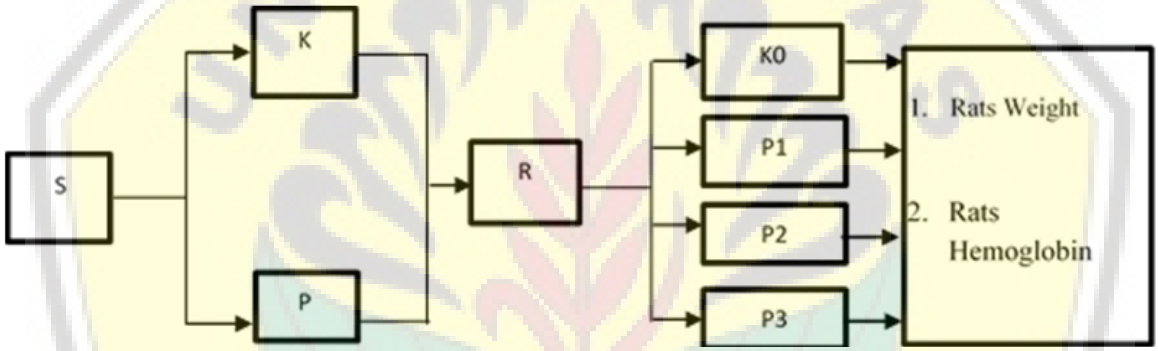

Figure 1. Experimental Research Design

Information:

S : Experimental animal (white rat Galur Wistar)
K : Control Group
P : Treatment group
R : Grouping rats by random sampling
K0 : Control group (pellet administration)
P1 : Tabaro dange based on
P2 : Provision of Tabaro and substitute purple sweet potato flour and Moringa leaf
P3 : Tabaro administration with yellow sweet potato flour and purple sweet potato and moringa leaf substitution

The experimental unit used in this study was a male white rat (Rattus norvegicus) male Wistar strain aged 3-4 months with body weight around 150-200 grams, with the inclusion criteria there were no anatomical abnormalities that appeared healthy. With replication 6 times. To overcome if there is an error in the study, a sample reserve is needed. To anticipate the loss of the dining experiment unit a correction is performed with 1/(1-f) where f is the proportion of the experimental unit that dies or fails. In this study using f = 10%.

Rats were grouped into two groups randomly, namely the control group and the treatment group. The control group was given standard feed and the treatment group was divided into three groups that were given the Tabaro dange snack bar (P1), the group that was given the Tabaro dange snack bar substitute purple sweet potato flour and Moringa (P2) and the group who were given the Tabaro dange snackbar substitution of yellow sweet potato flour and Moringa (P3). The gift starts on the 8th day after the adaptation period. Giving food and drinks ad libitum and giving Tabaro dange is done orally by feeding the rats, with the time of administration every day for 2 weeks.

The following is the treatment for each group. Control group (K0): feeding pellets. Treatment Group

1 (P1): administration of Tabaro dange F0: Sago 44g (40%), grated coconut 42g (38,18%), cassava 6g (5,45%), brown sugar 13g (7,26%) and anchovies 10g (9,09%) per 4 g/day. Treatment group 2 (P2): granting Tabaro dange F2: Sago 40g (36,36%), grated coconut 42g (38,18%), cassava 2g (1,28%), brown sugar 13g (7,26%), anchovy 10g (9,09%), purple sweet potato 4g (3,64%) and Moringa 4g (3,64%) per 4 g/day. Treatment group 3 (P3): administration of Tabaro dange F3: Sago 38g (34,55%), grated coconut 42g (38,18%), cassava 2g (1,28%), brown sugar 13g (7,26%), anchovy 10g (9,09%), yellow sweet potato (1.82%), purple sweet potato 2g (1,82%) and Moringa 6 g (5,45%) per 4 g/day.

Measurements of body weight of rats carried out on day 7 (before intervention), day k-14 and day 21 after the intervention was given using a digital scale with a level of accuracy of 0,01 kg. Measurement of hemoglobin levels was carried out by the Cyanmethaemoglobin method by taking blood through the rat's tail. Reference to normal Hb levels in mice following physiological values in male rats, which is 13,2-16,4 g/dL.[1] Data were processed statistically using SPSS 24 with data analysis using repeated measures for body weight and kruskall-wallis for Hb data.

Results

Efficacy of Tabaro dange on Weight Loss in White Rats (Rattus norvegicus): Preliminary weight data of rats is weight data before treatment and weight data after treatment is data for the 7th day and 14th day, weighed using a cannary scale digital scale in grams. Data on the average weight gain of white rats (rattus norvegicus) before and after treatment can be seen in Table 1.

Table 1 The average weight of white rat (rattus norvegicus strain wistar) before and after the treatment (grams)

Weight	K0 (Control)	Q1 (F0)	P2 (F2)	Q3 (F3)	p value
Beginning	202,5±8,5	2045±6,7	203,68±6,6	203,5±8,5	0,054
7 days	237,3±44	2386±4,1	239,1±4,9	239,6±4,4	
14 days	257,3±2,8	263,0±1,8	267,6±1,2	275,0±3,03	

The mean weight of all samples before treatment was 203,5±7,1 gram with a weight range between 192-211 grams. The mean weight of all samples of the 7th day after the treatment was 238,7±4,2 gram with a weight range between 232-245 grams. The average weight of the entire sample 14 days after treatment was 265,7±6,9 grams with a range of body weight between 254-281 grams.

Statistical test results showed that there were significant differences between initial body weight, day 7 body weight and day 14 rats (Rattus norvegicus) given the Tabaro dange intervention. Rats' weight gain after day 7 and day 14, respectively, reduced the body weight of rats before treatment. Data on the average weight gain of mice can be presented in table 2.

Table 2: Average weight gain of white rats (Rattus norvegicus) after treatment (grams)

Weight	K0 (Control)	Q1 (F0)	P2 (F2)	Q3 (F3)
7th day	20,0±2,8	27,6±1,7	30,1±1,6	36,3±4,6
14th day	54,8±6,2	58,5±5,6	64,0±5,5	71,6±7,2

Weight gain in rats due to the provision of high Dange Tabaro snacks will carbohydrate, protein, fat and energy to meet the needs of the mice to the growth process. The energy content in Tabaro dange can be seen in Table 3.

Table 3: Nutrient Content of Tabaro Formulations Dange

Material	Formulation		
	F0	F1	F2
Energy (Kcal)*	308,58	310,19	305,93
Carbohydrates (%)**	6833	67,04	66,12
Protein (%)***	6,07	8,76	854
Fat (%)****	1,22	0,87	0,81
Fe (%)	2,11	5,42	6,82
Vitamin C	0,02	0,04	0,6

Source: Primary Data, 2019

* 233 kcal energy, ** Total Carbohydrates 7-11 g (12-20% of total calories, *** Protein 7,9 g (10-15% of total calories, **** Fat 9,1 g 35% of total calories

The energy content in each tabaro dange formulation has met the emergency food requirements with the highest energy value contained in the F2 formulation of 310,19 kcal. The main source of energy is in carbohydrates, but fats and proteins can also contribute energy through the oxidation process of nutrients.[8] Carbohydrate content in an emergency food product is very important to meet calorie adequacy.[9] In addition to carbohydrates, fat content in emergency foods has an important contribution, namely as one of the energy contributors.[10]

Efficacy of Tabaro dange on Increased Hemoglobin (Hb) White Rat (Rattus norvegicus strain wistar) **Male**

Hemoglobin is a protein that has iron content and plays an important role in transporting oxygen and circulating it throughout the body's tissues.[8] In this study hemoglobin was measured before the intervention was established and after the intervention was given to experimental animals. Data on average hemoglobin levels before and after the intervention are presented in table 4.

Table 4 Average Hemoglobin (Hb) Levels in Experimental Rats

Variable	Group	N	Mean ± SD (g)	Min	Max	P-value
Early Hb	K1	6	8.0667 ± 1.83485	6.40	11.40	0.143
	Q1	6	6.9333 ± 0.48854	6.40	7.50	
	P2	6	7.7333 ± 0.56451	7,10	8.60	
	Q3	6	6.9667 ± 0.37238	6.40	7.40	
Final HB	K1	6	14.3167 ± 1.03618	12,90	15.60	0.001
	Q1	6	15.7000 ± 2.41578	12,20	19.50	
	P2	6	18,0333 ± 1,23882	16.50	19,20	
	Q3	6	23,2333 ± 3,53817	19.40	27.70	
Change in Hb	K1	6	6,2500 ± 2,54617	2.40	9.00	0,000
	Q1	6	8.7667 ± 2.29666	5.80	12.30	
	P2	6	10.3000 ± 0.86487	9.30	11.50	
	Q3	6	16.2667 ± 3.60648	12.30	20.90	

Table 4 shows that the average level of the highest hemoglobin rat (Rattus norvegicus) before the treatment does not have a noticeable difference. ANOVA test results showed that there were significant differences between the initial body weight of rats (Rattus norvegicus) before and after the intervention was given.

Discussion

Weight gain is natural because rats are animals that never stop growing, where the speed of growth will decrease when reaching adulthood.[11] The results showed there were differences in body weight of rats before and after the intervention in the treatment group. One of the factors that increase growth is the intake of food provided in sufficient quantities with the nutritional content contained in these foods.[8] All rats received the same ration, but there were different treatments for the amount of energy contained in the feed. The increase in body weight of mice that received higher F2 compared to other treatments. This is because the Protein content in F2 is higher than other formulas, although the energy content in F2 is lower compared to other formulas, the total energy is sufficient to meet the energy requirements of 10-15% of the AKG.[12] In the phase of protein, growth plays a very important role, because in that phase the process of biosynthesis takes place quickly, especially the formation of body protein, while energy is needed for the ongoing process of the body's metabolism.

Efficacy of Tabaro dange on Increased Hemoglobin (Hb) White Rat (Rattus norvegicus)

Nutrient intake of protein, iron, vitamin A and vitamin C can affect hemoglobin levels. Protein plays an important role in the transportation of iron in the body. Lack of protein intake in the body will be able to lead the transportation of iron deficiency and iron hampered. The lower the protein intake and iron intake, the lower the hemoglobin level.[13]

Vitamin C increases non- heme iron absorption.[14] The presence of vitamin C from Moringa accelerates the absorption of iron in the non-heme form. Iron non-heme by the reduction of ferric iron into Ferro in the small intestine so easily absorbed. The formation of hemosiderin which is difficult to mobilize to free iron can be inhibited by vitamin C. So that it can reduce the risk of iron deficiency anemia.[15]

Vitamin A affects the release of iron from the liver. Supplementation of vitamin A with iron improves vitamin A status and improves iron status.[16] The limitation of this study is that the initial hemoglobin levels were not uniform in all groups of rats to be treated.

The results showed that the administration of local food-based Tabaro dange can increase Hb levels in white rats. The content of protein, iron, vitamin A and vitamin C in Tabaro dange will affect the absorption of globin and iron proteins that can meet the needs of heme. The results of other studies indicate there is a positive relationship between the intake of iron with high levels of hemoglobin.[17]

Conclusion

Local food-based Tabaro dange snacks can increase body weight and hemoglobin levels in male white rats (*Rattus norvegicus*).

SUGGESTION

Further research is needed to determine the acceptability of Tabaro dange snacks so that they can be used as ration products in an emergency.

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Influence of Mental Health and Social Relationships on Quality of Life among Myanmar Migrant Workers in the South of Thailand

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Abstract

Background: Previous studies indicated that mental health and social relationships have influence on quality of life. However, there are limited studies on the association between mental health and social relationshipson quality of life among Myanmar migrant workers in Thailand.

Method: This study aimed to determine the prevalence of quality of life and the influence of mental health and social relationships on quality of life among Myanmar migrant workers in the South of Thailand.This cross-sectional analytical study was conducted among 794 Myanmar migrants who were selected by using a multi-stage random sampling from 2 provinces in the South of Thailand to respond to a structured questionnaire interview. The generalized linear mixed model analysis was performed to determine the association between mental health and social relationshipson quality of life when controlling other covariates.

Results: The prevalence of good quality of life among Myanmar migrant workers was 11.46% (95%CI:9.24-13.68). Mental health and social relationships were significantly associated with good quality of life were; no had depressive symptoms (adj. OR=3.83; 95%CI: 2.28-6.43, p-value < 0.001), had good relationship with employers (adj. OR=3.02; 95%CI: 1.71-5.31, p-value < 0.001) and had high level of involvement with peers (adj. OR=1.90; 95% CI: 1.09-3.32, p-value < 0.023). Significant covariates were average personal monthly incomes and received health information.About one-tenth of Myanmar migrant workers had a good quality of life. Mental health, social relationships and access to health information had influencedtheir quality of life.

Keywords: *Myanmar migrant workers, Quality of life, Social relationships, Thailand.*

Introduction

Quality of life (QOL) is a multidimensional level of an individual life's happiness where they live in societies to achieve their goal in life. QOL consists of 4 domains including physical, psychological, social relationships and environmental domains[(1)]. The concept of QOL is commonly used to describe the well-being among various susceptible populations, such as migrants, refugees, etc.[(2-4)], since QOL describes the degree to which a person enjoys the important possibilities of his or her life[(5)]. There were a number of factors influencing QOL. Social relationships were one of the factors associated with QOL of which it increased the likelihood of survival[(6)]. A study carried out in the Basque Country, Spain suggested that low social support was related to poor HRQOL, of which identifying the social support is a key in understanding health inequalities among immigrants[(7)].

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Migrating to a new country is an extremely complex and stressful process because it involves changes in all areas of life-socially, culturally and psychologically[8]. Psychosocial factors such as lack of social and emotional support from relatives and friends [9] were common among migrant workers. Some studies indicated that migrant workers were refused by local citizens [10] and lack of legal migration status in migration processes [11]. Depression, one of the most common mental health disorders, was identified as having a positiverelationship with occupation injury [12]. Depression imposes an immense social burden which leads to functional impairment, decreased quality of life, low productivity and impaired interpersonal relationship.[13]

Thailand economic growth has attracted an increasing number of migrant workers from neighboring countries [14]. Migrant workers in Thailand are mostly involved in the ''3 Ds'' jobs (dangerous, dirty and degrading jobs). These 3Ds conditions push them at risk for health problems. One notable health hazard of migrant workers is the deterioration of mental health, which has been implicated to suicide that is more common among migrant workers than that of local citizens [15].The Office of Foreign Worker Administration of Thailand reported that in July 2019 there were 2.83 million migrants residing in Thailand and about 1.87 million were from Myanmar. About 358,530 Myanmar migrant workers were in the South region. Most of these migrants worked in themanufacturing sectors, agriculture and animal husbandry,fishery and construction. Therefore, this study aimed to determine the prevalence of quality of life and the influences of mental health and social relationships factors on quality of life among Myanmar migrant workers in the South of Thailand.

Materials and Method

Study design and sampling: This cross-sectional analytical study was conducted in 2018. The populations were Myanmar migrant workers in the South of Thailand. The sample size was calculated by using the formulato estimate the sample size forlogistic regression analysis of Hsieh [16].The estimated sample size was 794. Werecruited Myanmar migrant workers from 2southern provincesby using multi-stage random sampling method.

Questionnaire: A structure questionnaire was developed based on the research questions and relevant literatures. The structured questionnaire consisted of 6 parts: A) Demographic and socioeconomic characteristics, B)Social relationships, C) Health behaviors and physical health status, D) the Perceived Stress Scale (PSS) of Cohen et al. [17], E) The Center for Epidemiology Studies Depression Scale (CES-D)[18], andF) WHOQOL-BREF was used to assess the quality of life. QOL scores were categorized into three groups: a) poor level (26-60scores), b)moderate level (61-95scores), c) good level (≥96scores)[1]. The questionnaire was undergone content validation by 5 experts and revised to improve its validity. The Cronbach's alpha coefficient of PSS, CES-D and WHOQOL-BREF were 0.78, 0.70 and 0.85 respectively.

Statistic Analysis: All analyses were performed using Stata version 10.0 (Stata Corp, College Station, TX). Demographic and socioeconomic characteristics of the participants were described by using frequency and percentage for categorical data as well as the mean and standard deviation for continuous data. A simple logistic regression was used for bivariate analysis to identify individual factor associated with QOL. In the bivariate and multivariable analysis, quality of life was classified into 2 groups using the cutoff score of ≥ 95 points which mean 'hada good quality of life'. The independent factors that had p-value <0.25[19] were processed to the generalized linear mixed model (GLMM) analysis to identify the association between mental health and social relationships with QOL when controlling the effect of other covariates and reported the adjusted odds ratio (Adj. OR),95% confidence interval (CI) and p-value<0.05 as the magnitude of effect and statisticalsignificant level.

Results

Majority of the Myanmar migrant workers were male (58.31%) with the average age of 32.79 (±9.00) years old, 69.52% were married and 37.78% finished only primary education. Most of them lived in urban settings (81.74%),75.19% lived with a family and46.98% lived in a labor camp. The highest proportion worked in manufacturing (29.97%) followed by agriculture and animal husbandry, fishery and construction. Their average personal monthly incomes was 9,201.17(±2,681.29) Baht, of which 3,203.21 (±1,660.17) Baht were average personal monthly expenditures. Almost all had health insurance (99.62%).

Most of the workers worked both indoor and outdoor (64.23%) and the rest (35.77%) worked only indoor. Most of them satisfied with their living and working

conditions as well as the relationship with others, except that 58.56% had a limitation on traveling. About one-third were smokers (38.16%), 16.12% were drinkers. More than half of the migrant workers (54.91%) had a physical check-up and 11.08% had chronic diseases. Most of them (88.66%) had a moderate level of stress and more than half (52.77%) had depressive symptoms.

Concerning the quality of life, 85.77% (95% CI: 83.15-88.03) of the migrant workers had a moderate level, 11.46% (95% CI: 9.42-13.87) had a good level and 2.77% (95% CI:1.82-4.17) had a poor level.

Factor associated with good quality of life: Bivariate analysis: The bivariate analysis results indicated that the independent variables that possibly associated with good QOL (p-value<0.25) were;average personal monthly income, physical health check-up, involvement with peers, relationship with employers, relationship with co-workers, relationship with family, received health information and depressive symptomsThese factors have proceeded to the multivariable analysis (Table 1).

Table 1: Factors associated with good quality of life: Bivariate analysis

Factors	Number	% Good QOL	Crude OR	95% CI	P-value
Depressive symptoms					<0.001
Yes	419	6.21	1		
No	375	17.33	3.16	1.96-5.11	
Gender					0.261
Female	331	9.97	1		
Male	463	12.53	1.29	0.82-2.03	
Age (Years)					0.270
< 30	427	10.30	1		
≥30	367	12.81	1.27	0.82-1.97	
Education					0.293
Primary school or lower	346	10.12	1		
Secondary school or higher	448	12.50	1.12	0.82-1.40	
Average personal monthly incomes (Baht)					0.032
<9,300	484	9.50	1		
≥9,300	310	14.52	1.61	1.04-2.50	
Average personal monthly expenditures (Baht)					
<3,000	327	11.31	1		0.913
≥3,000	467	11.56	1.02	0.65-1.59	
Physical health check-up					0.012
No	358	8.38	1		
Yes	436	13.66	1.77	1.12-2.82	
Involvement with peers					<0.001
Low to moderate	465	7.53	1		
High	329	17.02	1.90	1.60-3.94	
Relationship with co-workers					<0.001
Poor to average	445	7.87	1		
Good	349	16.05	2.23	1.43-3.50	

Factors	Number	% Good QOL	Crude OR	95% CI	P-value
Relationship with family					0.001
Poor to average	229	6.11	1		
Good	565	13.63	2.42	1.34-4.37	
Relationship with employers					<0.001
Poor to average	474	6.12	1		
Good	320	19.38	3.68	2.31-5.88	
Chronic diseases					0.051
Yes	88	5.68	1		
No	706	12.18	2.30	0.90-5.83	
Received health information					0.009
No	433	8.78	1		
Yes	361	14.68	1.78	1.14-2.78	

Factorsassociated with good quality of life: multivariable analysis: The generalized linear mixed model analysis (GLMM) by Backward elimination indicated that mental health and some social relationships wereassociatedwithgoodqualityoflifewhichwere;hadno depressive symptoms (adj. OR=3.83;95%CI:2.28-6.43, p-value < 0.001), hadgood relationship with employers (adj. OR=3.02;95%CI:1.71-5.31, p-value < 0.001) and had high level of involvement with peers (adj. OR=1.90; 95%CI: 1.09-3.32, p-value < 0.023). Other significant covariates were had average personal monthly incomes ≥9,300 Baht (adj. OR=1.62; 95%CI: 1.01-2.59, p-value = 0.043) and received health information (adj. OR=1.62;95%CI:1.00-2.61, p-value = 0.048) (Table 2).

Table 2: Factors associated with good quality of life: Multivariable analysis

Factors	Number	% Good QOL	Crude OR	Adjusted OR	95% CI	P-value
Depressive symptoms						<0.001
Yes	419	6.21	1	1		
No	375	17.33	3.16	3.83	2.28-6.43	
Relationship with employers						<0.001
Poor to average	474	6.12	1	1		
Good	320	19.38	3.68	3.02	1.71-5.31	
Involvement with peers						0.023
Low to moderate	465	7.53	1	1		
High	329	17.02	2.52	1.90	1.09-3.32	
Other covariates						
Average personalmonthly incomes (Baht)						0.043
<9,300	484	9.50	1	1		
≥9,300	310	14.52	1.61	1.62	1.01-2.59	
Received health information						0.048
No	433	8.78	1	1		
Yes	361	14.68	1.78	1.62	1.00-2.61	

Discussion

The findings observed that most of the Myanmar migrant workers perceived of having a moderate level of QOL (85.77%), only 11.46% having good QOL. It might be that the situations where they lived and worked were as they expected. They were not much better. This study also observed that those who had no depressive symptoms had a significantly better quality of life in comparison with those who had depressive symptoms, of which similar with previous studies conducted in China[20, 21].Besides, those who had a good relationship with employers had a significantly better quality of life in comparison with those who had a poor and average level which was similar with a study conducted in Thailand [22]. It might be that the relationship with peer could result in job security and incomes.The migrant workers who had a high level of peer involvement had significantly better QOL than those who had low to moderate levels of peer involvement which was similar to a study in Sweden[23]. It might be that they could share various issues and able to release their tensions. Concerning personal monthly incomes, this study indicated that those who had average personal monthly incomes≥9,300 Baht were more likely to have good QOL in comparison with those who had lower incomes.A study conducted in China was also observed a similar finding[20]. Concerning health, migrant workers who received health information were more likely to have a better quality of life in comparison with those who had not received health information. Migrants have usually accessed health information through social networks more than formal health service providers due to language and access barriers[24].

Conclusion

About one-tenth of Myanmar migrant workers in the South of Thailand had a good QOL. After adjusting for other covariates which were personal monthly income and access to health information;mental health especially depressive symptoms and social relationships including had a good relationship with employers and high level of peer involvement were found significantly associated with QOL.

Conflict of Interest: The authors declare that no conflict of interest

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Ethical Clearance: Taken from the office of Khon Kaen University Ethical Committee in human research (HE 602370)

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Diagnostic and Prognostic Role of Micro RNA 208 in Patients Undergoing Primary Percutaneous Coronary Intervention

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Abstract

Background: Despite improvements in the treatment of MI, 30% of patients show LV remodeling post-MI, moreover, it is expected that almost 30% will have an LV ejection fraction (LVEF) below 40% at 6 months post MI. the importance of adverse LV remodeling detection highlights in predicting morbidities and mortality in patients with AMI and/or congestive heart failure (CHF). The plasma miR-208a level analyzed by qPCR showed greater sensitivity and specificity in identifying myocardial injury than other miRNAs. Up regulated miR-208a from patients with dilated cardiomyopathy (DCM) was negatively correlated to left ventricular ejection fraction (LVEF). To address these problems, echocardiographic tools including strain and strain-rate provides a new window into myocardial injuries and deformation process, especially after introduction of two-dimensional (2D) speckle-tracking echocardiography which allows angle-independent quantification of myocardial deformities.

Aim of the Work: To evaluate the diagnostic role of micro RNA 208a in acute STEMI and To study the differences in micro RNA 208a expression between patients with LV systolic dysfunction and those without, following primary PCI for acute STEMI

Patients and Method: This study was conducted on 150 subjects divided into 2 groups. Group I was consists of 100 patients with acute myocardial infarction underwent 1ry or rescue PCI. Group II was consists of 50 healthy volunteers. All patients were subjected to full Clinical evaluation; Routine Laboratory Evaluation, Standard 12-lead electrocardiogram (ECG), Two-dimensional, M-mode, Doppler and color Doppler, strain rate and speckle tracking echocardiographic studies within 48 hours of the onset of chest pain and at 6 months follow up, Diagnostic coronary angiography followed by PCI. Blood sample for detection of the relative expression levels of serum miR-208a.

Results: Our results showed that miRNA 208a was significantly higher in patients with acute STEMI than age, sex and risk factor matched healthy volunteers, from the 1st hour after chest pain compared with control group. It also revealed that miRNA 208a expression is 100% sensitive and specific for the diagnosis of acute STEMI, with good correlation with cardiac troponin, this study showed that miRNA 208a can predict cardiac remodeling in 6 months follow up after acute STEMI, our study showed that among different echocardiographic data GLS can predict cardiac remodeling in patients with acute STEMI .

Conclusion: miRNA 208a is good biomarker for MI as it is early expressed in serum of AMI patients from 1st hour after chest pain with good correlation with cardiac troponin, miRNA 208a can be used as a predictor for myocardial remodeling after MI. Global systolic longitudinal strain have an important impact in LV remodeling following AMI.

Keywords: *Primary PCI, Myocardial infarction, myocardial remodeling, speckle tracking, miRNA 208.*

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Introduction

Myocardial infarction remains the first cause of death and disability in developed countries. Infarct size is the single most important predictor of adverse

ventricular remodeling and it is linearly dependent upon the amount of myocardial salvage by reperfusion ("time is muscle").[1] Irreversible ischemic injury begins within 15-20 min after the onset of severe ischemia. Irreversible injury is 80% complete within 3 hours of ischemia.[2] fibrotic changes after MI occurs in the infarct border zone and in the remote uninjured myocardium leads to altered chamber compliance and increased ventricular stiffness thereby compromising cardiac output.[3] The benefit of standard treatment as β-blockade and angiotensin-converting enzyme (ACE) inhibition in the acute phase after AMI and in the chronic phase of consequent development of heart failure due to LV remodeling are widely discussed but significant heterogeneity exists in the pharmacological benefits and prognostic outcomes to individual subjects.[4] The degree of inflammatory response varies according to individual response driven by genetic and epigenetic factors.[1]

MicroRNAs (miRNAs) are small non-coding RNAs ~22 nucleotides in length that function as guide molecules in RNA silencing targeting most protein-coding transcripts. The miR-208 family is composed of miR-208a, miR-208b and miR-499. It was found that miR-208a is exclusively expressed in the heart.[6]

miR-208a was undetectable in plasma from healthy people, non-coronary heart disease (CHD), or CHD people (patient with unstable angina), but it was elevated within 4 h after the onset of symptoms in 100 % of the MI patients while only in 85 % of these patients have a cTnT elevation.[7]

It was found that miR-208a can increase endoglin expression in cardiac myoblasts, Endoglin is a potent mediator of profibrotic effects of angiotensin II on cardiac fibroblasts, These data indicate that endoglin may play an important role in fibrogenesis in cardiac remodeling.[8]

Methodology: The present study was carried out at the cardiology department, faculty of medicine, Minia University and Minia Heart Center, Minia, Egypt. It was carried out in the period from June 2017 to December 2018. This study was conducted on 150 subjects divided into 2 groups. Group I consisted of 100 patients with acute myocardial infarction (MI), Group II consisted of 50 healthy volunteers. Patients with cardiomyopathies, congenital heart disease, atrial fibrillation and severe valvular diseases, Patients planning for CABG and Patients with severe chronic systemic diseases, cancer or severe wasting disorders were excluded.

Full clinical evaluation, Standard 12-lead electrocardiogram (ECG), Laboratory tests; including cardiac biomarkers, Two-dimensional, M-mode, Doppler and color Doppler, strain rate and speckle tracking echocardiographic studies; for group I Echo done within 48 hours of the onset of chest pain and at 6 months follow up, Diagnostic coronary angiography followed by PCI, Blood sample for detection of the relative expression levels of serum micro RNA-208 (miRNA-208) using real-time quantitative reverse transcription polymerase chain reaction (RT-qPCR). The timing of blood collection for the miRNAs analysis is within 2h in the emergency room after hospitalization[9]. The AMI patients were clinically diagnosed as the 3rd Universal Definition of Myocardial Infarction[10]. All samples were collected from consenting individuals according to protocols approved by the ethics committee.

As miRNA-208 is presented in two isoforms: miRNA-208a and miRNA-208b, human miR-208a is exclusively expressed in the heart whereas miR-208b is expressed in the heart and skeletal muscle [11], So our tests were carried out to detect miRNA-208a isoform.

Echocardiography: All AMI patients were examined using 2D echocardiography within 48–72 hours after the symptoms of AMI, using Philips IE 33 machine.

Standard 2D and color Doppler data were averaged from at least three consecutive beats. At baseline, 2D echocardiography was used to assess conventional parameters such LV end-systolic volume (LVESV), LV end-diastolic volume (LVEDV), LV ejection fraction (LVEF), wall motion and E/E' ratio. 2D speckle-tracking imaging analysis for evaluation of deformation parameters (global longitudinal strain) was also performed.

At six-month follow-up, 2D echocardiography was repeated to reassess all echocardiographic parameters. LV remodeling was defined as a ≥20% increase in LV end-diastolic volume (LVEDV) at six-month follow-up compared with the baseline.

Results

Study design, patient characteristics: A total of 100 AMI patients were enrolled for the study. The gender ratio was 85:15 (male: female). Another 50 healthy volunteers were recruited to provide a direct comparison of miRNA levels with AMI patients

There were no significant differences between the two groups regarding various clinical characteristics of patient group. (table 1)

Relative expression of miRNA 208a level was significantly higher in patients with AMI (165.91±17.57) than healthy controls (14.38±2.17), p <0.001 with cutoff value of 77 for miRNA 208a expression, is 100% sensitive and specific for the diagnosis of acute STEMI. (fig 1).

miRNA 208a was found to be expressed early in the plasma of patients with acute STEMI from the 1st hour after chest pain, earlier than cTnT.

Spearman's correlation coefficient was done to find the Correlation between miRNA 208a expression and cardiac troponins and showed a strong positive correlation; r: 0.886.

At follow-up, 39 patients (39%) were classified as having LV remodeling. miRNA 208a level was significantly higher in patients with LV remodeling (170.05±16.61) than in patients without LV remodeling (159.91±15.25), p-value 0.003.

In patient with no LV remodeling there was no significant difference as regard E.F, EDV, ESV at admission and sex months follow up but there was significant difference in GLS. On the other hand patients with LV remodeling show significant difference in LVEF, EDV, ESV but not GLS which is impaired all through after MI. (table 2)

Our results showed that LVESV, E.F and GLS, were all independent predictors of LV remodeling; the most powerful of which was GLS (p: .016, odds ratio 1.180) with cut off value of -10.5 GLS has a sensitivity of 79.5% and a specificity of 64.8 % for the prediction of LV remodeling with area under the curve 0.742.(fig 2)

Similarly miRNA 208a level, LVESV and E.F were all independent predictors of LV remodeling, the most powerful of which was miRNA 208a level (p: 0.001 and odds ratio 1.074), miRNA 208a has 64.1% sensitivity and 63% specificity for prediction of LV remodeling with cut-off value of 162.5 and area under the curve of 0.692.(fig 3).

	Patients N=100
Previous CAD: (n)	9(9%)
Serum creatinine	1.10±0.28
Cardiac troponin	211±81.41
Site of infarction:	
Anterior	58(58%)
Anteroseptal	12(12%)
Inferior	19(19%)
Inferior and right ventricular	11(11%)
Angiography & intervention:	
Primary	50(50%)
Rescue	50(50%)
Culprit artery:	
LAD	69(69%)
LCX	10(10%)
Ramus	1(1%)
RCA	20(20%)
Residual lesions: (n)	20 (20%)
Number of stents:	
1	82(82%)
2	13(13%)
3	3(3%)
4	2(2%)
Type of stent:	
BMS	37(37%)
DES	63(63%)
Time of test (mean ± SD); minutes	8.66±4.98
Fate: SCD	7(7%)
Killip class:	
1	80(80%)
2	9(9%)
3	5(5%)
4	6(6%)
Early complications:	
VF	5
First degree AVB	1
Shock	5
CHB	3
HF	12
VT	3
Late complications:	
ACS	2(2%)
HF	18(18%)
Remodeling (n= 93):	
Yes	39(41.9%)

(Table 1) shows various clinical characteristics of the patient's group. MUH: Minia university hospital, MHC: Minia heart center, LAD: left anterior descending, LCX: left circumflex, RCA: right coronary artery, DES: drug eluting stents, BMS: bermetal stents, SCD: sudden cardiac death, V.F: ventricular fibrillation, AVB: atrioventricular block, CHB: complete heart block, HF: heart failure, VT: ventricular tachycardia, ACS: acute coronary syndrome

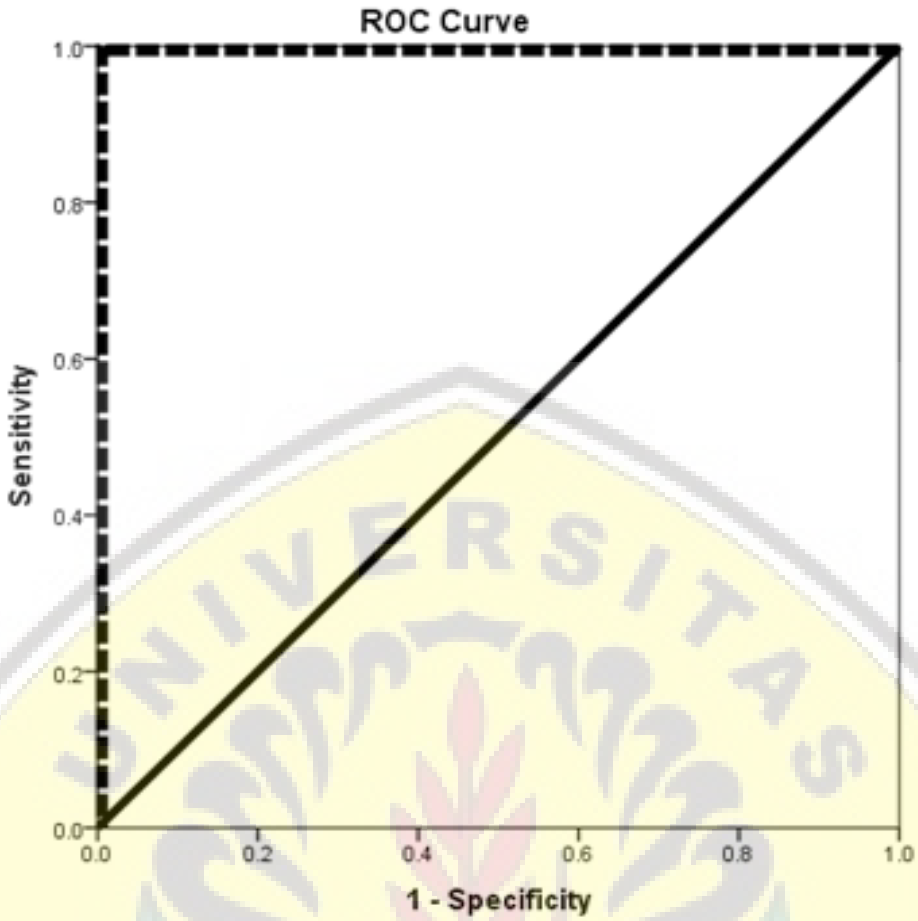

Fig. 1 Receiver operating characteristics (ROC) curves to assess the level of miRNA 208a.

Table 2: Differences in echocardiographic parameters at baseline vs. six months follow up.

	Cases with no LV remodeling			Cases with LV remodeling		
	At admission N=54	Six months follow up N=54	P-value	At admission N=39	Six months follow up N=39	P-value
	Mean ±SD	Mean ±SD		Mean ±SD	Mean ±SD	
EF	51.19±10.0	52.1±12.5	0.426	49.13±8.91	43.62±11.38	0.015
EDV	102.8±26.08	106.3±31.4	0.083	88.21±19.03	127.56±24.59	<0.001
ESV	52.63±22.79	53.6±29.5	0.573	47.59±14.00	70.54±24.96	<0.001
GLS	-10.20±4.56	-12.02±6.08	0.001	-7.87±4.28	-6.15±5.95	0.077
Mitral regurge: Mild Moderate Severe	 49(90.7%) 5(9.3%)	 50(92.6%) 3(5.6%) 1(1.9%)	0.998	 31(79.5%) 8(20.5%) 0(0%)	 23(59%) 15(38.5%) 1(2.6%)	0.007

EF: ejection fraction, EDV: end diastolic volume, ESV: end systolic volume, GLS: global longitudinal strain

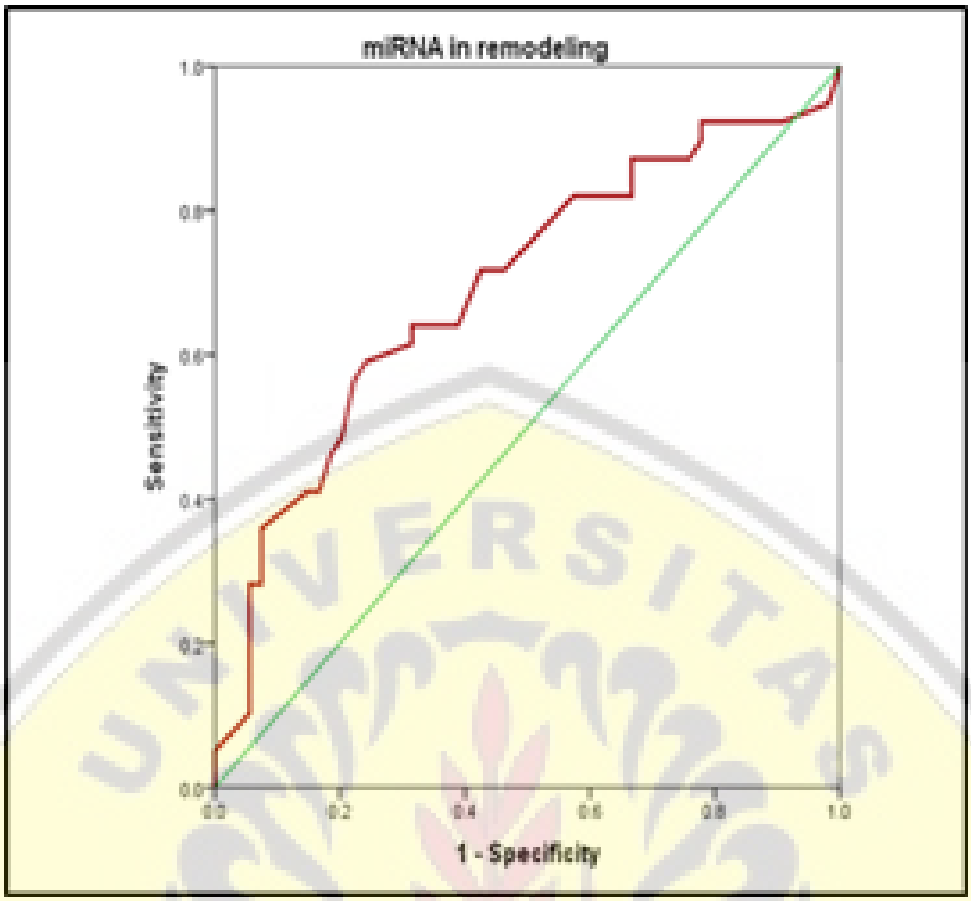

Fig. 2: Receiver operating characteristics (ROC) curve to asses GLS.

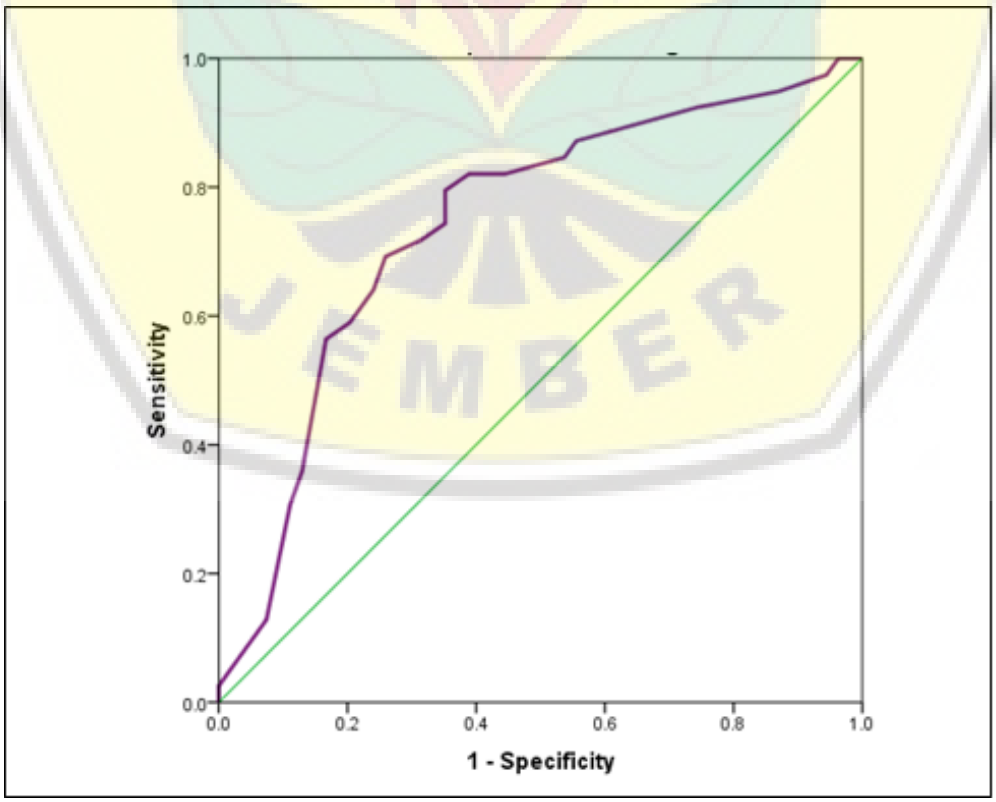

Fig. 3: Receiver operating characteristics (ROC) curve to asses miRNA level in patients with LV remodeling.

Discussion

As AMI is among the most important causes of death and illness, so early diagnosis is essential to maximize the effects of cardiac revascularization therapy, there is still a need for new biomarkers that are able to reduce time between the onset of MI and the actual therapeutic interventions. (7)

In this study we investigate the diagnostic and prognostic role of miRNA 208a in patients with AMI. We used RT-qPCR to determine the level of expression of miRNA 208a in 100 patients admitted with AMI and it was found that it was significantly higher in those patients than healthy volunteers and when we used fold change to express the difference between patients and control group it was (11.76±2.16) higher in patient than control group.

In our study miRNA 208a expression is 100% sensitive and specific for the diagnosis of acute STEMI.

miRNA 208a level was significantly higher in patients with LV remodeling than patients without LV remodeling with good correlations to cTnT high sensitive test, which is currently one of the main routine assays used to detect MI events.

LVEF has limitations for risk stratification after MI. To overcome these limitations, we used strain imaging modalities where strain measurement may reflect both the regional (infarct zone) and the global average myocardial deformation quantified by a software algorithm and seems to be more sensitive measurement of LV function.

Our study showed significant differences in GLS between LV remodeling group and non LV remodeling group and showed that the most powerful factor that can predict LV remodeling was GLS. Our study showed that the most powerful factor that can predict LV remodeling was miRNA 208a level.

Our results was concordant with other studies, in one study plasma miR-208a allow detecting acute MI with 90.9% sensitivity at 100% specificity, the best value compared with other cardiac miRNAs. This makes miR-208a as a profound diagnostic marker for earliest acute MI diagnosis. In addition, miR-208a is superior to cardiac troponin in specific diagnosis of acute MI in patients with kidney damage since heart troponins are excreted by kidney and their levels are frequently increased in subjects with chronic renal failure.(12)

Our results showed that miRNA 208a had good correlation with plasma troponin and this was consistent with other studies.(13)

Zaliaduonyte et al in 2014 suggest that LV remodeling was associated with more extensive inflammation process following AMI, this was concordant with our results that shows higher leukocyte count at admission in patients with LV remodeling than those without.(4)

Previous repeated studies showed that the major determinants of ventricular remodeling following AMI are the infarct size and the infarcted artery, enzymatic markers.(14), Results of our study do not contradict these data.

In Park et al. research, patients who showed significant LV remodeling during the follow-up had a significantly lower baseline strain and longitudinal strain >−10.2% was a strong independent predictor of LV remodeling. Differently from the Park study, we have enrolled patients with both anterior and inferior wall MI and our data also show a significant impact of longitudinal strain on LV remodeling prediction.(15)

Our findings was concordant with Zaliaduonyte et al. who enrolled patients with both anterior and inferior wall MI and data show a significant impact of longitudinal strain on LV remodeling prediction.(16)

Chistiakov et al mentioned that Overexpression of miR-208a in cardiomyocytes leads to abnormalities in cardiac rhythm and fibrosis.(12), this was concordant with our results that showed significant elevation of serum miRMA 208a in patients with LV remodeling.

Conclusions

miRNA 208a is good biomarker for MI as it is early expressed in serum of AMI patients from 1st hour after chest pain with good correlation with cardiac troponin, miRNA 208a can be used as a predictor for myocardial remodeling after MI. impaired LV function and reduced global systolic longitudinal strain have an important impact in LV remodeling following AMI.

Limitations: The main limitation of our study was a relatively small sample size, Relatively expensive miRNA extraction and detection kits, some bias in strain evaluation because of image quality inaccuracy may be present.

The Institutional Ethics Committee approved this

study of the School of Medicine, Minia University, Egypt and all patients gave informed consent before participation in this study. The study conducted in accordance with the ethical guidelines of the 1975 Declaration of Helsinki and International Conference on Harmonization Guidelines for Good Clinical Practice.

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Effect of Initial Therapy on TGF-β1 Protein Levels in Gingival Crevicular Fluid (GCF) of Chronic Gingivitis Patients

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Abstract

Gingivitis is a process of inflammation of the periodontal tissue which is confined to the gingiva characterized by hiperemi, swelling, tendency to bleeding in the gingiva. Local causes include plaque deposits and calculus. initial therapy aims to prevent more severe periodontal inflammation. Research purposes to determine the effect of initial therapy on TGF-β1 protein levels in GCF in patients with chronic gingivitis. The type of research was observational analytic on TGF- β1 protein levels in chronic gingivitis patients, carried out on 10 samples that were controlled 2 times after initial treatment in the form of scaling and root planning in patients with chronic gingivitis.

Research Result: The average level of TGF- β1 protein during pre-therapy was 1081.55 pg/ml, when observation 1 decreased by 599.67 pg/ml and when the second observation increased 957.12 pg/ml, the results of the paired T test obtained a value of $p < 0.05$.

Conclusion: Decreased levels of TGF- β1 protein in GCF of chronic gingivitis patients after initial therapy for severe gingivitis.

Keyword: *Chronic gingivitis, initial therapy, GCF, TGF-β1.*

Introduction

Periodontal tissue is a teeth supporting tissue, consists of gingiva, cementum, periodontal ligament and alveolar bone. Abnormalities could be occured in this tissue due to interaction of host factors, microbes and environment such as gingivitis. Gingivitis is an inflammation of the gingival tissue.[1]

According to data from National Basic Health Research Indonesia (RISKESDAS) in 2013, the national prevalence of dental and oral problems in Indonesia is 25.9%, as many as 14 provinces have a prevalence of dental and oral problems above the national level.[2]

Periodontal disease is an inflammatory process that involves the progressive, episodic loss of the periodontal attachment apparatus, which in turn causes tooth loss in vulnerable patients. Based on data from the National Health and Nutrition Examination Survey III (NHANES III) in 1999-2004, Eke and Barker estimated that the prevalence of moderate and severe periodontal disease was less than 1% in the age group below 35%, with increased prevalence in elder age groups. At the age of 75 years or older, it is estimated that the prevalence in the United States is approximately 18% for moderate periodontitis and 7% for severe periodontitis.[3]

Gingivitis occurs due to inadequate oral health which is usually characterized by redness, swelling and

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a tendency to bleeding in the gingiva. The local causes including the occurrence of gingivitis such as plaque and calculus deposits on the tooth surface, impacted food, cavities and inappropriate fillings.[4]

In Indonesia, gingivitis were in second rank, reaching 96.58%. In children, gingivitis does not occur as severely as adult gingivitis. Bacterial plaques in children usually consist of pathogens with low concentration. However, if gingivitis in children is left without good and correct treatment, it can cause periodontitis.[4]

Periodontal disease is multifactorial. When microbial factors and other environmental factors are believed to start and modulate the development of periodontal disease. Genetic and technological information that is needed to predict, diagnose and treat periodontal disease conceptually interesting to explore. Some important components such as cytokines, cell receptors, chemokines, enzymes and others are related to the introduction of antigens, immune systems, host responses. Among others, it is determined by the genetic component where polymorphism is likely to increase an individual's susceptibility to periodontal disease. Gene identification and polymorphism can produce new diagnostics for risk checking, early detection of disease and individual treatment approaches. Thus, genetic epidemiology, include knowledge about genetic polymorphisms can be very promising as a tool that can contribute to the understanding of the pathogenesis of periodontal disease.[5]

This study is considered necessary because every disease in the periodontal tissue, initial therapy is carried out, namely scaling and root planing. This treatment is included in the initial therapy phase. The main goal of early treatment for gingivitis is to prevent more severe inflammation in periodontal tissues so that the prevalence and incidence of periodontitis is reduced. One of the cellular component such as monocytes in the Gingival Crevicular Fluid (GCF) is TGF-β1. In previous studies cellular components molecularly have not been widely studied, especially in gingivitis. The cellular component of TGF-β1 in gingivitis plays a role in balancing the pro-inflammatory and anti-inflammatory cellular components to help the tissue healing process. Analysis of the TGF-β1 gene cytokine in the GCF also needs to be studied in the process of tissue healing after SRP treatment so that it can be used as a marker of gingivitis severity.

Based on this description, the authors are interested in conducting a study on "The Effects of Initial Therapy on TGF-β1 Protein Levels in Gingival Crevicular Fluid (GCF) of Chronic Gingivitis Patients "

Materials and Method

The research was conducted at the Laboratory of Molecular Biology and Immunology and the Microbiology Laboratory of the Faculty of Medicine, Hasanuddin University. This type of research was observational analytic with a pre-test and post-test, prospective cohort study design.

The study population was all patients who wished to have their teeth examined and treated at the AG Dental Care Clinic in South Sulawesi, Indonesia with gingival inflammation and diagnosed with chronic gingivitis that in accordance with the inclusion criteria. The sampling technique used was purposive sampling and number of samples determination was based on the Wilcoxon Signed Rank Test table as many as 10 samples prior to treatment conducted by a single cohort, there was no comparison (prospective cohort observation).

Gingival status is measured using the gingival index:

Score 0: normal gingiva (no inflammation, no discoloration and no inflammation)

Score 1: Mild inflammation (there is a slight change in color and a little edema but no bleeding on probing)

Score 2: Moderate inflammation (redness, edema and bleeding on probing)

Score 3: Severe inflammation (bright red or bright red, edema, ulceration, tendency for spontaneous bleeding).

All dental scores are summed and divided by the number of examined teeth, a person's gingival index score will be obtained.

Criteria for gingival assessment:

Healthy	: 0
Mild inflammation	: 0.1-1.0
Moderate inflammation	: 1.1-2.0
Severe inflammation	: 2.1-3.0

Examination of the gingival index is done by whether there is bleeding or not in the examined teeth, ie in teeth 16, 11,26 and 46,31,36.

Data collection was done by taking patient's gingival crevicular fluid (GCF) before initial therapy and having the first control after initial treatment such as scaling and root planing on day 7 and second control on day 21 and then examining TGF-β1 gene expression, TGF-β1levels and examination of bacteria found on plaques in the molecular biology laboratory, immunology and microbiology of the Faculty of Medicine, Unhas, Makassar. GCF was taken in the gingival sulcus area using a paper point to examine TGF-β1 protein levels (ELISA technique).

Results

Table 1: Description and Test for Normality of expression of TGF-β1 protein levels

	N	Mean ± SD	P
Pre-therapy	10	1081.5 5±44.98	0.908
Observation 1		599.67±65.30	0.458
Observation 2		957.12±151.85	0.412

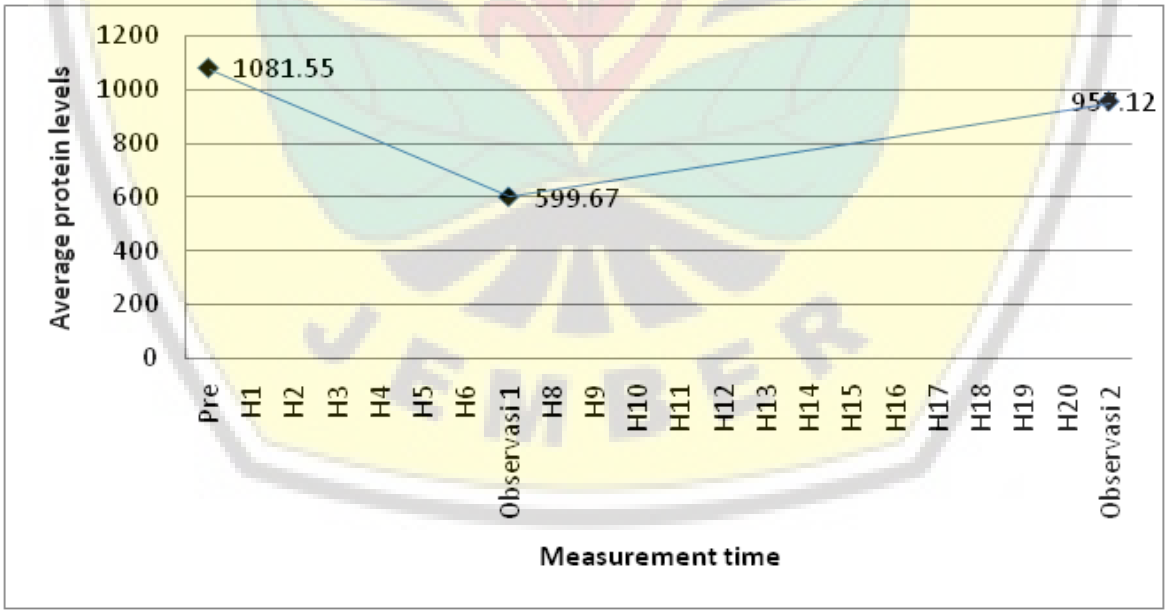
Source: Primary Data

Table 1 shows the average of TGF-β1 protein level at pre-therapy was 1081.55 pg/ml, when observation 1 decreased by 599.67 pg/ml and at observation 2 it increased to 957.12 pg/ml. The results of the Shapiro-Wilk statistical test show that the p value of each data group is> 0.05. These results indicate that the distribution of data is normally distributed, so that Paired T Test can be carried out.

Table 2: The effect of giving initial therapy is scaling and root planing on TGF-β1 protein levels in patients with chronic gingivitis

Paired T Test	n	Mean Differences	P
Pretherapy–Observation 1	10	481,88	0,000
Pretherapy–Observation 2		124.43	0.027
Observation 1–Observation 2		357.45	0,000

Table 2 shows the results of the paired t test obtained p value <0.05, which means that there is an effect of initial therapy given in the form of scaling and root planing to decrease TGF-β1 protein levels in patients with chronic gingivitis. Fluctuations in changes of protein levels of TGF-β1 gene mRNA expression can be seen in the following figure:



Graph 1: Average TGF-β1 protein levels

Discussion

There is also the effect of initial therapy given in the form of scaling and root planing on TGF-β1 protein levels in chronic gingivitis patients with average TGF-β1 protein level at pre-therapy was 1081.55 pg/ml, while observation 1 decreased by 599.67 pg/ml and when observation 2 increased to 957.12 pg/ml. The results of paired t test obtained p value <0.05, which means that

there was the effect of initial therapy given in the form of scaling and root planing on the decreased of TGF-β1 protein levels in patients with chronic gingivitis.

In humans, TGF-β1 levels vary between 49 and 868.6 ng/ml and correlate with probing depth. High TGF-β1 levels (73-1076 ng/ml) were detected in GCF samples from beagle dogs with experimental periodontitis. The second study found that TGF-β1 levels in gingivitis patients (395.4 pg/sample; 899.2 ng/ml) were higher than those seen in healthy controls (303.7 pg/sample; 2634 ng/ml) while theyhad lower concentrations. Buduneli et al., who found TGF-β1 levels in the healthy control GCF were 177 times higher than those reported in this study. TGF-β1 levels in GCF of healthy samples using ELISA range in 0.3-2.4 pg samples and 2-18.2 ng/ml and 0-2.8 pg samples and 0-6.8 ng/ml using those reported for control samples in this study. The results showed that TGF-β1 levels increased at the beginning of the inflammation process (day 7).[6]

This study is in line with the research conducted by Shaimaa et al in 2015 which proved a significant increase in TGF-β1 in the chronic periodontitis group. Similar findings were recorded in a study conducted by Sattari et al. and Vikram et al., who measured TGF-β1 levels in GCF of patients with chronic periodontitis before and after treatment, then showed that TGF-β1 levels were reduced after surgery.[7]

This study is in line with a study conducted by Sidney H. Stein in 2004 reported that the average of TGF-β1 level in GCF was higher in smokers compared to nonsmokers (P <0.03). (Stein, Sidney H, 2004) This study is in line with the research conducted by Alpagot, the average of TGF-β1 from heavy smokers was significantly higher than the average of TGF-β1 in moderate smokers (P <0.0037) and pack year correlated positively with TGF-β1, probing depth, attachment loss and viral load at baseline and 6-month visits (P <0.001). Smoking correlated negatively with CD4 cell count at baseline and 6-month visit (P <0.001). [8]

The results of this study is in line with research conducted by Ali Gurkan in 2005 showing that TGF-β1 levels were seen to be higher in gingival tissue and GCF in the inflammatory area when compared to healthy areas. In this study, it was shown that all groups had almost the same total TGF-β1 GCF at the baseline. With consideration there were anti-inflammatory role of TGF-β1, then a very high cytokine levels can be expected due to the collected sampling area is severe and inflamed areas. Therefore, it can be hypothesized that the collected GCF samples of studied group from the areaswith active disease in which there is an imbalance between anti-inflammatory and destructive factor. However, when the data is expressed as the concentration, the healthy group had higher TGF-β1 GCF levels compared with the placebo group and SDD (subantimicrobial dose doxycycline).Results from the study indicate that SDD supportive therapy improves clinical parameters and increases TGF-β1 GCF levels in patients with severe,generalized chronic periodontitis. The beneficial effects of SDD can be obtained after the end of treatment.[9]

This research supported the research conducted by Lilies AA*et al* concluded that the RT-PCR examination using TGF-β1 primary Macrogen to found TGF-β1 gene expression with results before gingivectomy and SRP treatment of 9.72121. A week after gingivectomy and SRP treatment decreased to 4.10328, three weeks after gingivectomy and SRP treatment rebound to 9,7010. The expression of the TGF-β gene decresed on the seventh day after gingivectomy and SRP treatment and increased again on the 21st day and the TGF-β1 gene here acted as an anti-inflammatory.[10]

Conclusions and Suggestions

Conclusion: There were decrease in TGF-β1 protein levels in GCF of chronic gingivitis patients after initial therapy for severe gingivitis.

Suggestion:

As for suggestions for further research, such as:

1. It is necessary to examine other cytokines such as IL5, IL8 and IL11 which play a role in the pathogenesis of gingivitis.
2. Examination of the TGF-β1 gene mRNA is needed for curettage treatment in the gingival pocket of gingivitis cases.
3. Examination of TGF-β1 protein levels is needed for curettage treatment in the gingival pocket of gingivitis cases.
4. Comparison of other gingivitis cases is needed so that some predisposing genetic factors that causes gingivitis can be obtained.
5. Comparison of healthy gingival samples is needed so that the normal values contained in the GCF are

obtained.

6. Variation of treatment given for sample is needed such as conventional medicine or herbal extracts that have been tested in humans.
7. More samples are needed to see the polymorphism of gingivitis.

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Sexuality Awareness of Women During Pregnancy

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Abstract

The aim of the study was to find out the women's sexuality awareness during pregnancy. *The research was designed as a quantitative cross-sectional study.* To collect the relevant data, a self-constructed questionnaire was developed. The participants were 242 pregnant women in an average age 28.07 ± 5.13 years. The results were evaluated using descriptive statistics and the chi-squared test. Most women (61.98%) have expressed awareness of sexuality during pregnancy, but only 40.08% have provided sufficient information when determining the level of awareness, which has also been shown in their knowledge. There was no statistical significance between parity and awareness. Primary healthcare education (by gynecologists, midwives), which has proven desirable and inadequate, needs to be strengthened and enhanced. Proper awareness can contribute to a better quality of life for pregnant women, which also includes the sphere of sexuality.

Keywords: *Sexuality, Pregnancy, Pregnant women, Awareness, Midwife.*

Introduction

Sexuality is an integral part of the individual as well as the whole, formed by the close connection of its biological, psychological and socio-cultural dimensions. Sexuality is an important part of the health, but also of one's general well-being[1]. Pregnancy is a period that requires management of important life events such as physical and psychosocial changes[2], it calls for new forms of balance with regard to hormonal changes that affect both physical and emotional dimensions. One of the dimensions that can be affected is also sexuality.[3] In some women, the period of pregnancy changes their sexual behaviour; it affects quality of life and their partner coexistence[4,5].

In pregnant women, sexual dysfunction has a high prevalence[6]. The reason may be that this issue is taboo and women's concerns are unnecessarily raised by various irrelevant recommendations and prohibitions. It is assumed that in women with physiological pregnancy, despite changes in their body resulting from the pregnancy process, sexual intercourse is possible for the entire duration of pregnancy without risk to the mother and foetus, as long as hygiene requirements are maintained and woman's desire is a determining factor. [7,8] Adequate sexual activity poses no danger to physiologically active pregnancy. Sexual satisfaction improves the self-esteem of pregnant women, facilitates mutual relationship between partners and strengthens their marriage[9]. Pregnant women need to learn more about this topic, however, in this period, their awareness and support are yet inadequate.[4]

Raising awareness and counselling on sexuality should be a part of the prenatal care, in order to help couples maintain an intimate relationship and a healthy, positive sexual life[10] and thus improve the quality of care for pregnant women[6].

The aim of the study was to find out the women's sexuality awareness during pregnancy.

Research Methodology

The research was designed as a quantitative cross-sectional study. The research data were collected in five gynaecological outpatient clinics. The research sample consisted of 242 respondents with a mean age of 28.07 years (SD ± 5.13 years). The purposive sampling technique was used in the research. Pre-determined inclusion criteria were a current pregnancy and an informed consent of a participant for the research study. From the point of view of the period of pregnancy by

trimesters, 6.20% were in first trimester, 29.75% in the second trimester and the majority, 64.05% in the third trimester. Within the research sample, 62.81% were the primiparous women, 27.27% were the secundiparous and 9.92% were the multiparous. Most respondents (55.37%) finished the secondary education, 43.80% the higher education and 0.83% primary education (table 1).

To collect the relevant data, a self-constructed questionnaire was developed. It was based on literature survey and focused on the research areas regarding awareness, knowledge, concerns and changes related to sexuality during pregnancy.These research areas were examined in accordance with the variable criteria (age, trimester, parity). However, we present only the partial results of the research study. Statistical functions within MS Excel 2000 and IBM SPSS 22.0 – descriptive statistics and the chi-squared test (X^2) were used for statistical data processing.

The clarity of the questionnaire was verified by a pilot study with 5 pregnant women using a group interview method. Based on the piloting, the problematic formulations of a formal and stylistic character were modified. The study was approved by the Ethical Commission of the Žilina Self-Governing Region. A combined method of administering questionnaires was chosen in five gynaecological outpatient clinics. The choice of the outpatient clinics was determined by their availability and also by the obtained consent of their gynaecologists. Pregnant women attending the prenatal counselling were addressed personally. Once the informed consent was signed, they were instructed how to complete the questionnaire. The questionnaire could be completed in a printed form or electronically via a given e-link, sent to the e-mail addresses of the respondents, if required. The questionnaires were completely the same for both printed and electronic form. 87 questionnaires were distributed personally, reaching 80.5% of responsiveness ($n = 70$) and 200 questionnaires were sent electronically to e-mail addresses, reaching 86.5% of responsiveness ($n = 173$). Total responsiveness was 84% ($n = 287$). The research data collection was conducted between September 2015 and January 2017.

Results

Table 1: Basic characteristic of participants

Characteristic (n=242)	n (%)
Age	
18 – 25years old	78 (32.23%)
26 – 35years old	137 (56.61%)
36 - 45 years old	27 (11.15%)
Education	
University education	106 (43.80%)
Secondary school education	134 (55.37%)
Primary education	2 (0.83%)
Parity	
Primiparous	152 (62.81%)
Secundiparous	66 (27.27%)
Multiparous	24 (9.92%)
Trimester	
1st trimester	15 (6.20%)
2st trimester	72 (29.75%)
3st trimester	155 (64.05%)

Table 2: Level of awareness and parity

	Overall Awareness		Parity						(X^2)	p
			Primiparous		Secundiparous		Multiparous			
	n	%	n	%	n	%	n	%		
Fully sufficient	97	40.08	59	38.81	26	39.39	12	50.00	9.155	0,907
Partially sufficient	79	32.64	46	30.26	24	36.36	9	37.5		
Somewhat insufficient	26	10.74	19	12.5	7	10.60	0	0.,00		
Absolutely insufficient	22	9.09	17	11.18	3	4.55	2	8.33		
I have no information	18	7.43	11	7.23	6	9.09	1	4.17		
Total sample	242	100	152	100	66	100	24	100		

X^2–a chi-squared test; p–significance level ($p<0.05$).

150 (61.98%) respondents reported to have been informed on women's sexuality and intimate relationship during

pregnancy, whereas 92 (38.02%) women expressed to lack the information. Therefore, we further surveyed sufficiency of this information.

40.08% of respondents reported to have received fully sufficient information on this topic and 32.64% stated to be partially informed. 7.43% of pregnant women expressed to have no information and absolutely insufficient information reported 9.09% of surveyed respondents.

Level of awareness and parity: The best awareness of women's sexuality and intimate relationship during pregnancy had multiparous women (overall awareness was in 50.00% respondents fully sufficient, in 37.5% partially sufficient), then the secundiparous (39.39% had fully sufficient information, 36.36% had partially sufficient information) and the least aware of this issue were the primiparous (38.81% had fully sufficient information and 30.26% had partially sufficient information).

The significance level p <0.05 showed no statistical significance (Chi2=9,155; p=0,907) between the parity and the level of sexuality awareness during pregnancy.

In order to verify adequate awareness, we examined women's knowledge of the issue of sexuality during pregnancy.

Table 3: Suitability of sexual intercourse during pregnancy

Answer	n	%
1st trimester	28	11.57
2st trimester	68	28.10
3st trimester	13	5.37
It is not possible during pregnancy	4	1.65
It is possible during the entire pregnancy	129	53.31

Only half of the respondents (53.31%) stated the correct answer that sexual intercourse is possible throughout the entire pregnancy. The second most frequent answer was that the intercourse is acceptable in the second trimester (what said 28.10% of respondents), then in the first trimester (expressed by 11.57% of respondents) and the least common answer was the third trimester (5.37% of respondents). However, there were also women (1.65%), who think the sexual intercourse is not possible during the whole pregnancy.

For further evaluation of knowledge, we asked the women, when is the sexual intercourse unsuitable during pregnancy. In this question, the respondents had the option to mark multiple answers. In total, they marked 973 (100%) answers. The most frequent concerns that women expressed regarding sexual intercourse were fear of preterm labour or miscarriage 225 (23.12%), infection or discharge 201 (20.66%), any kind of genital bleeding 196 (20.14%), cervix dilation 142 (14.59%) and placenta praevia 85 (8.73%). All answers may be considered as correct, however, several respondents marked also incorrect answers as: the last weeks before the labour 42 (4.32%), haemorrhoids 23 (2.36%), gestational diabetes 13 (1.34%), varices 8 (0.82%), anaemia 7 (0.72%). When asked whether it is necessary to use contraceptive method during sexual intercourse, up to 28 (11.57%) respondents stated their consent.

We surveyed whether the pregnant women **are interested in information on sexuality in pregnancy**. Majority of respondents (78.10%) expressed their interest in information on female sexuality and intimate relationship during pregnancy, whereas 21.90% of respondents didn't show their interest.

We also asked about **preferred sources of information** about the issue. In this question, respondents had the option to mark multiple answers. Altogether, they marked 412 (100%) of answers. Most often they wanted to be informed about the issue of sexuality in pregnancy by their gynaecologist 171 (41.50%), information brochure 83 (20.15%), midwife 72 (17.48%) and internet 68 (16.50%).

We were interested in the awareness of the issue of sexuality in pregnancy by gynaecologist/and midwife. 106 (43.80%) respondents were informed about this issue by gynaecologists/midwives and 137 (56.61%) respondents were not informed.

Discussion

In the study, Kouakou et al.[11] indicated that inadequate awareness and prejudice about sexuality in pregnancy have a negative impact on sexual life during pregnancy. Our study brought up that even though the majority of women (61.98%) admitted to be informed on women's sexuality and intimate relationship during pregnancy, it shall not be satisfactory enough for us, as the fully sufficient level of awareness expressed only 40.08% of women. Thus, the majority of respondents were either partially or insufficiently informed about the issue (tab. 2). The best informed about women's

sexuality and intimate relationship during pregnancy were multiparous women, then the secundiparous and the least informed about this issue were the primiparous women, although no statistically significant differences based on parity were demonstrated (tab. 2). Since the knowledge evaluation was of a subjective character, we also focused on the detection and assessment of awareness based on women's knowledge. We can state that in some respondents, the knowledge was inaccurate or distorted. Only half of the women answered correctly that it is possible to have sexual intercourse during the whole duration of pregnancy. Some respondents (1.65%) even thought that it was impossible to have sex in pregnancy at all. Despite the identified lack of knowledge, the findings were still more positive, when compared to another study with shown 18% of women having the same opinion[4]. In 11.57% of women the awareness was significantly low, as they said it was still necessary to use contraceptive method during sexual intercourse in pregnancy. The positive thing is that the majority of women expressed their interest in information on women's sexuality and intimate relationship during pregnancy. As sources of information on this issue the respondents preferred mainly gynaecologist, information brochure, midwife and internet. However, the internet is not always a trustworthy source, as many times the published information come solely from experiences of other women and are not based on professional opinions. According to findings, only 29% of women discusses the sexual issues with their doctors[12]. In our study we found that less than half of women (43.80%) were informed on the topic of sexuality in pregnancy by their gynaecologist/midwife. Revealing the problem of women being insufficiently informed by gynaecologists/ midwives ought to lead to solution and correction. Similar results of insufficient informing on this issue by health professionals (gynaecologists/midwives) were found also in other studies[4, 9, 13]. Authors of these studies emphasize how important is to provide consultations on sexuality in pregnancy by health professionals within the scope of prenatal care services. According to Paulet et al.[14], the discussion on the expected changes in sexuality during pregnancy should be routinely performed by doctors and midwives to improve the perception of sexuality in pregnancy. The health professionals should inform on sexuality each pregnant woman and not only those, who express their interest in this subject matter. Some women, due to their shyness, are unable to talk about this issue or hesitate to ask doctor or midwife for advice or information. The lack of awareness and lack of adequate information on sexuality in pregnancy raises unnecessary concerns about the potential negative obstetric outcomes, leading to prevention of sexual activity during pregnancy[15]. Accurate counselling of partners about sexuality during pregnancy can help to reduce concerns and thereby reduce the high level of female sexual dysfunction[16]. Midwives/nurses need to draw attention to the needs of pregnant women, listen to their concerns, difficulties, identify their knowledge, including the intimate area of sexuality during pregnancy and contribute to their awareness, or at least facilitate their access to the necessary information. Several studies from the various branches of medicine have demonstrated the substantial importance of informative counselling by health professionals[17,18,19].

The above-mentioned results and findings should be considered within the scope of the limitations of our research. In our case, the limitation is presented by a deliberate choice of the respondents and as a result the conclusions can be interpreted only within this selected research sample group. Further limitations of the research could be an uneven structure and composition of the sample group when comparing awareness by parity. As a result, the presented research study can be considered as only partial and might serve as a starting point for another, more extensive research on this subject. Despite these limitations, we believe that our research study has brought some constructive and challenging results.

Conclusion

In our work we wanted to point out the importance of informing women about the issue of sexuality during pregnancy. We found that most women subjectively felt informed about the issue, but the level of this information was not sufficient and the knowledge resulting from the information was distorted and inaccurate. We see the contribution of our work in revealing the need to improve awareness of this issue and to increase and enhance the education of women about sexuality during pregnancy in primary healthcare by trustworthy healthcare professionals. Midwives should be the main source of information and thus contribute to the health-related quality of life of pregnant women, including their sexual life during pregnancy.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: The study was approved by the Ethical Commission of the Žilina Self-Governing Region (Slovak Republic). All participants received full information about the nature and goals of the research, as well as about the details connected with their involvement in the study. The data collection was anonymous and all participants expressed their willingness to be included in the study, attaching their informed consent.

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Barriers in Utilization of Public Health Services by Elderly Slum Dwellers in Jaipur City

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Abstract

Background: Slum population in India is increasing with urbanization and even after various efforts of Government and NGOs, slum dwellers remains deprived of basic services for quality of life. Getting health services by elderly slum dwellers is also a challenging task.

Objective: The aim of this study was to find out the major barrier perceived by elderly slum dwellers in utilization of Health services. Methodology*:* 125 elderly aged 60 and above were randomly selected from Jawahar Nagar Urban slum of Jaipur, Rajasthan. Structured interview schedules were developed, field tested and used to interview elderly slum dwellers. Result*:* 84% of the elderly respondents were aware of the nearby government health facilities; data indicates that unaware elderly did not access any public health care facility. unawareness is a barrier in accessibility of health services. 78.26 percent elderly were aware about the free treatment facility available at government health centers but unaware elderly have not accessed any public health care facility. It was found that maximum waiting time of more than 60 minutes was for those who visited public hospital. 77.6% elderly did not have free health care card mostly due to unawareness. Other barriers to access of health care were Behavior of service providers (88.3%), Distance from home (64.7%), Transport facility (82.4%), Amenities at the health facility (88.3%) and Convenience for attendants (88.3%).Conclusions*: Major barrier identified by elderly slum dwellers in utilization of Health services are* Availability of service provider, cost, timeliness, ease of access, behavior of service provider and coverage through insurance or beneficiary schemes.

Keywords: *Utilization, Barrier, Health Services, Slum dwellers.*

Introduction

The well-being of senior citizens (Old age population as defined by WHO is - population aged 60 years and above) is mandated in the Constitution of India under Article 41- "The state shall, within the limits of its economic capacity and development, make effective provision for securing the right to public assistance in cases of old age". Item No. 9 of the State List and item 20, 23 and 24 of Concurrent List relates to old age pension, social security and social insurance and economic and social planning[1].

India is in a phase of demographic transition. There has been a sharp increase in the number of elderly persons between 1991 and 2001. It has been projected that by the year 2050, the number of elderly people would rise to about 324 million. India has thus acquired the label of "an ageing nation". The elderly as per the 2001 census were 7, 66, 22,321 i.e. 7.5% of total population; out of which aged males were 37, 768, 327 i.e. 7.1% of total population and the aged females were 38, 853, 994 i.e. 7.8% of total population[2]. One of the main social effects of extension of life in later years is the extended period of widowhood for women (Ingle GK, Nath A).[3]

WHO (2004)[4] reported that despite the critical role that PHC centers play in older persons' health and well-being, older people encounter many barriers to care such as the unavailability or expensive transportation, waiting in long line in uncomfortable settings, becoming discouraged from seeking and continuing treatment and so on. Barriers to accessibility may be assessed on following parameters: Availability of health services

Cost of care, Timeliness and easy initiation of services, Behavior of service providers and Insurance coverage/ free health care schemes. This study is an overview of the situation and perception of elderly slum dwellers on barriers in accessing health services.

Methodology

Study Design:

- This was a Cross sectional study
- The Unit of study was an elderly slum dweller

Study Area:

- Jawahar Nagar Urban slum (JNUS), Jaipur city

Study Population: There are around 65000[4] slum dwellers in Jawahar Nagar Urban Slum (JNUS) of which 7.5% are in the age group of 60 and above. So there should be around 4875 old people. However, over 80% families are nuclear thus the older population in JNUS is around 975 approximately.

Sample size and technique: There are 7 sectors in JNUS. Out of these 7 sites approximately 15-16 elderly from each site were selected (Total 125) using a method similar to snowball technique and with the help of local social workers.

Data Collection: Data collection was done through using a pretested interview schedule and started from 10th April till 3rd May 2012.

Tools:

- Interview schedules
- Semi-structured interview schedules
- Facilitator guide for FGD

Data Analysis: Data collected through interview schedules was analyzed with SPSS computer software. The Findings of FGD were related with the finding from the analysis of quantitative data.

Results

73.6%respondents were in the age group of 60-70 and 20.8%. were in the age group of 71-80. Only 1.6% of the respondents were in the age group of 91-100. The respondents were randomly selected among the elderly population in the study area. Females outnumbered males with 56.8% as compared to males with only 43.2%. All respondents were married, however 28.8% of women were widow (51% of total women respondents). It was found that 78.4% of the respondents were illiterate and 12.0% have done school education up to primary level whereas just 0.8% have done up to senior secondary level. So far as the occupation of the elderly slum population is concerned, it was found that majority of them, about 54.4%, were dependent on others as they have 'no work' for them followed by 21.6% daily labourers. Only 8.0% were retired government employees. Also 4.8% of respondents were found to be beggars.

Awareness about nearby public health facilities: It is on the assumption that awareness about public health facility nearby would affect utilization of health services. In this study, it is found that about 84% of the elderly respondents were aware of the nearby government health facilities (Fig. 1).

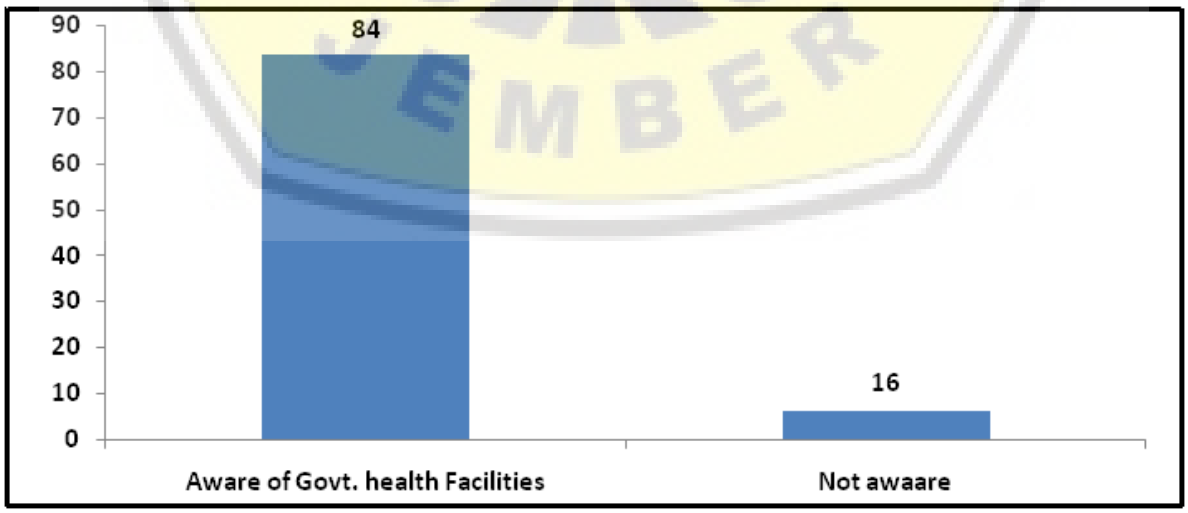
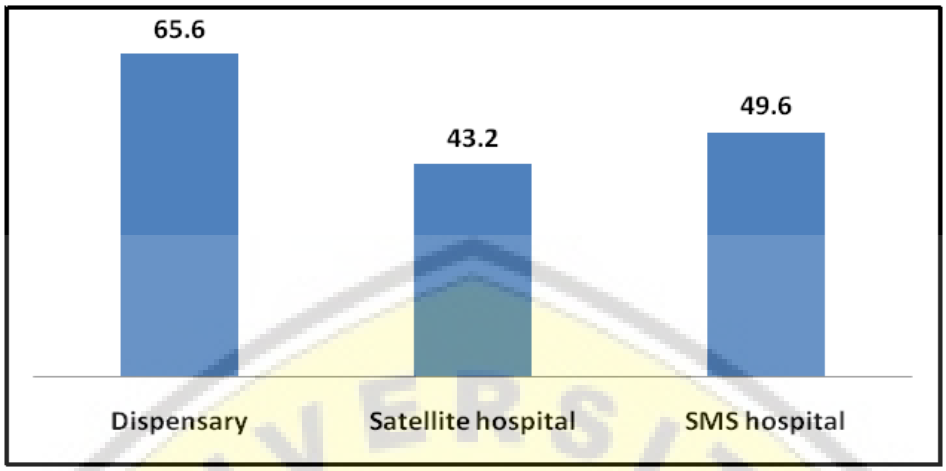


Fig. 1: Percent of Elderly Slum Dwellers According to Awareness of the Nearby Government Health Facility (n=125)

The awareness about various type of nearby government health facilities was also assessed. It is found that 65.6% were aware of Dispensary, followed by 49.6% for SMS Hospital and only 43.2% were aware of Satellite Hospital (Figure 2).



*Multiple responses hence sum of percentage is not equal to 100

Figure 2: Percentage of Elderly Slum Dwellers according to Awareness about Type of Govt. Health Facilities (n=115)*

The table 1 indicates that unaware elderly have not accessed any public health care facility. Thus it is evident that unawareness is a barrier in accessibility of health services.

Table 1: Percentage of Utilization of Various Health Facilities by Unaware Elderly Slum Dwellers (n=20)*

Type of facility	Minor illness	Major Illness	Emergency
Public	0	0	0
Pvt. Hospital	50.0	83.3	75.0
Pvt. clinic	41.7	16.7	8.3
UMP	25.0	00	00
Chemist shop	41.7	00	00
Call doctor at home	8.3	8.3	8.3

*Multiple responses hence sum of percentage is not equal to 100

Awareness about 108 ambulance and free treatment services: 108 ambulance services are considered to be very popular in Rajasthan in providing transportation to the consumers during emergency health situations. We tried to capture opinion of the elderly slum dwellers about the utility of these services. We found only 52.17% elderly aware of the 108 ambulance services (Table 2). However, this doesn't mean that their family members are also not aware of such a service, yet the utilization rate of 108 ambulance services explains the reason behind low level of awareness. The utilization of 108 ambulance services was found to be zero among the elderly slum dwellers. Because of zero utilization rate even by those who were aware, rest of them hardly need to be aware of these services.

Table 2: Percent of Elderly Slum Dwellers According to Awareness & Utilization of 108 Ambulance Services

108 Services	Percent (n=115)
Aware about 108 services	52.17
Not aware about 108 services	47.83
Utilizing 108 services	Nil

Awareness about free treatment at public health facility: We also tried to gather their opinion about free treatment services available at the government health facilities. It can be seen from the figure 3 below that 78.26% elderly were aware about the free treatment facility available at government health centers. This

could be due to low education level among the elderly slum dwellers. Besides, this could also be due to low utilization of government health facilities.

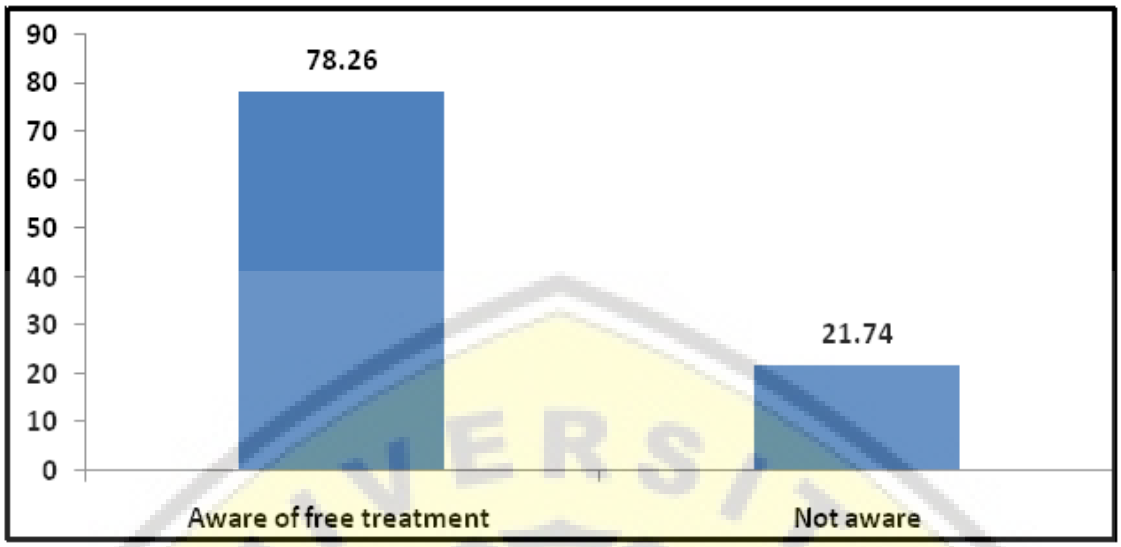


Fig. 3: Percent of Elderly Slum Dwellers according to Awareness about Free Treatment at Government Health Facilities (n=115)

Waiting Time: The waiting time at the health facility is an important determinant of health care accessibility. People prefer to go to a facility where waiting time is less unless the desired services are exclusively available at a certain facility. The average waiting time taken in the hospitals is given below in the figure 4.

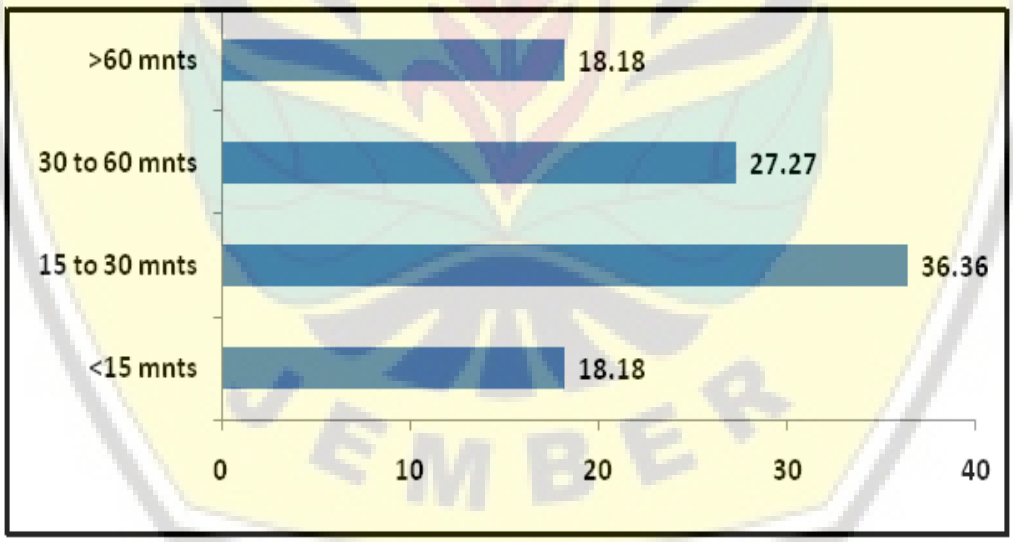


Fig. 4: Percent Waiting time at hospital (n=22)

Table 3: Percent of Elderly Slum Dwellers According to Waiting time by Type of Facility (n=32)

Waiting time	Public (n=15)	Private (n=17)
<15 minute	6.7	17.6
15 − 30 minute	20.0	35.3
15 − 30 minute	33.3	17.6
>60 minute	26.7	0.0
No idea	13.3	29.4
Total	100	100

When we sorted out the waiting time for those who went to any hospital we found that out of 4 treatment seekers, for 3 elderly who visited the private hospital, the time taken was less than 15 minutes. Similarly, it was found that maximum waiting time of more than 60 minutes was for those who visited public hospital (Table 3).

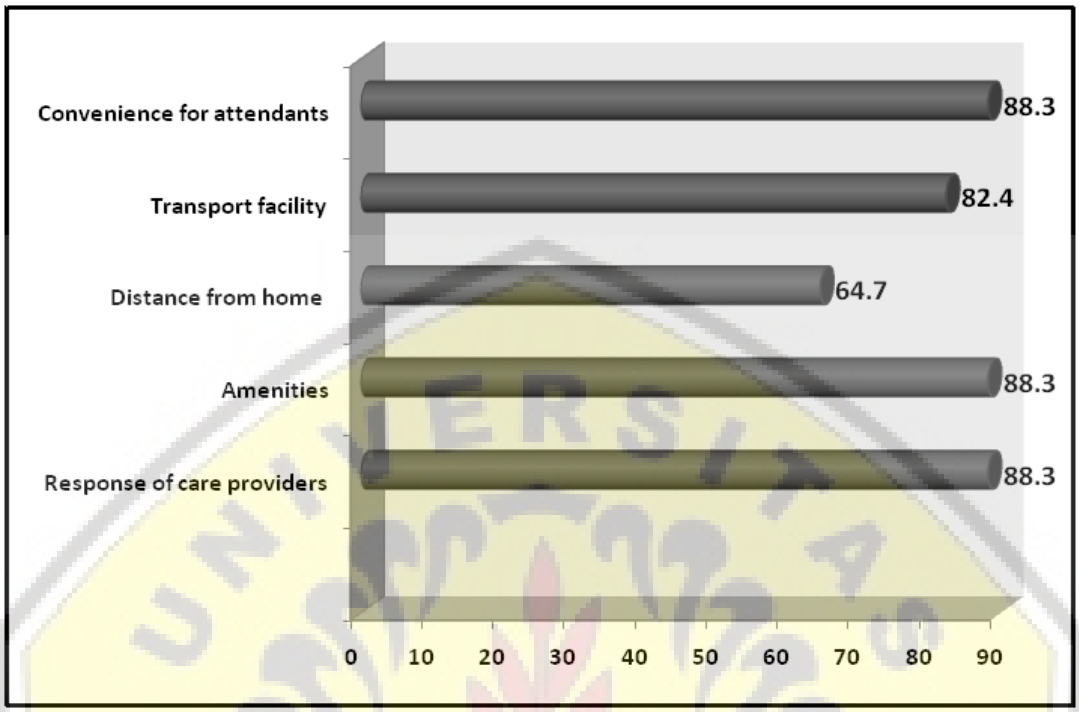


Figure 5: Barriers of Public Health Care Accessibility

The barriers in accessibility of public health facility were assigned following weights by the elderly:

a. Behavior of service providers.....88.3%
b. Distance from home.....64.7%
c. Transport facility.....82.4%
d. Amenities at the health facility.....88.3%
e. Convenience for attendants.....88.3%

Discussions

The awareness about locations of public health care facilities was found to be 84% in the study. However, mere awareness about location is not enough as poor people feel problem in finding appropriate person whom they may contact at the facility and in taking decision as to which health facility they should visit as is obvious from the findings that they chose to visit Dispensary for serious illnesses without realizing that serious illnesses may not be treated at dispensaries. Thus apart from unawareness about proper care providers, the ignorance about consequences of health problems also affects their health seeking behavior accessibility.

The public health facilities are meant for providing relief to poor population but doctors are not sensitive about this concept and resultantly the vulnerable population suffers the most.

Attendants were more worried about their own problems most important of which was earning bread and butter for their own family. So often they took the elderly person to the health care provider at a nearby facility as per their own convenience and when the problem was not cured they preferably got the person admitted in the government hospital where no one takes care and the person is unable to survive if not very fortunate.

This phenomenon also explains the importance of a son in the poor Indian families and high birth rate in want of a male child among poor population. For a son it is almost impossible to neglect his parents. That is why we could not find other social factors which may render elderly devoid of health care like carelessness of their younger family members. The elderly are also prone to abuse in their families or in institutional settings. This includes physical abuse (infliction of pain or injury), psychological or emotional abuse (infliction of mental

anguish and illegal exploitation) and sexual abuse. A study that examined the extent and correlation of elder mistreatment among 400 community-dwelling older adults aged 65 years and above in Chennai found the prevalence rate of mistreatment to be 14%. Chronic verbal abuse was the most common followed by financial abuse, physical abuse and neglect.

Time spent in accessing health care is crucial. In public health facilities waiting time is more than that in private health facilities. Time is important for the patient as well as for the attendant, as they are all daily wage earners and if half of the day is spent in hospital they tend to lose whole day's earning that ranges between Rs. 50 to 200 which is quite a big amount for them. Most of the participants in the FGDs complained about the time taken at SMS hospital for utilization of the services- "It takes at least 3–4 hours to take doctor's advice and medicines at SMS".

The other problem that the elderly mentioned is the overcrowding of the public hospitals. In the words of slum women- *"Satellite Mei ToSunwai Hi Nahi Hoti. Vahaan Jao To Boltei Hain- Baithja Na Baba AbhiDhekhtei Hain"*. Due to the over burden and patient load, the doctors and nurses could not give adequate attention to each individual. Most of the time they are perceived by the poor people as one who seems to overlook their problems. This situation discourages the poor to access the public health facilities.

Enquiry is made about their preference for private health facilities in response to which they said that apart from short distance it is the responsiveness of the care giver that matters most for them.

Amenities also constitute a barrier. Elderly generally do not go to a health facility alone. The amenities become important decisive factor because of the persons accompanying the elderly. During the study it was found that all the elderly have assigned due importance to amenities not only for them but also for persons accompanying them.

Higgs, Bayne & Murphy[5] used quantitative and qualitative approaches in obtaining their data about consumer's perspectives of health care. "Major barriers were cost, length of time one could get an appointment, lack of comfort with providers and having to miss work for appointments". We tried to capture response regarding selection of health care facility, however, only a few agreed that it was dependent on convenience of the family members. It seems that they did not want to blame their family members for their health. It is evident from the data that despite high cost of care in private health facilities they preferred to go there because of convenience of family members because length of time to get an appointment, lack of comfort with providers and wage loss actually are costs for the attendants as the jobless elderly had nothing to worry about these factors.

Conclusion

Data of this study reflects that major barrier in utilization of services by elderly slum dwellers are Behavior of service providers, Distance from home, Transport facility, Amenities at the health facility, Convenience for attendants.

Recommendations:

- In order to reduce waiting time at hospitals provision for exclusive service area for elderly can be made without much expense as presently there is no exclusive registration counter, OPD and diagnostic facility, etc. for elderly, which can help in reducing waiting time. Also we can ensure monthly health checkup of elderly in slums by a team of doctors' expert in geriatric care to reduce number of hospital visits.
- Keeping the role of 'Significant Others' in focus, a separate geriatric care hospital is needed with a capacity of at least 300 beds, ICU and OT and geriatrics trained staff, help desk and all amenities for attendants. Individual attention and facility of attendant care should also be there in the hospital.
- Doctors and staff of public health facilities need to be sensitized towards health care needs of the elderly on a priority basis.
- Provision should be made for free to and fro transportation facility to a nearby public hospital including SMS exclusively for elderly slum dwellers.
- Organization of awareness generation campaigns about free drugs scheme and other provision made available to the poor population for health and old age care including awareness about different services available at different public health facilities.

Ethical Clearance: Taken from Ethical committee

Source of Funding: Self

Conflict of Interest: Nil.

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Comparison between Effect of Foot Exercise and Warm Water Foot Soak on Foot Edema among Antenatal Women

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Abstract

Introduction: Pregnancy is a precious phase in women's life, which has got various hormonal, psychological, vascular, metabolic and immunologic effects on the body. Foot edema commonly occurs during pregnancy because the gravid uterus exerts continuous pressure on the inferior vana cava during resting which interferes with venous circulation. Lower extremities edema is a common discomfort during pregnancy and is associated with daily activity limitation and discomforts[1]. The researcher aimed to compare the effect of foot exercise and warm water foot soak on foot edema among antenatal women.

Methodology: A quasi experimental, comparative study was conducted in selected hospitals of central Gujarat region. Conveniently 70 antenatal women with physiological foot edema were recruited. Out of these 70, 35 participants were randomly allocated to each Group A foot exercise and Group B warm water foot soak. The tool of data collection included a socio demographic and maternal variable performa and observational check list of figure of eight technique to measure the foot edema. Pre-treatment assessment was done for both groups. After interventions Foot edema was assessed by using tool of data collection for both groups.

Result: There was statistically significant effect found in relieving of foot edema in foot exercise group and warm water foot soak group. In both the groups p value were < 0.001 which depict that there was statistically significant effect fond in relieving of foot edema.

Conclusion: Foot exercise and warm water foot soak, both were found to be effective to reduce foot edema. But none were found to be superior to other. Both are cost effective, safe, non-pharmacological and easy to perform at home. Hence antenatal mother can use it easily to relieve their problem of foot edema.

Keywords: *Foot exercise, warm water foot soak, foot edema, antenatal women.*

Introduction

Pregnancy is a unique experience of every woman's life. It is a phase which most of the women sick to experience in her life. Pregnancy brings about a lot of changes in the body of the female as it is built over various hormonal, metabolic and psychological changes. Sometimes these changes can result in to minor ailments of pregnancy, of which one is foot edema. Lower extremities edema usually causes uneasiness during pregnancy and it also associated with restrictions in daily activities[2].

Edema can cause discomfort, pain, feeling of heaviness, night cramps etc. Various other measures have

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been recommended to decrease pregnancy related foot edema like isometric exercise, warm water immersion, aerobics, foot reflexology etc[3]. Ankle exercise helps good blood flow, restore range of motion and reduce swelling in the ankle[4].

Warm water therapy has shown its efficacy in increasing nourishment to tissue, calms and helps relax tension. It is a non-pharmacological, safe and side effect free, cost effective and easy to administer measure just like foot exercise[5].

Medication are usually contra indicated during pregnancy as they may interfere with the baby's development, hence complementary and alternative therapies such as massage therapy essential oils, exercise, water soak and herb can offer natural relief, without the stress of adverse reactions.

Material and Method

A quasi experimental, comparative, two group pre-test post-test design was employed for the present study. The study was conducted at selected hospitals of central Gujarat. Ethical clearance and formal permissions were obtained before the conduction of the study. 70 samples were conveniently recruited for the study, following which they were randomly allocated to either Group A: Foot exercise or Group:B Warm water foot soak (35 in each). Researcher developed perfoma was used to collect baseline data of the participants, whereas an observational check list for figure of eight technique was used to assess the foot edema. Pre intervention assessment of the foot edema was done for the participants of both the group. For Gorup A, the participants were asked to perform foot exercise 2 times a day for 3 days for a duration of 20 minutes, in which they had to initially sit with their legs well supported, than flex and stretch each ankle 20 times alternatively, followed by which they had to circle their each feet at ankle in both clockwise and anti-clock wise direction, 20 times each. For group B, the foot of participants were immersed till 3 inches above their ankle in the tub of warm water which was at a warm temperature comfortable for them to dip their feet, for the duration of 20 minutes, 2 times a day for 3 consecutive days. Post intervention assessment was done for both the groups after third day.

Results

Finding related to socio demographic and maternal variables of antenatal women of both the groups: Major findings of study depict that many participants in Group A belonged to 21-30 years of age group, whereas in Group B were from below 20 years of age group. Majority of participants of Group A had height between 151 -160 cm and Group B had 141-150 cm. In both the groups majority of participants weight were 51-60 kg. Most of participants from both groups had completed primary education and did house hold related moderate level of work. Both groups had majority primi gravida participants. Majority of participants from both the groups were having pregnancy of 25-32 weeks. Among both the groups, most of the participants were taking one hour of sleep during day time and 8 hours of sleep during night time.

Table No. 1: Findings related to effectiveness of foot exercise on foot edema among antenatal women

Group		Mean	Standard deviation	T-value	P value
Foot exercise	Day 1, pre intervention, right foot assessment	45.80	7.08	4.8820	<0.001
	Day 3, post intervention, right foot assessment	44.85	6.78		
	Day 1, pre intervention, left foot assessment	46.08	6.87	8.5080	<0.001
	Day 3, post intervention, left foot assessment	45.17	6.77		

It is as mentioned in table number 1. It clearly depicts that there was statistically significant effect of foot exercise on foot edema with p value < 0.001 for both the feet.

Table No. 2: Findings related to effectiveness of warm water foot soak on foot edema among antenatal women.

Group		Mean	Standard deviation	T-value	P value
Warm water foot soak	Day 1, pre intervention, right foot assessment	48.48	6.45	8.0430	<0.001
	Day 3, post intervention, right foot assessment	47.15	6.25		
	Day 1, pre intervention, left foot assessment	49.00	6.43	3.6230	<0.001
	Day 3, post intervention, left foot assessment	47.78	6.59		

It is as mentioned in table number 2. It clearly depicts that there was statistically significant effect of warm water foot soak on foot edema with p value < 0.001 for both the feet.

Findings related to compare the effectiveness of foot exercise and warm water foot soak on foot edema among antenatal women of both the groups: T- test was employed to compare the effectiveness of foot exercise and warm water foot soak on foot edema among antenatal women of both the groups. The analysis showed that in none of the group p value was <0.05. Hence it was interpreted that although both interventions are effective in reducing foot edema among antenatal women, but none of them were statistically better than the other (p>0.05).

Finding related to association between pre intervention foot edema and selected socio demographic and maternal variables: Fisher chi square test was used to determine the association for Group A, age ($\chi2$=31.518), height ($\chi2$=20.727) and weeks of pregnancy ($\chi2$= 44.89)were found to be associated (p value <0.05). Whereas for Group B, age ($\chi2$=31.405), height ($\chi2$=42.416) and weight ($\chi2$=56.566) were found to be associated (p value <0.05). Remaining all variables were found to be statistically independent (p value >0.05).

Discussion

The aim of the study was to identify the effect of foot exercise as well as warm water foot soak on foot edema among antenatal woman. A few studies have been conducted to relieve foot problems and regarding foot health during pregnancy. The current study revealed that there was statistically significant effect found in relieving of foot edema in both the groups at 0.05 level of significance. It also showed that none of the group p value was less than 0.05. Hence it was interpreted that although both interventions were effective in reducing foot edema among antenatal women, none of them were statistically better than the other (p>0.05). Thus both of the interventions can be used to relieve foot edema, as they are cost effective and easy to performby the antenatal woman, without requiring any special equipment or procedure. This study can be done on a larger and different type of population, at different geographical region to know about its usability.

Conclusion

The current study had focused on alternative solutions for home based non-medical measure to reduce foot edema which is easily accessible, cost effective and comfortable to use at home as well as hospital. Hence, nurses, community workers and antenatal women should be conscious about practice of such measure to ease the difficulty of antenatal women caused by foot edema.

Conflict of Interest: None

Source of Funding: Self

Ethical Clearance: Permission was obtained from ARIP Institute Ethical Committee, Charotar University of Science and Technology, Gujarat, India.

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The Potency of +Oxivarea towards Expression of TNF-α and IL1-β on Wounded Skin of Rat (Rattusnovergicus) Infected by Methicillin Resistant Staphylococcus Aureus (MRSA) Bacteria

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Abstract

Treatment of *Staphylococcus aureus* infection with antibiotics is often ineffective because the development of the strain provides resistance to the antibiotic, which is commonly called *Methicilin Resistant Staphylococcus aureus.+Oxivarea* is essential oil from the utilization of grape seeds oil, olive oil, lemon oil and nutmeg oil which has anti-microbial properties, polyphenol content and antioxidants. This study have an aim to investigate the potency of *+Oxivarea* towards expression of TNF-α and IL1-β on wounded skin of rat which are infected by MRSA bacteria. Experimental laboratory study with post-test only control group design. 36 male rats (*Rattusnovergicus*) which devided into 6 groups of treatment namely K1 and K2 (negative control wound without MRSA and +Oxivarea observation in 3 days and 5 days); P1 and P2 (MRSA without +Oxivarea, observation in 3 days and 5 days); P3 and P4 (MRSA and +Oxivarea, observation in 3 days and 5 days). The expression of TNF-α and IL1-β in each was measured with *Immunohistochemistry* method (IHC). The data was analyzed by calculate using measures of central tendency and the scatter, continued with *Kruskal Wallis* and *Mann Whitney* ($p<0.05$) to knowing the difference of every group. +Oxivarea give an effect with treatment of wounded skin rat infected by MRSA in TNF-α and IL1β expression with significant difference ($p=0.000$ and $p=0.007$; $p<0.05$). There was a potency of +Oxivarea with antimicrobial compound can decreased TNF-α and IL1β expression in wounded skin of rat infected by MRSA.

Keywords: *+Oxivarea, TNF-α, IL1-β, MRSA, Stapphylococcus Aureus.*

Introduction

Staphylococcus aureus is an opportunistic pathogen known for its ability to cause nosocomial infectious diseases starting from mild skin infections, such as impetigo to severe illness, endocarditis, pneumonia, sepsis and toxic shock syndrome. Nosocomial infection was a part of Health care-associated Infection which mean initially referred to those infection linked with admission to an acute-care hospital. The US Center for Disease Control and Prevention identifies that nearly 1.7 million hospitalized patients annually acquire HCAIs while being treated for other health issues and that more than 98,000 of these patients (one in 17) die due to HCAIs which most of them caused by *S. aureus*[1]. Methicilin Resistant Staphylococcus aureus (MRSA) infections differ throughout the world. an evaluation of 15 studies showed that 13 studies showed 74% of *Staphylococcus aureus* infections worldwide were caused by MRSA[2].

Host immunity to bacterial infections in wounds also plays a role in the healing process of the wound itself. The stages of healing the wound are controlled by a biologically active substance known as growth factors, namely a protein that can stimulate and activate cell proliferation, so that it can accelerate the wound healing process[3]. One growth factor that plays an important

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role in the wound healing process is TNF-α and IL1-β which are a proinflammatory cytokines who works on immunity system[4].

Targeting the inflammatory pathway has high potential in preventing and eradicating disease. However, most drugs developed to date tend to be very expensive and are associated with adverse side effects. Therefore, there is an urgent need to develop new, safe, affordable and very effective agents that are expected to be an alternative management of inflammation caused by an illness [5].

+*Oxivarea* is an essential oil with the main ingredients are grape seed oil, lemon oil, olive oil and nutmeg oil. Where these ingredients have anti-microbial properties with polyphenol content and benefits in human health such as increasing bioactivity, antioxidants, anti-inflammatory, anti-bacterial, anti-cancer, antiviral, cardioprotective, anti-aging and anti-diabetic [6]. The previous study mentioned that+*Oxivarea* effective in inhibiting the growth of MRSA bacteria [7] and believed to help bacterial degradation by decreasing pro-inflammatory cytokines that are formed due to infection with MRSA bacteria with the mechanism of anti-microbial properties [6][7]. This study aims to determine the potencyl for + Oxivarea towards expression of TNF-α and IL1-β in Wound Skin of Rat infected by Methicillin Resistant Staphylococcus Aureus (MRSA) bacteria

Materials and Method

Study design and setting: This study was a true experimental with post-test only control group design. The sample consisted of 36 male Wistar rats, 200-250 gram body weight, 3 months old, then all samples were adapted about1 week before the treatment. This study had obtained study ethical with certificate number 452/ HRECC.FODM/VII/2019

Population and sample research: K1 group of rat is negative control wound without MRSA and +Oxivarea observation in 3 days, K2 group of rat is negative control wound without MRSA and +Oxivarea observation in 5 days, P1 group of rat which given wound with MRSA but without +Oxivarea, observation in 3 days, P2 group of rat which given wound with MRSA but without +Oxivarea observation in 5 days, P3 group of rat wich given wound with MRSA and +Oxivarea ±10mg twice a day observation in 3 days, P4 group of rat wich given wound with MRSA and +Oxivarea ±10mg twice a day observation in 5 days.

Preparation of Sample: Samples of rats were anesthetized using 10% ketamine at a dose of 20mg/kg body weight combined with 2% xylazine intramuscularly. On the back of the mice the hair is shaved in the middle of the back with a width of 3cm x 3cm, the next step is disinfection with povidone iodine 10%. The wound was by making incisions on the back of the mouse about ± 2cm, then closed using a transparent dressing which aims to create an ideal moist condition for wound healing and prevent contamination to the surrounding area.

+Oxivarea essential oil from PT. Surya Dermato Medica Laboratories. MRSA was given about 0.5 Mc Farland (1.5x108 CFU/mL) in P1, P2, P3 and P4. ± 10mg of Oxivarea + applied to the wound using cottonbud twice a day, in the morning and evening until the day the rat was decapitated. On the 3rd and 5th day all rats were extracted its tissues by using ether as an anesthetic, the skin on the back of treated rats was cut until the dermis layer was then fixed. Cutting the fixed skin tissue is done by processing including the stages of dehydration, clearing, impregnation and embedding. After becoming block paraffin, the tissues will be placed in glass object after cutting with microtom about 4-6 micron and ready to IHC examination.

Immunohistochemistry of TNF-α and IL1-β: The Examination of TNF-α and IL-1B expression was carried out using single immunohistochemistry and indirect staining. Calculation of IL-1β and TNF-α expression in cells was carried out in 10 visual fields with 400x magnification using a light microscope that gave a positive reaction to the anti-rat IL-1β and TNF-α with immunohistochemical techniques using TNF-α and IL-1B monoclonal antibodies (Santa Cruz Biotechnology, Inc. Europe). The expression of IL-1β is said to be positive if it is found in a brown colour on fibroblast cells that express IL-1β. The expression of TNF-α in tissues was showed with brown colour in tunica intima which showed the inflammation. All observation in microscope from 10 viewing fields with 400x magnification. The calculation is done by at least two readers (duplo) with at least two incision wound tissue preparations made, which are equipped with positive controls so the results are valid.

Data analysis: Data obtained were analyzed by means of *Kruskal Wallis* and followed by the *Mann Whitney* test ($p<0.05$) based on Kolmogorov-Smirnov normality test and Levene'shomogenity test ($p<0.05$) in Stastistical Package of Social Science (SPSS) Software 16.0 version (IBM corporation, Illinois, US).

Findings:

a. TNF-α: There were an expression of TNF-α about 3,3% in lymphocyte cell with low intencity in group wounded skin infected by MRSA with +Oxivarea in day 3 (P2) (Table 1). Meanwhile in day 5 observation of group P3 and P4, there were an expression of TNF-α about 34% in wounded skin infected MRSA, then decreased in group of wounded skin infected MRSA with +Oxivarea. The data were not normally distributed ($p<0.05$), so the analysis would be continued with non parametric test Kruskal Wallis with significant difference ($p=0.000$, $p<0.05$) and all the result of Mann Whitney ($p>0.05$).

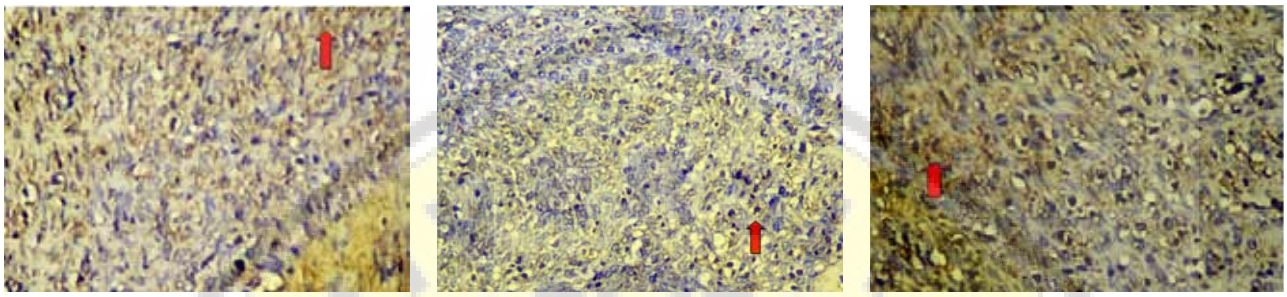

Figure 1. TNF-α expression in Wounded skin of rat infectedby MRSA. Positive expression of TNF-α presented in brown color in the lymphocyte (red arrow) in each group. P2, P3 and P4 group with 400x magnification.

Table 1. The mean ± Standart deviation (SD) of TNF-α expression in wounded skin rat between groups

Goups	n	Mean ± SD
K1	6	0.0 ± 0
K2	6	0.0 ± 0
P1	6	0.0 ± 0
P2	6	34.0 ± 17.84
P3	6	3.33 ± 8.16
P4	6	13.33 ± 20.66

Table. 2. The mean ± Standart deviation (SD) of IL1-β expression in wounded skin rat between groups

Goups	n	Mean ± SD
K1	6	0.0 ± 0
K2	6	0.0 ± 0
P1	6	1 ± 1.0
P2	6	0.0 ± 0
P3	6	0.0 ± 0
P4	6	0.0 ± 0

b. IL1-β: The results of observations of IL1-β expression on preparations of wistar rat skin consisted of calculation data that occurred in the control group, infection wound group and infectious wound group treated with + Oxivarea on day 3 and day 5 (Table 2) appeared just in P1 group (day 3 observation with MRSA without +Oxivarea) and increased after +Oxivarea treatment and 3 days after infection. The data were not normally distributed ($p<0.05$), so the analysis would be continued with non parametric test Kruskal Wallis with significant difference ($p=0.007$, $p<0.05$) and all the result of Mann Whitney ($p>0.05$).

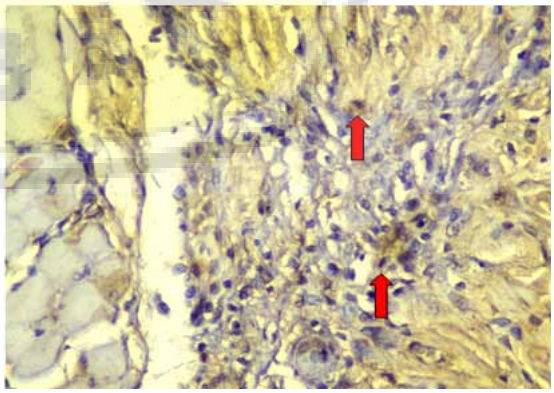

Figure 2. IL1-β expression in Wounded skin of rat infectedby MRSA. Positive expression of IL1-β presented in brown color in the lymphocyte (red arrow) in P2 group with 400x magnification.

Discussion

Through analysis of the calculation data by comparing the average value of TNF-α positive cell expression showed that the distribution of the number of inflammatory cells expressed TNF-α was different especially on the fifth day the expression of TNF-α decreased when given + Oxivarea with a group of mice that were injured and given MRSA without + Oxivarea administration. This shows that the antimicrobal constituent + Oxivarea active substance can kill bacteria, especially MRSA.

This indicates a decrease in the expression of proinflammatory cytokines as time passes for a longer + Oxivarea administration. Decreased levels of TNF-α, indicate the presence of control of inflammation and adequate progress in healing [8].

This study was conducted to determine the effect of + Oxivarea administration on wound healing especially in the inflammatory phase by observing inflammatory cells that express TNF-α. In this study the appearance of TNF-α expression increased on the fifth day where it was still expressed in the inflammatory phase after trauma to the skin (24 hours - 2 weeks). Inflammatory cells (neutrophils, macrophages) function to cleanse infections in wounds and debris and release dissolved mediators such as pro-inflammatory cytokines (TNF-α, IL1, IL-6 and IL-8) and growth factors such as (PDGF, TGF-β, TGF-α, IGF-1 and FGF) involved in the mobilization and activation of fibroblasts and epithelial cells for the next phase in the process of wound healing[9].

IL1-β expression in this study only occurred in the wound group with MRSA without the treatment of + Oxivarea at 3 days susceptible to infection. Where it is still in the inflammatory phase. In the wound group of MRSA infection with the addition of + Oxivarea after being compared with the group expressing IL1-β, the results of the decline. This can indicate that there is an effect of + Oxivarea on the decrease of IL-1β as proinflammatory cytokines that works on the day of the beginning of the inflammatory phase day because all the results of the expression on the fifth day show negative expression results.

+Oxivarea contains biochemical components such as polyphenol, methyl palmitate, methyl oleat, methyl stearate, methyl linoleic which have antimicrobial effects. Polyphenols are bioactive compounds found in fruits and vegetables that contribute to their color, taste and pharmacological activity. Grape seeds and olive oil are rich in polyphenols which are known for their antioxidant effects. Macrophages are also affected by polyphenols where macrophages are known to be key players in the inflammatory response. Active macrophages when starting inflammation by removing proinflammatory mediators and cytokines such as IL-6 and TNF-α. Polyphenols suppress macrophages by inhibiting cyclooxygenase-2 (COX-2), inducible nitric oxide synthase (iNOS), so they reduce the production of TNF-α, interleukine-1-beta (IL-1-β) and IL-6 expression. Polyphenols can modulate the NF-κB activation cascade at different steps by influencing IKK activation and regulating oxidant levels or by influencing NF-κB binding with DNA which leads to anti-inflammatory effects leading to the potential for this in dealing with chronic inflammatory conditions [9].

It can be concluded again that +Oxivarea can be said an anti-inflammatory because it can suppress IL1-β. IL1-β was produced by the activation of the nuclear factorkappa B(NF-κB) signaling pathway. In resting cells, NF-κB is found in the cytoplasm in the form of heterodimers. IκB prevents NF-κB from migrating to the nucleus. When the cell is activated IκBphospholizes into the release of NF-κB from IκB, which gives NF-κB the chance to move to the nucleus and begin transcription of genes that can be induced by NF-κB[10]. If NF-κB is suppressed by the presence of +Oxivarea it will inhibit the release of proinflammatory cytokines such as IL1-β.

Conclusion

It can be concluded that +Oxivarea have a potency by decreasing pro-inflamatory cytokines like TNF-α and IL1β in wounded skin of rat infected by *Methicillin Resistant Staphylococcus aureus* (MRSA).

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Statement conflict of Interest: The authors declare there is no conflict of interest

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Fetal and Maternal Outcome in Patients with Pregnancy Related Acute Kidney Injury

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Abstract

Background: Pregnancy related acute kidney injury (PR-AKI) is a serious problem occurring during pregnancy it may lead to feto-maternal morbidity and mortality.

Aim of the Work: To study the feto-maternal outcome in patients with PRAKI.

Method: 80 pregnant diagnosed with Pr-AKI according to American College of Obstetricians and Gynecologists, 2013 were studied and analyzed.

Results: Higher ranges of systolic and diastolic blood pressure. 56% fetal mortality and 23% of the babies need admission in neonatal intensive care unit with 80% recovery rate of renal function and about 15% became a CKD patients and 5% of cases died.

Conclusions: AKI complicating pregnancies is a common and serious problem. If recognized and treated promptly recovery is assured in majority of cases. Early identification and prompt management of preeclampsia and can prevent majority ofARF cases.

Keywords: *Pregnancy related acute kidney injury PRAKI, preeclampsia, feto-maternal outcome.*

Introduction

Pregnancy and childbirth are the times of celebration, but it may turn into a catastrophe and pregnant women can become suddenly severely ill. The intensity of evaluation and early management issues is great, because both woman and the infant will be at risk[(1)].

The development of acute kidney injury (AKI) in pregnancy, termed pregnancy-related AKI **(PRAKI)** which is a heterogeneous disease entity that occurs due to a multiple underlying etiologies. Regardless of the cause, it is the most important obstetrical complication which associated with significant maternal and fetal morbidity and mortality[(2)].

Definitions of AKI which commonly used vary from a mild increase in SCr level to the need for dialysis[(3)]. The American College of Obstetrics and Gynecology addresses the diagnosis of acute renal failure as a serum creatinine level of >1.1 mg/dL or a doubling of the serum creatinine concentration in the absence of other renal disease. The normally physiological changes that occur in the pregnant state seen to mask acute kidney injury (AKI) early in its disease course[(4)]. The true estimation of GFR during pregnancy is not reliable unless a timed urine creatinine excretion (24 hours urine creatinine clearance is used). Estimates used for non-pregnant individuals are not reliable in pregnancy[(5)].

The incidence of PR-AKI varies widely across

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the world;it was reported incidence of 1 in 20,000 pregnancies to as much as 1 in 50 pregnancies due to many factors which contribute to this variation in incidence, as lack of uniform defining criteria, physiologic changes that occur in pregnancy that affect the interpretation of laboratory tests and regional differences in factors contributing to acute kidney injury (AKI). In addition, AKI (a term that has replaced acute renal failure) is often under-recognized until it is severe. Often there is a lack of information on baseline pre-pregnancy SCr values in this population, which further poses a problem [6].

It is reported that PRAKI has a bimodal distribution with an early peak of AKI as a consequence of septic abortions and a second peak due to hypertensive disorders of pregnancy, along with obstetric complications such as hemorrhage [7].

Patients and Method

This study has been conducted on 80 patients with (PR-AKI) in the emergency room and critical care unit of obstetrics and gynecology of Minia university hospital over the period from June 2017 to December 2018. The study was approved by the hospital's research ethics broad. All patients provided written informed consent.

The diagnosis of AKI in pregnancy was determined by the following criterion (any one of three): (American College of Obstetricians and Gynecologists, 2013): Serum creatinine > 1.1 mg/dl or doubling of serum creatinine from baseline, oliguria/anuria > 12 h duration, need for dialysis. All patients were submitted to complete history taking (including gestational age, parity and gravidity, history of maternal and neonatal complications and history of chronic illness) and examination was performed. Although observation of fetal and maternal morbidity and mortality.

Statistical Analysis: Data was collected and included in a data based system and analyzed by statistical package of or social sciences (SPSS) version 20. Parametric data were expressed as mean ± standard deviation (SD). It was analyzed statistically using student t-test while non-parametric data were expressed as percentages and were analyzed using chi square.

Results

Table (1): Parity and obstetric history

Previous obstetric history	MG	33(41.3%)
	PG	25(31.3%)
	Recurrent abortions	17(21.3%)
	Twins	5(6.3%)

Multigravida in 41.3% 0f patients, history of recurrent abortion in 17.5% and twins' pregnancy in 6.3%.

Table (2): Blood pressure measurements in patients:

Systolic BP	Range	(90-210)
	Mean ± SD	147.3±27.1
Diastolic BP	Range	(60-160)
	Mean ± SD	91.8±14.5

The systolic blood pressure ranges from 90 up to 210 and the diastolic blood pressure ranges from 60 to 160.

Table (3): Fetal outcome:

Fetal Outcome	Died 45(56%) NICU 18(23%) Live 17(21%)

It was observed that PRAKI resulted in 56% fetal mortality and 23% of the babies need admission in neonatal intensive care unit and only 21% live births.

Table (4): Maternal outcome:

Maternal Outcome	Resolved	64(80%)
	Died	4(5%)
	CKD	12(15%)

Most of PRAKI patients (80%) has a complete recovery of renal function and about (15%) became a CKD patients and 4 (5%) of cases died.

Discussion

It was found a significant increase in systolic blood pressure (SBP) and diastolic blood pressure (DBP). The different underlying causes as the causes of AKI in pregnant women are divided into three main groups: (1) obstetrical complications as septic abortion, anti-partum and post-partum hemorrhage, intra uterine fetal death (IUFD). (2) pregnancy-specific disorders as preeclampsia/eclampsia, HELLP, AFLP, TMA, hyperemesis gavidarum. (3) Miscellaneous causes as lupus nephritis, post infectious glomerulonephritis (GN), acute pyelonephritis[8]. **Arrayhani et al.,**[9] also found that hypertension was a common symptom in patient with P-AKI as PE count for (66.7%), with eclampsia in (13.5%) and HELLP syndrome in (58.3%) of them.

Also **Prakash et al.,** [10] postulated that PE/E was the commonest cause of P-AKI.**Pr-AKI** is also associated with significant fetal mortality and morbidity, this study found that (56%) was a fetal mortality and (22.5%) of the babies need admission in neonatal intensive care unit due to premature labor, this is in agreement with **Liu et al.,** [2]who postulated that the odds of perinatal mortality in pregnancy with AKI increases 3.4-fold when compared with pregnancies without **Pr-AKI.** Studies from India have reported high perinatal mortality of 20% to 45% due to intra-uterine death, stillbirth and prematurity [11]**.** In China, perinatal mortality was 17%, with higher mortality noted with **Pr-AKI** in the second rather than third trimester [8]**.** Premature delivery occurred in 40.9% patients and full-term delivery in 35.6%. Perinatal mortality was 23.5%, mainly due to intrauterine death (17.5%) and prematurity (6%) [10].

Reversal of AKI occurs following delivery of fetus in majority of patients with PE. However, persistent renal dysfunction and the need for long-term dialysis may occur lead to CKD development. The most common histological lesion in the setting of AKI in patients with PE/HELLP syndrome is acute tubular necrosis (ATN). However, renal cortical necrosis has been reported in preeclamptic women with AKI [12]**.**

In this study the final maternal outcome was (80%) of patients has a complete recovery of renal function and (15%) became a CKD patients and (5%) of cases died 3 cases died due to severe obstetric complication and one case died due to severe DIC. It was in agreements with others who found that less severe Pr-AKI demonstrates favorable renal recovery at 40% to 75%. In contrast, 4% to 9% of women with severe Pr-AKI remained dialysis dependent at 4 to 6 months postpartum [2]**.**The rate of progression to end stage renal disease from Pr-AKI, in general, range from 1.5% to 2.5% [13]**.** The risk of perinatal death is higher (26%) and increases with the severity of the renal injury [10].

Arrayhani et al., [9] obtained a total recovery in 76% of the cases, which is similar to the result that was found in this study. **Arora et al.,** [14]**, Goplani et al.,** [15] **and Erdemoğlu et al.,** [16] reported a total recovery of renal function in 42%, 54.3% and 61%, respectively.

Similarly, maternal mortality due to PRAKI represents less than 10% in Europe and North America but remains high in the developing countries [17]**.** Recent studies in India have shown a maternal mortality rate around 20% [17]. In Turkey, this rate was 10.6% [16]. In Pakistan, **Khalil et al.,** [18] reported a maternal mortality rate of 15% in 2011 compared to 33.3% of cases reported by **Chaudhri et al.,** [19].

The Institutional Ethics Committee approved this study of the School of Medicine, Minia University, Egypt and all patients gave informed consent before participation in this study. The study conducted in accordance with the ethical guidelines of the 1975 Declaration of Helsinki and International Conference on Harmonization Guidelines for Good Clinical Practice.

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HIV Infection, Religion and Spirituality in Nigerian Community Settings

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Abstract

This article focuses on religion and spirituality regarding People Living with Human Immunodeficiency Virus (PLWH) in Nigeria. Specifically, the paper x-rayed the situation of HIV epidemic in Nigeria, followed by the impact of religion and spirituality on PLWH and finally the possible solution that can help to reduce the prevalence of the disease, as well as improve care and support of PLWH in Nigerian community settings.

Keywords: *HIV infections, Religion, Spirituality, Nigeria, Community Settings.*

Introduction

HIV epidemic is still a serious health challenge that demands serious attention. Presently, Sub-Saharan Africa accounts for 66% of all people with HIV infection[1] while 9% of PLWH globally are from Nigeria.[2] Moreover, about 3.3 million people live with HIV with a 3.6% adult HIV prevalence rate.[3] However, the Nigerian, Government is making tremendous effort to avert this epidemic through Anti-Retroviral (ARV) drug treatment. Nonetheless, less than 50% of PLWH in Nigeria are being diagnosed and treated to enhance their quality of life, reduce opportunistic infections and impact of HIV transmission in the community.[4] Studies have shown that the causes of stigmatization from members of the society that results to serious depression and anxiety among HIV-infected persons.[5] In addition, studies have also demonstrated that religious and spiritual care, coping skills and social support can be used as a mediator of perceived symptoms of stigmatization effects and improve health among those infected with HIV.[6]

Religion and spirituality reflects social support and thus can be employed as alternative and holistic treatment for PLWH.[5] Religion and spirituality can be a key role in both HIV infection prevention and care of PLWH within their community and congregation. Religion has been defined as the formal, institutional and outward expression of the sacred and has been measured by importance of religion, belief in God, religious attendance and prayer/meditation.[7,8] On the other hand, spirituality includes the internal, personal and emotional expression of the sacred and is often assessed by spiritual well-being, peace/comfort derived from faith and spiritual coping.[9] Previous studies revealed that an intensified religious and spiritual action is associated with less psychological distress, social functioning, greater energy and will to live, better cognitive functioning and feeling that life has improved since HIV diagnosis.[10,11] Nevertheless, religion and spirituality can also worsen outcomes because of likely belief on their religion faith and rejection of antiretroviral therapy and because of views of HIV as punishment from God for sinful lives. This paper tries to point out the existing knowledge regarding on religion and spirituality as it related to the roles religiosity and spirituality play in PLWH in Nigeria. Furthermore, the paper reviewed the negative impact religion and spirituality has on PLWH and finally the possible solution that can help to reduce the prevalence of the disease, care and support of PLWH in Nigerian Community settings.

The Bane of Religion and Spirituality among PLWH: The religion of a patient can affect the way he/she perceive health and disease and association with others.[12,13] Many spiritual patients strive to meet some religious needs related to their disease and failure to meet these needs may influence the type of life they live.[14] In addition, the form of spirituality (negative or positive) embraced by a patient may have a precarious

influence on the condition of the disease as revealed in earlier research.[15,16] Moreso, when a patient feels punished and abandoned by a higher power is termed negative spirituality and the feeling and believe that that God loves and forgives them despite their shortcomings is positive spirituality.[17] Patients may embrace negative spiritual/religious beliefs in preference to conventional treatment that may be detrimental to health-seeking behaviors, treatment adherence, survival and quality of life.[18] Previous researches have also showed that religion and spirituality may have a hurtful effects on HIV patients banished from their religious organizations because of the humiliation/misjudgment connected with being HIV-positive.[19,20] Some religious leaders and organizations have reacted with upright judgments and disapproval for people with HIV that have self-conscious behavior change.[21] Messages from the pulpit about sin and a 'bad death' due to AIDS have been common.[22,23] In an investigation of religious leaders in Nigeria.[24] establish that 54% of Christian leaders assumed that AIDS had been sent by God as a specific punishment for sexual license; a further 20% thought that it was a divine punishment covering other transgressions. Among the Muslim leaders, 68% claimed that it was wholly a divine punishment.[24] Despite these inadequacies, religion and spirituality has been characterized to promote acceptance and support for greater well-being of people living with HIV.

The Place of Religion and Spirituality in the Lives of PLWH: In Nigeria, religion and spirituality connects people of different races, class and nationality together, including PLWH. In addition, religious principles and exercises are entangled in the activities of the people and the leaders of churches, mosques and other religious communities play influential roles in determining the attitudes, opinions and behaviors. Researchers have shown that a religion/spirituality can assist PLWH in adoption of protective health behaviors.[10,25-34]

In Nigeria, religious institutions are spread throughout the country and have the capacity to reach a large number of people. The perception of HIV patients about their health, disease and interaction with relative, friends and neighbours can be determined by the way their religious and spiritual belief influences them.[35,12] Inspite of the hilarious effect of religion and spirituality on PLWH, some scholars have suggested that religious and spiritual influences can contribute immensely to high level of satisfaction with life in PLWHA.[34] Even more,[36] investigated the views and live experiences of men living with HIV/AIDS and suggested that religions such as Catholicism can promote acceptance and support for greater well-being of men living with HIV/AIDS. In addition, religiosity may become noticeable in the patients attitudes, religious services participation, improved religious beliefs which will show in the patients personal actions such as prayer. Positive relationship between religiosity and well-being in PLWHA is based on religion providing the basis of social support, recovery of meaning in life and a coping mechanism.[37,38] Therefore, since religion and spirituality could improve the adoption and practice of protective health behaviors[39], religious and spiritual-based HIV/AIDS prevention programs are assumed to be an effective way to decrease the prevalence of HIV/AIDS by encouraging harmless and less HIV risky behaviors. With this in mind, many religious organizations are getting involved in HIV/AIDS prevention education programs and are likely to be more effective in preventing the spread of HIV/AIDS.[40]

Conclusion

This paper presents a perspective on the state of knowledge on religion and spirituality regarding People Living with Human Immunodeficiency Virus (PLWH) in Nigeria. In Nigeria, religious institutions are spread throughout the country and have the capacity to reach a large number of people. The perception of HIV patients about their health, disease and interaction with relative, friends and neighbours can be determined by the way their religious and spiritual belief influences them.

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Postoperative Hypersensitivity and Digital Radiographic Assessment of a Zinc Modified Versus a Conventional Glass Ionomer Cement in Deep Carious Lesion: Randomized Controlled Clinical Trial

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Abstract

Aim of the Study: This study aimed to determine the effect of different glass ionomer in the healing of deep carious lesion after partial caries removal

Design: A total of 50 teeth of patients who fulfilled the inclusion criteria were selected to participate in the study. Then they were divided into two main groups: control group (Equia fill) and intervention group (Chemfill rock). Postoperative hypersensitivity (using thermal test and percussion test) and periapical lesions (using digital periapical radiograph) were tested in this period at the baseline (T0), after three months (T3) andafter six months (T6).

Results: Categorical data were presented as Frequencies (n) and Percentages (%). Fisher's exact and Cochran's Q tests were used to analyze inter and intragroup comparisons respectively. The significance level was set at $P \leq 0.05$ for all tests.

Conclusion: The hypersensitivity and periapical lesion was no affected by the type of glass ionomer.

Clinical Significance: Different type of glass ionomer can be used in deep carious lesion.

Keywords: *Deep carious cavities, glass ionomer cement, postoperative hypersensitivity, chem Fil Rock.*

Introduction

After the revolution in restorative materials due to the innovation of adhesive material and the change from the concept of drill and fill to biological model and conservatism, many techniques have been developed to treat deep carious lesion[(1)]. These techniques depend on decreasing the bacterial population allowing the remineralization of the remaining dentin by changing the ecological system by removing the superficial layer of carious dentin with the highest bacterial population and leaving the deepest layer of affected dentin (affected by bacterial acid that usually precede the bacteria itself) then sealing the cavity. Bacterial population has a main effect on the propagation of carious lesion, so elimination of bacterial acid increases the power of remineralization of infected dentin. One of these techniques is the partial caries removal [(2)].The success rate of partial caries removal is up to 91% [(3)].

The glass ionomer was the material of choice for this technique due to their biocompatibility, chemical

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bond and fluoride release. Many modifications have been done to improve the glass ionomer properties, the addition of metal ions (silver and recently zinc) is one of this modification. Beside improving the mechanical properties, it was found that the addition of metal ion to glass ionomer decrease the bacterial growth[4]. Few clinical studies have evaluated the role of antimicrobial agents incorporated into restorative materials and their potential anti-caries effect [5]

Zinc increase the uptake of fluoride and enhance remineralization by preventing the surface remineralization (allow better penetrate of fluoride into deeper surface (prevent lesion arrestment). Zinc also bind with the hydroxy apatite crystal making it less soluble in acid[6].Multiple in vitro studies showed that Zn modified glass ionomer has better mechanical performance and antibacterial action [7, 8] but due to lack of evidence from enough well conducted clinical studies, this study will be conducted.

The null hypothesis was that both conventional glass ionomer and zinc modified glass ionomer are successful in the management of deep carious lesion.

Material and Method

A total of 50 teeth of patients who fulfilled the inclusion criteria were selected to participate in the study. Consent was taken from each patient prior to the commencement of the study. Teeth were divided into 2 main groupsby utilizing simple random sampling method each group was 25 participants according to base material tested. The selected participants were divided into two groups: group ($\mathbf{A_1}$) control group (EQUIA fill) and group ($\mathbf{A_2}$) intervention group (CHEMFILL). The study took place over a period of six months (**T**). Postoperative hypersensitivity and periapical pathosis were tested in this period at the baseline ($\mathbf{T_0}$), after three months ($\mathbf{T_3}$) and after six months ($\mathbf{T_6}$).

Simple randomization has been used every patient took a number from 1using random integer set generator. The assessor was blind, but due to the difference in the material, the operator did not been blinded.

Clinical Procedures:

Preoperative clinical assessment: A detailed chart for each patient was taken. A proper pain history was taken to exclude the absence of any signs of irreversible pulpitis. Clinical examination was done to find any sign of inflammation like swelling, fistula or abscess. Cold pulp testing was done to ensure pulp vitality using Refrigerant spray (Endo Frost, Roeko, Coltène/ Whaledent, Germany). The spray is applied by a cotton pellet and the patient told the operator in case of pain sensation. Percussion/palpation and mobility tests were performed, Periapical digital radiograph was performed (T0) to detect the presence of any periapical lesion or widening in periodontal ligament. These tests were repeated each follow up visit at T3 and T6.

Caries Removal Procedure: Local anaesthesia was given to the patient, then isolation using rubber dam was done. Access to carious lesion using high speed hand piece.The removal of Deep carious tissue was performed following the guidelines published by the International Caries Consensus Collaboration (ICCC) **.**The caries was selectively removed using spoon excavator *(no51,52, Dentsply, Maillefer)* The caries was totally removed from the cavity wall with spoon excavator or low speed hand piece with carbon-steel rose-head bur to perform a proper marginal seal.Glass ionomer restoration were applied according to manufacturer instruction.

Results

Postoperative hypersensitivity: Frequencies (n) and Percentages (%) of Postoperative hypersensitivity incidence in both groups were presented in table (1)

Fisher's exact test showed no significant difference in the occurrence of postoperative hypersensitivity at baseline (P=0.667) and after 3 months (0.500), while after 6 months there was a significant difference between both groups (P=0.025). At baseline both groups had the same percentage of occurrence of postoperative hypersensitivity (13.0%). After 3 months the percentage decreased in the control group to (8.7%) while remaining fixed in the intervention arm. After 6 months there was no incidence of postoperative hypersensitivity in the control group, while intervention cases suffering from sensitivity increased from (13.0%) to (21.7%) by the end of the follow-up period.

Periapical Lesion: Frequencies (n) and Percentages (%) of periapical lesion incidence in both groups were presented in table (2)

Fisher's exact test showed no significant difference between both groups regarding the occurrence of periapical lesions after 3 and 6 months (P=0.500). Starting from baseline till the end of the follow-up

period, members of the intervention group were free from periapical lesions. While for the control group only (4.3%) of participants had periapical lesions starting from 3 months till the end of the follow-up period.

Table (1): Frequencies (n) and Percentages (%) of postoperative hypersensitivity incidence in both groups

Follow-up	Postoperative hypersensitivity	Intervention		Control		P-value
		%	n	%	n	
Baseline	Absent	87.0%	20	87.0%	20	0.667ns
	Present	13.0%	3	13.0%	3	
3 months	Absent	87.0%	20	91.3%	21	0.500ns
	Present	13.0%	3	8.7%	2	
6 months	Absent	78.3%	18	100%	23	0.025*
	Present	21.7%	5	0%	0	

*; significant ($p \leq 0.05$) ns; non-significant ($p>0.05$)

Table (2): Frequencies (n) and Percentages (%) of postoperative hypersensitivity incidence in both groups

Follow-up	Periapical lesion	Intervention		Control		P-value
		%	n	%	(n)	
Baseline	Absent	100%	23	100%	23	—
	Present	0%	0	0%	0	
3 months	Absent	100%	23	95.7%	22	0.500ns
	Present	0%	0	4.3%	1	
6 months	Absent	100%	23	95.7%	22	0.500ns
	Present	0%	0	4.3%	1	

*; significant ($p \leq 0.05$) ns; non-significant ($p>0.05$)

Discussion

In this study we use the partial caries removal techniques[9] as treatment for deep cavitated lesion according to the recent consensus recommendation that support it success, less risk of pulpal exposure and less cost compared to other alternative techniques like step wise excavation [10]. Clinical studies showed that No risk to left infected dentine under the restoration sufficiently sealed and no need for re-entry to remove the residual dentine. It showed high success rate both clinically and radiographically.[11, 12]

In our study, we use two different type of high viscosity glass ionomer as with the Minamata Convention the use of mercury will be phased down and this undoubtedly will influence dental treatment regimens and economic resources[14]. Zinc modified glass ionomer is a new one of metal modified glass ionomer as zinc substitution calcium ions in the crystalline structure of glass ionomer resulted in increasing the density of glass as zinc due to higher atomic dentist of zinc ion.[15] This substitution results an increase in oxygen density which represent the degree of atoms packing in glass which increase the strength and fracture toughness of glass ionomer[16]. In addition, the zinc has an antibacterial property and remineralizing effect, low concentrations of zinc can both reduce enamel demineralisation and modify remineralisation but its effect on caries is not yet determined[6].Zinc can interact with hydroxyapatite crystal by adsorption onto crystal surfaces and/or incorporation into the crystal lattice which result a decrease in hydroxyapatite solubility, Zinc also can modify the crystal-growth of orally relevant calcium phosphates [6].

Most of dentist use the clinical sensitivity to hot and cold for assessment of pulp vitality, for many years the clinical sensitivity was considered irrevalant, but according to the study conducted by **Ricucci et al.,2014,**[17] there was a good correlation between the clinical sign and histological status of the pulp. **Pigg et al., 2016**[18] stated that the cold test using the endofrost

had good validity to distinguish a vital pulp from a nonvital pulp.

Our follow up visit was scheduled after 3months and six months. The available evidence supports that the peak of increase in dentin microhardness and dentistry is the first 3 months after partial caries removal. This may be due to decrease of bacterial activity, reorganization of collagen fibre and the increase in calcium ion concentration [19].as the pulp death could occur and remain silent a second visit is scheduled at 6 months to give more chance dentin formation [20].

The result of our studies showed that for hypersensitivity assessment both material (zinc modified and conventional glass ionomer) showing no statistical difference at base and 3months follow up while there was a statistical increase in the postoperative hypersensitivity after 6 months favouring the control. **Molina et al, 2013**[8] and **Molina et al 2014**[21] support this result. this could be attributed to many factors like the size of the cavities type of occlusion of the patient and the minor variable in the pulp response[22].Another factor is the mechanical properties, the Equia fill showed higher diametral and flexure strength than the Chemfill rock[7,23]. This could affect the clinical performance of glass ionomer and sealing ability of lesion and the lesion and the ingress of fluids,[24] **Giray et al 2014,** support that the microleakage with Chemfill rock is higher than the Equia fill on the other hand [25]**el Deeb and Mubarak 2018**, reported that bonding properties of Chemfill rock to stimulates carious dentin is better than the Equia fill.

Regarding the periapical lesion, there was no significant statistical difference between the two group or within the same group during the follow up periods, which could confirmed that partial caries removal and sealing of carious lesion is a successful line of conservative treatment for deep carious lesion [9, 11]. Even with the absence of statically difference two cases of the control group showed periapical lesion. This result could interpreted by the selection criteria of case and the possible variation between the clinical sign and symptoms and the histopathological status of the pulp[17] also its may contributed to the increase of ion release in the zinc reinforced glass ionomer which may result higher remineralization of affected dentin, increase the dentin hardness and increase the antibacterial effect[26], also[27] **Prudencio et al 2003,** found that the addition of zinc to glass ionomer present an increase in fluoride release than conventional glass ionomer.

Within the limitation of this study, the results supports that the partial caries removal could be the technique of choice for management of deep carious lesion without the need of second re-entery, this finding are in agreement with[9,28] also the result of our study support that glass ionomer could be used as final restoration especially due its less techniques sensitivity, time,cost of treatment which of mean concern due to the large national expenses on the dental health each year.

Conclusion

We concluded that both type of glass ionomer could be used successfully in deep caries management. the postoperative hypersensitivity and pulpal reaction were not affected by the type of restoration. The technique of caries removal could be effective factor in preservation of pulp vitality

Clinical Significance: Different glass ionomer could be used in treatment of deep cavities but further studies to assess the survival rate as final restoration

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Competing Interests: No conflict of interest

Ethical Approval: The Ethics and research committee, Faculty of Dentistry, Cairo University approved the study and patients' consent was obtained.

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Nasal Versus Oral Feeding Tube Placement: Selected Outcomes among Preterm Infants

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Abstract

Background: Enteral feeding tubes for preterm infants may be placed via either the nose or mouth. Nasal tube placement may compromise respiration, however, orally placed tubes may be more prone to displacement.

The Aim: The current study was to determine the effect of nasal versus oral placement of enteral feeding tubes on weight and the incidence of adverse events among preterm infants.

Method: A descriptive comparative study design was utilized.

Sample: A convenient sample of sixty physiologically stable preterm were assigned to two equal groups within six months (between July 2018–Jan. 2019). They were recruited from neonatal intensive care units of both Kasr Alainy and El-Monira Pediatric Hospitals-Cairo University.

Tools: Three tools were developed by the researchers: preterm infant's characteristics, observational checklist forincidence of adverse events and recording sheet for daily weight and time to sustain full oral feeding.

Procedure: The researches recorded preterm infant's characteristics, any adverse events, weight and time to sustain full oral feeding in the morning shift twice a week for two weeks.

Results: Orogastric tube feeding was statistically significant different compared to nasogastric tube feeding regarding displacement. There was no difference among two groups in weight gain, time to reach full feeds and frequency of adverse events. Orogastric tube feeding group had lesser duration of hospital stay than nasogastric and orogastric tube feeding group reached to full oral feeds quickly compared to nasogastric with no statistical significant differences.

Recommendation: Further researches with a larger population would probably be required to know the significance of this outcome.

Conclusion: This study concluded that no differences were found between both orogastric and nasogastric tube feeding on preterm infants' weight, incidence of adverse events and time to sustain full oral feeding.

Keywords: *Nasogastric tube, orogastric tube, Preterm Infants, outcomes.*

Introduction

When preterm infants are too immature or unwell to suck feeds they can receive their milk through a feeding tube passed via either the nose or the mouth. The establishment of safe oral feeding in preterm infants may be delayed because of poor co-ordination of sucking and swallowing, neurological immaturity and respiratory compromise. Enteral feeds may be delivered through a catheter (feeding tube) passed via the nose or via the mouth into the stomach or upper small intestine[(1)].

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Neonates are obligate nose breathers. Feeding tubes placed via the nose can cause partial nasal obstruction, increased airway resistance and increased work of breathing[2,3]. This increase in energy expenditure may potentially affect growth and development. Nasogastric intubation through the larger nare may increase airway resistance as the preterm infant is forced to breathe through an airway of smaller calibre. In addition, individual differences in nasal size may be acquired secondary to the effects of nasogastric tubes [4].

Incorrect placement, or subsequent displacement, of feeding tubes into the lower oesophagus or into the lung can lead to aspiration, respiratory compromise and increased energy expenditure[5]. Orally placed tubes may be easier to displace as they can loop inside the mouth. Repetitive movement of the orally placed tube may result in mucosal trauma and may increase the incidence of apnea and bradycardia due to vagal stimulation [6]. There is not enough data to make any recommendation regarding the superiority of either routes of feeding [7].

Aim of the study: To determine the effect of nasal versus oral placement of enteral feeding tubes on weight and the incidence of adverse events among preterm infants.

Research question: What are the differences between nasal and oral placement of feeding tube on weight and the incidence of adverse events among preterm infants?

Material and Method

Research Design: A descriptive comparative study design was utilized.

Participants: A convenient sample of 60 preterm infants were assigned to two equal groups within six months (between July 2018 – Jan. 2019).

Tools of Data Collection: Three tools were developed by the researchers after extensive review of related literature: preterm infant's characteristics, observational checklist and recording sheet for weight and time to sustain full oral feeding.

Tool Validity and Reliability: Data collection tools were submitted to three panel of experts in the field of high risk neonates to test the content validity. Reliability was done by cronbqch's alpha test and the result was 0.82.

Procedure: After the preterm infants had initial physiological stable state, they assigned to receive either nasogastric or orogastric feeding, the researchers' recorded preterm infant's characteristics once from admission sheet using tool I. They assessed any adverse events such as apnea, displacement and injury (trauma) in the morning shift twice a week for two weeks using tool II. All infants were weighed each morning, naked, before feeding and bathing, on one same time and time to sustain full oral feeding was recorded for all preterm infants using tool III.

Results

It was evident from table (1) that there were no statistically significant differences between orogastric and nasogastric groups regarding their gender, diagnosis and gestational age ($p > 0.05$).

Table (1): Characteristics of Preterm Infant's Characteristics For Both Groups In Percentage Distribution (N=60)

Preterm Infant's Characteristics	Groups				P
	Orogastric (n=30))		Nasogastric (n=30)		
	N	%	N	%	
Gender					
• Male	17	56.7	13	43.3	0.219
• Female	13	43.3	17	56.7	
Diagnosis:					
• RDS	27	90	25	83.3	
• M.A	3	10	3	10	0.729
• Sepsis	-	-	2	6.7	
G.A.					
• <32 Weeks	9	30	13	43.3	0.284
• 32-37 Weeks	21	70	17	56.7	

Note: RDS = Respiratory distress syndrome, M.A = Meconium Aspiration, C.S = Cesarean Section NVD = Normal Vaginal Delivery, G.A: Gestational Age

Table (2): Hospital Stay For Both Groups In Percentage Distribution (N=60)

It was revealed from table (2) that there were no statistically significant differences between orogastric and nasogastric groups regarding their hospital stay ($p > 0.05$).

Hospital Stay	Groups				P
	Orogastric (n=30)		Nasogastric (n=30)		
	N	%	N	%	
• One-<two weeks	1	3.3	-	-	
• Two-<three weeks	6	20	3	10	
• Three-<four weeks	2	6.7	5	16.7	
• Four weeks and more	21	70	22	73.3	
Mean±SD	41.27±18.984		41.47±17.190		0.346

It was illustrated from table (3) that there were no statistically significant differences between both groups regarding their daily weight at the four measures.

Table (3): Daily Weight At 1st, 2nd, 3rd And 4th Measures In Percentage Distribution (N=60).

Daily Weight	Groups		P
	Orogastric	Nasogastric	
	Mean±SD	Mean±SD	
1st Measure	1699.17±340.018	1606.50±354.951	0.190
2nd Measure	1693.83±332.586	1621.33±357.247	0.598
3rd Measure	1724.00±329.897	1693.00±351.027	0.211
4th Measure	1740.00±327.246	1712.00±337.062	0.270

Table (4): Time To Sustain Full Oral Feeding For Both Groups At 1st, 2nd, 3rd And 4th Measures In Percentage Distribution (N=60)

It was represented from table (4) that there was no statistically significant difference about time to sustain full oral feeding for both groups ($p > 0.05$).

Time to sustain full oral feeding	Groups				P
	Orogastric		Nasogastric		
	N	%	N	%	
• < a week	2	6.7	4	13.3	
• Week-<two weeks	11	36.7	9	30	
• Two weeks-<three weeks	4	13.3	2	6.7	0.287
• Three weeks-<four weeks	3	10	7	23.3	
• Four weeks and more	10	33.3	8	26.7	

Discussion

There was limited data available on the effect of the nasal versus the oral route for placing feeding tubes in preterm or low birth weight infants.

In relation to preterm infant's characteristics. The current study revealed that more than half of the preterm infants were males in the orogastric group, while more than half were females in nasogastric group. This findings goes in the same line with[8], who reported that more than half of preterm infants in both orogastric and nasogastric groups were males. While[9] contradicted these findings and reported that more than half of nasogastric group were males, while in orogastric group, a relatively high percentage of preterm infants were females.

The result of the current study revealed that more than three quarters of preterm infants were diagnosed

with RDS in both groups. This study goes in the same line with [10], who found that more than two thirds of neonates had RDS.

Regarding gestational age, [8] who studied Mode of gavage feeding: does it really matters, reported that the highest percentage of preterm infants in both orogastric and nasogastric groups their gestational age were ≥30 - <32 weeks and this contradicted with the result of the current study which revealed that more than two thirds of orogastric group and more than half of nasogastric group preterm infants were born between 32-37 weeks of gestation with no statistically significant differences of both groups.

Hospital stay was slightly longer in nasogastric group than orogastric group but with no statistically significant differences among both groups, as mean duration of hospital stay was 41.47 days in orogastric group and 41.47 days among nasogastric group. This result contradicted with the study of (9). Who revealed that there was no much difference among two groups. Mean Duration of hospital stay was 35.38 days with standard deviation of 7.60 among Nasogastric tube feeding group and 37.54 days with standard deviation of 9.45 among Orogastric tube feeding group.

Preterm infants in orogastric group gained weight more than those in nasogastric group at 1st, 2nd measures, 3rd and 4th measures. As mean of weight were (1699.17, 1693.83, 1724.00 and 1740 respectively) in orogastric group and (1606.50, 1621.33, 1693.00 and 1712.00 respectively) in nasogastric group but there was no statistically significant differences. This findings supported by [9], who demonstrated that mean time to regain birth weight was 19.38 days among Nasogastric tube feeding group and 19.23 days among Orogastric tube feeding group. Also (11), who studiedcontinuous feeding promotes gastrointestinal tolerance and growth in very low birth weight infants, reported no statistically significant difference in the time taken to regain birth weight.

Regarding adverse events of both orogastric and nasogastric tube placement, the results of the current study delineated that, there was no statistically significant differences between both orogastric and nasogastric groups about injury at the 1st, 2nd, 3rd and 4th measure. This findings supported by [9], who concluded that there were no significant differences among two groups to frequency of adverse effects.

Concerning displacement, the current study illustrated that there was statistically significant difference between both orogastric and nasogastric groups at the 2nd measure (p= 0.050), while there were no statistically significant differences between both groups about displacement of the feeding tube at the 1st, 3rd and 4th measures. This findings supported by [8] who reported that the episodes of non-intentional removal and displacement are more in OGT group and it statistically significant (p = 0.012 and p<0.0001 respectively). Also, [9], reported thatfrequency of tube displacement was more common among Orogastric tube feeding compared to Nasogastric tube feeding. Which was statistically significant with a p-value of 0.001, mean difference of -0.4462 times/day.

In the matter of apnea, the results of the current study showed that there were no statistically significant differences between both orogastric and nasogastric groups about episodes of apnea at the 1st, 2nd, 3rd and 4th measures. This findings goes in the same line with [8], who reported that episodes of apnea, bradycardia, desaturation and oxygen requirement are more in NGT group as compared to OGT group but statistically Insignificant OGT versus NGT (p = 0.86).

For time to sustain full oral feeding, the highest percentage of both orogastric and nasogastric groups reach to full oral feeding by one week to less than two weeks from starting oral feeding. There were no statistically significant differences about time to sustain full oral feeding for both orogastric and nasogastric groups. This finding was in agreement with [8] who found that orogastric tube group neonates required (6.18±0.61) days as compared to Nasogastric tube group neonates as they required (6.47±0.59) days to achieve full feeding but it is statistically insignificant (P =0 .368).

Based on clinical observation. The differences between both groups in terms of outcome measures like duration of hospital stay, time to reach oral feeds were not statistically significant which may be due to small sample size and there is need of larger samples and also further continuation of this study to know the significance of these outcomes.

Conclusion

This study concluded that no differences were found between both orogastric and nasogastric tube feeding on preterm infants' weight, incidence of adverse events and time to sustain full oral feeding.

Ethical Clearance: Acceptance of ethical committee at faculty of nursing, in Cairo University was gained. All studied neonates' parents were informed about the aim, procedure, benefits and nature of the study and the written consent was obtained from them. The confidentiality of information was assured.

Conflict of Interest: The authors declare that there is no conflict of interest.

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The Contribution of Some Pseudo-cereal Naturally Gluten-Free in the Dietary Balance of a Group of Celiac Adolescents

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Abstract

Background: Celiac disease is an autoimmune disease induced by gluten in genetically predisposed individuals. However, celiac disease is generally associated to malnutrition especially in children and adolescents.

Materials and Method: The survey was carried out on 132 celiac patients in the region of Rabat between the year 2015 and 2018. Weekly dietary frequency and Mediterranean index KIDMED was used to evaluate the dietary balance.

Results: A 132 children and adolescents with celiac disease participated in the study of which 59.8% (n = 79) of the respondents were female and 40.2% (n = 53) were male. The average age of patients was 14.34 ± 0.2 years, with a minimum age of 10 years and a maximum age of 16 years.

The result of KIDMED classification (crombach alpha = 0.80) showed that 28.8% (n = 38) of children had a very poor level of adherence to Mediterranean diet, 57.6% (n = 76) in need of improvement and 13.6 % (n = 18) were in optimal Mediterranean diet. In the other hand, 84.26%, 86.04% and 54,45% of respondents reported consuming maize, sorghum and rice more than 4 times/week respectively.

Conclusion: It has been found that the diet of most of the individuals surveyed during this study having followed a diet consisting of cereal (maize, sorghum, millet and rice) without gluten allows them having a growth and a more or less correct corpulence. Consequently, these celiac patients manage to meet their nutritional needs in an acceptable way.

Keywords: *Celiac Disease - KIDMED - Gluten free diet- pseudo cereal.*

Introduction

Celiac disease (CD) affects people in all parts of the world. In last decades celiac disease thought to be a rare childhood syndrome, but currently the celiac disease known to be a common autoimmune genetic disorder[1]

Celiac disease can be effectively treated by a strict, life-long adherence to a gluten-free diet[2]. The absence of gluten in natural and processed foods represents a key aspect of food safety of the gluten-free diet A promising area is the use of minor or locale pseudo-cereals like, sorghum and millet the aim of our study is to find the place of the naturally absence gluten in pseudo-cereal in the dietary balance of the participants.

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The Mediterranean Diet is associated with many positive health benefits. . It suggests the high intake of vegetables, fruits, whole grains, legumes, healthy fats and water; a moderate consumption of seafood, poultry and dairy; and a low intake of sweets and processed or red meat. For patients with celiac disease, the Mediterranean Diet can help provide important nutrients that a typical gluten-free diet may lack—without the significant risk of undesired weight gain that can lead to overweight or obesity[3] . And the diet can easily be made gluten-free.

Method

Population: The survey was carried out on 132 celiac patients under strict gluten-free diet for a year, in the region of Rabat. It was conducted by experienced dietician, between 2015 and 2018.

KIDMED Index: The quality of the diet was assessed using the KIDMED index (Mediterranean food quality index for children and adolescents)[4] . The KIDMED index is based on the principles of the Mediterranean model diet, because of its good correlation with the improvement of glycemic control and cardiovascular health.[5]

Frequency of consumption questionnaires: The participants were asked to check, for each food on the list, the frequency closest to their usual consumption. Prior knowledge of the eating habits of the studied population and the determination of the objective of the questionnaire make it possible to choose the elements to be included in the questionnaire and to determine its length. The consumption data collected at the individual level was transformed into digital data[6] .

Statistical Analysis: The quality of the diet was estimated using the KIDMED index (Mediterranean Food Quality Index for Children and Adolescents). It was deduced from a 16-items for wich the scores are classified into three groups : (score ≤ 3: very poor quality); (4≤score≤7: need for improvement) and (score≥8: optimal Mediterranean diet).

BMI (body mass index) is calculated according to WHO standards: (overweight :> + one standard deviation, type (equivalent to IMC 25 kg/m²); Obesity: > + two standard deviations, equivalent to a BMI of 30 kg/m²) and Slimming: <- two standard deviation [7].

After filtration, the collected data captured on a support designed for exploitation, then analyzed and interpreted. The qualitative characteristics expressed in percentages and the quantitative characters translated into mean ± standard deviation. The tests applied are those of chi-square, students and multiple correlation.

Results

KIDMED Index: The study carried out on 132 celiac patients chosen in a simple and random way and having completely answered all the asked questions show that 59.8 % (n = 79) of the respondents are female and 40.2% (n = 53) are male. The sexe ratio is not balanced (female/male ratio = 1.49). In addition, the distribution of the respondents shows that the average age of patients was 14.34 ±0.2 years, with a minimum age of 10 years and a maximum age of 16 years. The distribution satisfies Gaussian conditions (asymmetry coefficient = -0.59 ± 0.21 and flattening coefficient =-1.05 ± 0.42). The distribution of celiac patients according to the environment of origin shows that 74.2% (n = 98) come from the urban environment against 25.8% (n = 34) from rural regions. With respect to the socio-economic level, 66.4% (n = 85) of the patient's progress to a middle social level, 17.4% (n = 23) of low social leveland 18.2% (n = 24) answered that they come from a high social level.

The anthropometric study of patients according to their body mass index revealed that 78.79% (n = 104) have an index of between 18.5 and 25, which corresponds to the category of persons with a corpulence according to WHO. In addition, 12.88% (n = 17) were underweight, of which 16 cases out of 17 were between 10 and 12 years old and 8.33% (n = 11) were overweight and all are female and over 16 years old. For size-at-age growth, the distribution of Z score corresponding to each child shows a prevalence of 17.42% (n = 23). These stunted children are all between 10 and 12 years old

The distribution of celiac children by sex, age group and degree of diet quality presented in Table 1. As a result, 30.30% (n = 40) of children were in very low adherence to Mediterranean diet, 32.57% (n = 43) were in need of improvement and 37.12% (n = 49) were in optimal Mediterranean diet. Moreover, female children (n=17) aged 10 to 12, 13 out of 17, need improvement and 4 out of 17 are in optimal Mediterranean diet. While among female children aged 13 to 15, only one girl out of 12 is in a very low adherence to Mediterranean diet and another 5 girls need improvement,while the remaining six girls assumed normal. However, in female children over the age of 15, 56% (n = 28) were in very

poor food quality, 32% (n = 16) need improvement and 12% (n = 6) were in an optimal Mediterranean diet state. In the other hand, male celiac children with very low adherence to Mediterranean diet were those aged 10 to 12 years (n = 6) and over 15 years (n = 5). However 9 male children, under 15 years old, need a nutritional improvement and 62.26% (n = 33) of the men are on optimal Mediterranean diet

Distribution of food frequency: The table 2 shows the frequency of consumption per week for each food group. Food quantities were estimated using a "Food portion guide" reference manual[8]. In addition, 84.26% 86.04% and 54,45% of respondents reported consuming maize, sorghum and rice more than 4 times/ week respectively. However, more than 75% of the respondents answered to consume vegetables and fish 4 times and more per week. Similarly, over 54% confessed to consuming more than 4 times a week rice and fruits.

Table 1. Distribution of celiac children by sex, age group and diet categories (frequency-expressed results).

Standard	Gender						Total
	Female (n=79)			Male (n=53)			
	[10-12]	[13-15]	> 15	[10-12]	[13-15]	> 15	
Very Bad Quality	0	1 (8,33%)	28 (56%)	6 (33,33%)	0	5 (25%)	40
Need Improvement	13 (76,47%)	5 (41,67%)	16 (32%)	4 (22,22%)	5 (33,33%)	0	43
Optimum Mediterranean Diet	4 (23,53%)	6 (50%)	6 (12%)	8 (44,44%)	10 (66,67%)	15 (75%)	49

Table 2. Weekly dietary frequency in celiac children (expressed as a percentage).

Food	More than 4 Times	2 to 3 Times	Less than Once
Maize	75 (84,26%)	10 (11,23%)	4 (4,4er9%)
Sorghum	37 (86,04%)	4 (9,30%)	2 (4,65x%)
Rice	72 (54,45%)	50 (37,88%)	10 (7,57%)
Flour	22 (16,67%)	12 (9,09%)	99 (75%)
Millet	26(19,69%)	33(25%)	73(55,30%)
Dried fruit	55(41%)	43(33%)	34(26%)
Dairy products	43(33%)	83(63%)	6(4%)
Vegetables	102(77%)	26(20%)	4(3%)
Fruits	76(58%)	43(33%)	13(10%)
Meat And Fish Or Eggs	99(75%)	20(15%)	14(11%)
Gluten Free Products Other Than Flour	11(9%)	6(4%)	115(87%)

Discussion

A gluten-free diet provides effective treatment for celiac disease, this diet is complex, costly and socially restrictive[9]. Gluten-free foods imported from other countries are very expensive and will never be affordable for masses, expensive and outside the reach of the general population especially for long term use. The problem can be remedied by the accurate labeling of food products. Unfortunately, adequate food labeling laws do not exist in Morocco, the same situation was cited in Pakistan[10]. In Slovakia like other European countries, the situation is different health insurance companies are covering gluten-free products approximately from 60 % of the price (flour, pasta, raw material) to 5-30 % (ready baked bread, additional gluten-free cookies) and Gluten-free products have to be registered and approved as gluten-free by official laboratory examination. [11]

In Morocco, a gluten-free diet poses several other challenges, such as adhering to a balanced diet using the available alternatives. The population studied shows that it has very few participants who cannot balance their diet while the rest follow an optimal diet or need to improve their diet. This population uses naturally gluten-free alternatives like maize millet sorghum and rice. However, children and adolescents in other countries, show low adherence to the Mediterranean diet despite the availability of gluten-free product 4.2% in Spain[4], 27% in Greece[12] and between 23,0% and 33,0%.[13,14] According to a study conducted in Italy on 162 children between 9 and 12 years in the Autonomous Community of Madrid, the rate of children in optimal diets (37.12%) was closer to ours (37.5%)[5]. However, the celiac children's with optimal adherence to their diet composed mainly of food of plant origin (fruits, vegetables and cereals (maize and sorghum)) the gluten-free diet can also induce nutritional imbalances and the eating habits and the composition of the food[15].

Conclusion

Patient information and education remains a cornerstone in the management of any disorder to individuals and families with celiac disease through programmes of awareness, advocacy and education, Gluten-free foods imported from foreign countries are very expensive and will never be affordable for masses because they are more expensive than their regular counterparts. Using local products to make meals for celiac patients can help effectively in improving their well-being and overall health for the population studied. Consequently, these celiac patients manage to meet their nutritional needs in an acceptable way.

Conflict of Interest: No

Source of Funding: No

Ethical Clearance Obtained: Number :86/17 Ethics committee for biomedical research, Faculty of Medicine and Pharmacy, University Mohammed V, Rabat, Morocco.

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Stress, Stress Coping, Social Support, Generativity and Subjective Well-being in the Middle-Aged People

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Abstract

Purpose: This study was aimed to investigate stress, stress coping, social support, generativity and subjective well-being in the middle-aged people, to confirm the factors that affected subjective well-being so as to find out the relative importance of variables.

Method: The subjects in this study were 204 middle-aged men and women from 40 to 59 years old living in two cities in Seoul and Chungcheongnam-do and data were collected from them. The data were analyzed using descriptive statistics, Pearson's correlation coefficient and stepwise multiple regression using the SPSS 22.0 program.

Results: Mean score of subjective well-being was 3.36 point. Subjective well-being showed negative correlations with stress and avoidance among coping method of stress while positive correlations with social support seeking and problem-solving, social support and generativity. Upon the results of multiple regression analysis, social support (β=.0.37, p<.001), generativity (β=0.31, p<.001), stress (β=-0.26, p<.001) and problem-solving (β=0.16, p<.001) were shown as the influencing variables on subjective well-being with 72.5% of explanatory power for these four variables.

Conclusion: This study investigated the factors to affect the subjective well-being of the middle-aged using multiple variables, which will be used as the basic data when the nursing intervention programs are developed.

Keywords: *Stress, Coping, Social support, Generativity, Subjective well-being.*

Introduction

While life expectancy of Korean in 2015 is 82.1 years old, healthy life expectancy considering the qualitative aspects of health is 73.2 years old, showing about 10 years gap. It is urgent to establish the preventive system for health management to extend the physical and mental healthy life expectancy in the middle-aged people.[1] They experience multiple times of crisis socially or at home due to the anxiety on weakened physical and mental health, aging and retirement; burden to adapt to the multiple social changes; and burden to achieve the tasks in the development stage that should play a productive role in the society or at home. Crisis in the middle aged may cause multiple types of stresses, which develops the mental and psychological problems and threatens well-being.[2] Since stress does not cause the serious outcomes by itself but varies according to the individual ways of recognition and responses,[3] nursing interventions are required by the ways of coping stress.

Psychosocial developmental tasks in the middle aged are generativity versus stagnation which should be solved in each development stage. When the crisis of each stage overcomes, it becomes a new momentum. Generativity is a degree of individual inner development

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in terms of identity, meaning the degree of maturity in the psychosocial adaptation in the middle aged.[4] Generativity is a core element that makes him or her feel positively and evaluate his or her life meaningful and valued one and it generates the optimistic attitudes to the changes on him or her to empathize the positive aspects.[5]Generativity is a concept existing in the individual but it is established upon the outcome of seamless interactions with social environment. Acknowledging the social support system or support of resources in the social relations can enhance the psychological well-being and generativity.[6]

As stated above, coping stress works as a core mechanism to mediate the stressful incidents and adaptation and generativity is related to the well-being in the middle-aged people. Especially, subjective well-being is a comprehensive concept with emotional experiences and cognitive judgements related to life, demonstrating that social support worked as a crucial element to affect the well-being significantly.[7] To date, few studies had been conducted on the subjective well-being in view of nursing and no study was found on the integrative approach to the factors to affect the subjective well-being especially in the middle aged. Hence, this study is intended to seek the nursing interventional plans to enhance the quality of life in the middle-aged people by investigating the factors to affect their subjective well-being using multiple variables.

Method

Subjects: The study subjects were randomly sampled among the middle-aged men and women from 40 to 59 years old who were living in Seoul and a city in Chungcheongnamdo. The minimum sample size of this study was calculated to be 184 under the conditions of modest effect size with .15, significance level with .05 and 12 predictors to secure the statistical power with 95% for correlation and regression analysis using G*Power 3.12 Program. Considering 20% of dropout rate, 221 copies of questionnaires were distributed and 204 copies were included as the final analysis subjects.

Instruments:

Stress: KPSS-10, a Korean version of Perceived Stress Scale (PSS) developed by Cohen et al.[8] was used in this study. It includes a total of 10 questionnaires with 5-point scale meaning higher score as higher perceived stress. Cronbach's α was found as .78 in this study.

Stress coping: Shin and Kim's[9] Korean Coping Strategy Indicator was used as a measurement tool in this study. It consists of 3 elements with a total of 33 3-point scale questionnaires. Cronbach's α was found as .87.

Social support: A Korean version of Multiple-dimensional Scale of Perceived Social Support (MSPSS) developed by Zimet et al.[10] was used. This tool consists of 12 5-point-scale questionnaires meaning higher score as higher degree of social support. Cronbach's α was found as .94.

Generativity: Generativity Index for the Middle-Aged developed by Lee & Lee[6] was used. It consists of 27 5-point-scale questionnaires meaning higher score as higher degree of generativity. Cronbach's α was found as .94.

Subjective well-being: Index of subjective well-being developed by Bak and Hong[11] was used. It consists of 30 questionnaires from 'never' for 1 point to 'very likely' for 5 point, meaning higher score as higher degree of subjective well-being. Cronbach's α was found as .95.

Data Collection: Data were collected from September to December 2019. The data collection was performed from the subjects of middle-aged men and women who visited community social gatherings, sports centers, shopping centers and so on by the investigator. In addition, written informed consents were prepared to participate in the study voluntarily after being informed on the study purposes and intentions.

Ethical Consideration: Anonymity and confidentiality for the selected study subjects were promised after informing the study purposes and intentions and they were informed to be allowed not to answer the questions if they are reluctant to expose the private information. Also, they were informed to stop or withdraw their consents if they do not want to participate in the study at any time. The collected data will be stored in the locked personal cabinet for 3 years after the completion of the study and then they will be discarded.

Data Analysis: Collected data were processed using SPSS/WIN 22.0 program. Frequency, percentage, mean and standard deviation were calculated for the general characteristics of the subjects, stress, coping stress, social support, generativity and subjective well-being. t-test, ANOVA and Scheffé test as a post-hoc analysis were performed on the difference of subjective well-being in the middle-aged by the general characteristics.

In addition, multiple regression analysis was performed to investigate the factors to affect the subjective well-being of the subjects.

Results

General characteristics of subjects: Mean age of the subjects was 47.66(±5.31) years old and 40 to 49 years old group was the most among these with 125 persons (61.3%). In terms of sex, females were more with 104 (51.0%) than males. University graduates were the most with 141 (69.1%); 154 (75.5%) had their spouses; 106 (52.0%) had no religion; and 172 (84.3%) had occupations. With respect to the economic status, 140 (68.6%) answered as 'middle' .

The degree of Stress, stress coping, social support, generativity and subjective well-being of the subjects: Means scores of stress; social support seeking, problem-solving and avoidance among stress coping; social support; generativity; and subjective well-being were 1.83(±0.48); 1.77(±0.44); 2.16(±0.41); 1.64(±0.36); 3.29(±0.57); 3.46(±0.77); and 3.36(±0.56); respectively (Table 1).

Table 1: The degree of Stress, stress coping, social support, generativity and subjective well-being (N=2)

Variables	Mean	SD	Min	Max
Stress	1.83	0.48	0.50	3.20
Social support seeking	1.77	0.44	1.00	3.00
Problem solving	2.16	0.41	1.09	3.00
Avoidance	1.64	0.36	1.00	2.64
Social support	3.29	0.57	1.48	4.78
Generativity	3.46	0.77	1.00	5.00
Subjective well-being	3.36	0.56	1.60	4.73

Difference of subjective well-being according to the general characteristics: For the difference of subjective well-being according to the general characteristics, significant difference was found by economic status (F=22.48, p<.001). Those who answered 'middle' for the economic status showed higher level of subjective well-being than those who answered 'low' or 'high'.

Correlations among stress, coping stress, social support, generativity and subjective well-being of the subjects: Subjective well-being of the subjects showed negative correlations with stress (r=-0.65, p<.001) and avoidance among coping stress (r=-0.40, p<.001), while it showed positive correlations with social support seeking (r=0.41, p<.001) and problem-solving (r=0.43, p<.001) among coping stress; social support (r=0.74, p<.001); and generativity (r=0.73, p<.001). As the scores of stress and avoidance were lower and those of social support seeking, problem-solving, social support and generativity were higher, the scores of subjective well-being were higher (Table 2).

Table 2: Correlations among stress, coping stress, social support, generativity and subjective well-being

Variables	Stress	Social support seeking	Problem solving	Avoidance	Social support	Generativity
	r (p)	r (p)	r (p)	r (p)	r (p)	r (p)
Subjective well-being	-0.65 (<.001)	0.41 (<.001)	0.43 (<.001)	-0.40 (<.001)	0.74 (<.001)	0.73 (<.001)

Influencing factors on subjective well-being of the subjects: Upon the results of multicollinearity test before conducting regression analysis, the range of Variance Inflation Factor (VIF) of all the variables was 1.102-1.475. Durbin-Watson stat to check the independency of error terms showed 2.177 satisfying

the hypothesis of independency. To confirm the factors to affect the subjective well-being, economic status which showed the significant difference among general characteristics was switched into a dummy variable and 7 variables were put in including stress, coping stress (social support seeking, problem-solving and avoidance), social support and generativity. Results of the stepwise regression analysis were social support (β=.0.37, p<.001), generativity (β=0.31, p<.001), stress (β=-0.26, p<.001) and problem-solving (β=0.16, p<.001), demonstrating explanatory power of these four variables with 72.5%. The biggest influencing variable was social support among these (Table 3).

Table 3: Influencing factors on subjective well-being

Variables	B	SE	β	t	p
Intercept	2.43	0.22		11.14	<.001
Social support	0.27	0.04	0.37	6.94	<.001
Generativity	0.30	0.05	0.31	5.74	<.001
Stress	-0.30	0.05	-0.26	-5.68	<.001
Problem solving	0.26	0.06	0.16	4.13	<.001
F=135.02, p<.001, Adj **R2** =.725					

Discussion

Mean value of subjective well-being of the subjects was 3.36 points among its range from 1 to 5 points in this study. In Heo and Son's study[12], psychological well-being scores were 3.45 points and 3.42 points in the adolescent and middle-age periods, respectively. For subjective well-being by general characteristics, significant difference was found in the economic status.

Praag, Frijters, & Ferrer-i-Carbonell[13] reported subjective well-being meant overall satisfaction in occupation, economy, housing, health, leisure, environment and so on, which supports the results of this study. In addition, an early study on well-being showed low impact of demographic variables on the subjective well-being, which is consistent with the results of this study.[14]

Upon the results of correlations between subjective well-being and other variables, higher subjective well-being scores were rated as the scores of stress and avoidance were lower and those of social support seeking, problem-solving, social support and generativity were higher. Middle-aged period is exposed to multiple stresses which cause mental and psychological problems and threaten well-being. It was reported that social support at this timefunctioned as a buffer to assist to respond and adapt to the stressful situations and it was related to psychological well-being,[15] which supports the results of this study. Also, generativity was related to subjective well-being,[16] which is consistent with the results of this study.

To find out the factors to affect subjective well-being, a total of 7 variables including economic status, stress, coping stress (social support seeking, problem-solving and avoidance), social support and generativity were put in to perform the stepwise regression analysis, demonstrating the significant variables with social support, generativity, stress and problem-solving. The explanatory power of these four variables was 72.5%. The biggest influencing variable among these was social support, which is consistent with the study result that psychological well-being was higher as the individual perceived level of social support system or resources was higher in the social relation.[7]

Generativity had been reported to be related to psychological well-being, self-esteem and life satisfaction and to feel subjective well-being in the course to acquire generativity, which supports the results of this study.[16] Also, stress can be predicted as an influencing variable on subjective well-being since the level of subjective well-being varied by the negative emotional experiences such as stress.[11] Lastly, problem solving among coping stress showed as an influencing variable on subjective well-being. Because no study had been conducted to confirm coping stress affected subjective well-being, it cannot

compare directly. However, considering the report that problem-solving lessened the stress level directly by changing the stress incident,[17] coping stress as a concept to apply the adaptation process of the human-being[18] can be predicted as an active measure to cope with stress.

Based on these results, active problem-solving method are required on the stress to enhance the subjective well-being in the middle-aged people and information and system should be established to be able to use the local community infrastructure in the formation of identity and strengthening support system for the middle-aged.

In addition, to allow the new meaning of life in the middle-aged people, active process is needed to experience well-being by themselves such as establishment of generativity and physical and mental health enhancement to prepare old age, moreover, to reorganize and understand it for integrative life from middle-age to old-age.

Conclusion

In this study, social support, generativity, stress and problem-solving were significant predictors as influencing factors on the subjective well-being in the middle-aged people and their explanatory power was 72.5%. Therefore, it is required to establish social support system, develop generativity and seek active problem-solving-centric coping for subjective well-being in the middle-aged. This study has the meaning of integrative approach considering multiple variables to provide nursing interventions so as to enhance the subjective well-being in the middle-aged. However, it has the limitation to generalize the study results since this study was conducted by random sampling from middle-aged men and women who lived in certain areas.

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Associated Factors between Health Literacy (HL) and Results (eGFR, HbA1c) for Delayed - Progression of Kidney Disease in Type 2 Diabetic Patients The Northeast Thailand

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Abstract

Background: The Northeast Thailand the prevalence of kidney disease in type 2 diabetic patients and death from diabetes is higher than in other regions.

Aims: 1) To study the morbidity of kidney disease in stages of type 2 diabetic patients the northeast. 2) To study associated factors between health literacy (HL) and good lab in type 2 diabetic patients the northeast.

Setting and Design: This study uses a cross-sectional analytical research.

Method and Material: A total of 1,325 type 2 diabetic patients, aged 18 and over, were selected by the multi-stage stratified cluster random sampling and collecting data using questionnaires.

Statistical analysis: Descriptive statistics Including the distribution of frequencies, percentages, mean and standard deviations. Data were analyzed using statistical generalized linear mixed model (GLMM).

Results: It was found that most of the 1,325 samples had a mild of eGFR in the second phase, 38.34%, there were 85.36 percent for the poor lab and data without using herbs, normal creatinine. And included cognitive skills, self-management skills and decision skills. Have associated with good lab with statistical significance at the level of 0.05.

Conclusion: Type 2 diabetic patients Irregular glomerular filtration rate found can be found up to almost two-thirds and results for poor lab of 2.5 out of 3, with health literacy at a low level.

Keywords: *Results (eGFR, HbA1c),Diabetes, Kidney disease, Type 2 diabetic patients and Health literacy.*

Introduction

Diabetes is a chronic disease that is a major public health problem and is likely to increase steadily. In 2015, there are 415 million people worldwide with diabetes and expected to increase to 642. Million people in the year 2040.[1] Kidney disease is increasing steadily. In 2015 around the world, the prevalence of kidney disease is 11.0 percent - 13.0 or 200 million people.[2,3] In the United Kingdom and Canada It is found in 25 percent and is higher than 40 percent in the United States. Diabetic nephropathy is the main cause of kidney replacement therapy in United Kingdom[4] and 39.7 percent of the prevalence of kidney disease in type 2 diabetes patients in the United States.[5] Poorly controlled diabetes can accelerate the progression of kidney disease at all stages of diabetes. Which increases the cost For maintenance including high-cost procedures such as regular dialysis.[6] The prevalence of kidney disease in Bangkok. Northern and northeastern regions are higher than the central and southern regions.[7]

The rate of kidney disease, which is caused by

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diabetes, is increasing every year and the problem of kidney disease from diabetes is recognized as a major problem. The most common cause of kidney disease is 49 percent and Type 2 diabetis is the leading cause of kidney disease worldwide. Is a significant problem in both developing and developed countries and is related to mortality Illness and medical expenses and patients still have a low quality of life.[8] In Thailand, 7.6 million kidney disease patients, of which end stage renal disease (ESRD) is diagnosed, require more than 70,000 dialysis or abdominal dialysis, causing suffering. With patients And the government is responsible for the annual medical expenses of 10,000 million baht[6]

And from the report of the Bureau of Non-Communicable Diseases, Department of Disease Control, Ministry of Public Health 2017, the mortality rate with diabetes increases every year. And the northeastern region, which is region 7, 8, 9 and 10, has higher mortality than other regions.[9] National Health Security office reported that the northeast region has a higher prevalence of kidney disease in type 2 diabetic patients than other regions.[10]

Objective:

1. To study the morbidity of kidney disease in stages of type 2 diabetic patients the northeast.
2. To study associated factors between health literacy (HL) and results (eGFR, HbA1c) for delayed - progression of kidney disease in type 2 diabetic patients the northeast.

Patients and Method

Cross sectional analytical research. Data were collected by questionnaires. During August - November 2019, the population used in this study with type 2 diabetic patients. Came to check in the diabetes clinic of the hospital in the northeastern region and calculate sample size by using the Hsieh et al. (1998)[11] population proportion formula. Sample size adjustment using a sample size calculation formula for studies using Multiple logistic regression to analyze data by adjusting the relationship between independent variables with the Variance Inflation Facor: VIF (Hsieh et al., 1998)[9]. There fore, the researcher obtained a sample size of 1,325 people and used Inclusion criteria, type 2 diabetic patients who have been diagnosed by doctors, aged 18 years and older. And willing to answer the questionnaire.

The multi-stage stratified cluster random sampling technique, in which the northeastern region has 4 regions, randomly selected hospitals from each health zone, 2 hospitals, Both community hospitals and hospitals in the city. A total of 8 hospitals and randomized type 2 diabetic patients. From the diabetes clinic Outpatient department In the hospital that can be chosen at random

The research instrument is self-Administered questionnaire and health literacy by the researchers who integrated the concept of Nutbeam (2008)[12] consists of 6 skills which are access skill, cognitive skill, communication skill, self- management skill, media literacy skill and decision skill. Then the questionnaires were presented to 5 experts to examine the content validity and then calculate the relative index between the question and the objective to get the value of 0.82. Diabetes Clinic Roi Et Hospital, consisting of 30 people, due to their similar characteristics to the sample group, examining the Reliability of Cognitive skill in 10 items. by kuder-richardson 20: KR20 with the difficulty classification r. 0.61. Health literacy questionnaires were access skill, communication skill, self-management skill, media literacy skill and decision skill equal to 0.80, 0.81, 0.79, 0.78 and 0.77.

Descriptive Statistics: Frequency distribution, Mean percentages and Standard deviation regarding general data, clinical data, health literacy levels, results (eGFR, HbA1c) for delayed - progression of kidney disease. Analyze variables to explain the associated between variables. Various affecting the results (eGFR, HbA1c) for delayed - progression of kidney disease (good lab). For data analysis, the categorical variable has a dichotomous variable, which is the need to modify practice group, the results group (eGFR, HbA1c) for delayed - progression of kidney disease poor level (Poor lab).And good behavior groups. Is the Results group (eGFR, HbA1c) for delayed - progression of kidney disease good level (Good lab), which is the Outcome of the study. Data were analyzed using Generalized linear mixed model (GLMM) statistics and 95% CI Confidence.

Results

1. General data of a sample of 1,325 people, mostly 66.87% female, 55.17% over 60 years old, body mass index overweight 74.79%, dual family status 78.04%, primary school education percentage 82.65% of the current occupation is agriculture, 44.30%, Duration of diabetes is in the range of 6 years and over 88.23%.Most do not smoke, 88.83

percent. Most do not drink alcohol, 86.72 percent. Most non-steroidal anti-inflammatory drugs do not. 80.60%. Most of them do not use herbs, 69.43 percent. And most of the internet use is less than 4 hours per day 94.87%

2. Clinical data from the latest health examination The sample consisted of 1,325 people. Most blood pressure is usually less than 140/90 mmhg 84.23%. Urine albumin is higher than 30 mg/dl 50.42%. Normal serum creatinine is less than or equal to 1.2 mg/dl 86.57%. Cholesterol LDL greater than 100 mg/dl 78.64 percent.

3. Number and percentage of the subjects have health literacy levels access skills were at a moderate level 53.13%, cognitive skills were at a low level 58.79%, communication skills were at a low level 58.64, self-management skills were at a moderate level 55.09%, Media literacy skills With a low level of 60.68 percent, media literacy skills with a low level of 60.68 percent and decision skills with a low level of 57.66 percent

4. The glomerular filtration rate (eGFR) and hemoglbin A1c (HbA1c) good lab and poor lab due to studies The objective is to study the rates of kidney disease in different stages of type 2 diabetic patients. Northeast region It was found that the number and percentage of most samples had the HbA1c level higher than 7 mg/dl 85.36 percent. And the glomerular filtration rate stage 2 (eGFR 60 - 89 ml/min/1.73m^2) 38.34%, most of the samples had results for delayed - progression of kidney disease, 85.36% Poor lab level as follows shown in table 1.

Table 1: Number and percentage of good lab and poor lab of the sample. (n=1,325)

eGFR and HbA1c	Number	Percentage
1. HbA1c (mg%)		
Normal (less than or equal to 7)	194	14.64
High (more than 7)	1,131	85.36
2. Glomerular filtration rate (eGFR)(ml/min/1.73m²)		
Stage 1 with normal or high GFR (eGFR ≥ 90)	486	36.68
Stage 2 mild CKD (eGFR 60 - 89)	508	38.34
Stage 3A moderate CKD (eGFR 45-59)	186	14.04
Stage 3B moderate CKD (eGFR 30-44)	134	10.11
Stage 4 severe CKD (eGFR 15-29)	11	0.83
Stage 5 end stage CKD (eGFR <15)	-	-
3. Results for Delayed - Progression of Kidney Disease		
Good lab (eGFR ≥ 90, HbA1c ≤ 7mg%)	194	14.64
Poor lab (eGFR ≤ 90, HbA1c > 7mg%)	1,131	85.36

5. The odds ratio analysis between the general data associated with the good lab showed that age, body mass index, education level, occupation, duration of diabetes drinking alcohol, the use of non-steroidal anti-inflammatory drugs, the use of herbs and using the internet per day correlated with the results of good lab and statistically significant at the level of 0.05.(Simple logistic regression)

6. The study found that the sample group had the good lab 14.64 percent (95% CI 12.73: 16.54). And from the analysis of the crude odds ratio between the clinical results that are in relation to the results of a good lab for delayed - progression of kidney disease, the urine albumin and serum creatinine associated with good lab and statistically significant at the level of 0.05. (Simple logistic regression)

7. Analysis of the odds ratio associated between health literacy and good lab results showed that access skills, cognitive skills, communication skills, self-management skills, media literacy skills and decision skills. Have associated with good lab with a statistical significance of 0.05

8. The analysis of factors associated to the results of

a good lab when considering the effects of other factors, such as region level and hospital level using (Generalized linear mixed model (GLMM) and Confidence at 95% CI). The results showed that age, body mass index, duration of diabetes, the use of herbs, serum creatinine, cognitive skill, self-management skilland decision skill were related to the results of a good lab . With statistical significance at the level of 0.05 as shown in Table 2.

Table 2: Showing odds ratio and 95% CI between factors associated with good lab from GLMM analysis

Factors	Number	%Good lab	Crude OR	Adjusted OR	95%CI	p-value
1. Age (years)						
Less than 45	66	27.27	3.71	2.31	1.08 to 4.93	0.030
45 – 60	528	20.64	2.57	1.72	1.11 to 2.66	0.015
More than 60	731	9.17	1			
2. Body mass index (kg/m2)						
Less than 18.5	103	14.56	1.50	2.54	1.28 to 5.05	0.007
18.5 – 22.99	231	33.77	4.49	4.16	2.73 to 6.36	< 0.001
Greater than or equal to 23	991	10.19	1	1		
3. Duration of diabetes (year)						
Less than or equal to 5	1,169	23.72	2.00	2.85	1.66 to 4.91	< 0.001
6 years and older	156	13.43	1	1		
4. The use of herbs						< 0.001
Use	405	6.67	1	1		
Not use	920	18.15	3.10	2.31	1.40 to 3.82	
3. Serum creatinine (mg/dl)						0.006
Normal (less than or equal to1.2)	1,147	16.04	3.20	2.78	1.34 to 5.76	
High (more than 1.2)	178	5.62	1	1		
4. Cognitive skill						
Low	779	8.99	1	1		
Average	431	19.26	2.41	2.15	1.44 to 3.22	< 0.001
High	115	35.65	5.61	3.23	1.82 to 5.75	< 0.001
5. Self-management skill						
Low	429	7.93	1	1		
Average	730	16.58	2.30	1.81	1.12 to 2.92	0.015
High	166	23.49	3.56	3.48	1.81 to 6.70	< 0.001
6. Decision skill						
Low	746	11.13	1	1		
Average	456	16.67	1.59	2.28	1.19 to 4.36	0.012
High	105	31.43	3.66	3.81	1.68 to 8.62	< 0.001

Discussion

The study found that the results (eGFR, HbA1c) for delayed - progression of kidney disease good level (Good lab)of the sample, only a percentage 14.64 (95% CI 12.73 : 16.54) and patients with type 2 diabetes abnormalities in the glomerular filtration ratecan be found in nearly two-thirds, consistent with Bunloet et al., 2018. That is, when the number of patients with diabetes increases, the kidney disease from diabetes will increase respectively and the results (eGFR, HbA1c)for delayed - progression of kidney disease to a poor level of 2.5 out of 3.

Majority find that health literacy for delay - progression of kidney disease is low and the results

for delayed – progression of kidney disease to a good level there is a statistically significant associated with those younger than 45 years old, body mass index 18.5–22.99kg/m^2, duration of diabetesis less than or equal to 5 years, not using herbs, normal serum creatinine is less than or equal to 1.2,cognitive skill, self-management skill and decision skill and high level of health literacy affects delayed-progression of kidney disease behavior and results (eGFR, HbA1c) for delayed - progression of kidney disease good level (Good lab).

This study has limitations in data collection. Which is data collection using questionnaires In many patients, the complete lack of clinical examination results is recorded. And is an elderly person which causes problems in reading questionnaires Which will not be brought to participate in this study

Summary of this study shows patients with type 2 diabetes. In the northeastern region, behaviors should be adjusted to delayed - progression of kidney disease. Therefore, it is able to apply health literacy to delayed-progression of kidney disease to improve health services. Increase screening policies for at-risk groups for complications and as a guideline for management of education systems for target patients.

Ethical Clearance: Taken from the Ethics Committee of Khon Kaen University. Based on the Declaration of Helsinki and Good Clinical Practice Guidelines (ICH GCP) No. HE622126, given on 20 July 2019.

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Conflict of Interest: Without.

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Staging Characteristics of Prostatic Cancer Patients in Department of Urology Dr. Soetomo Surabaya

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Abstract

Background: Prostate cancer is ranked 4th as the leading cause of death of cancer in men in Indonesia. Most of the patients in developed countries are diagnosed at an early stage while in Indonesia they come at an advanced stage. It is important to know the yearly staging distribution throughout the hospitals, including General Academic Hospital Dr. Soetomo, for the epidemiology recording. As a result, the strategy in the treatment can be evaluated further according to this data.

Objective: This study aims to know the earlier diagnosis characteristics of staging of prostate cancer in patients of General Academic Hospital Dr. Soetomo Surabaya.

Method: This study is an observational descriptive study with a retrospective design. The data in this study were taken from the medical records of prostate cancer patients in General Academic Hospital Dr.Soetomo from 1 of March 2014 to 31 of May 2018 which was selected according to inclusion and exclusion criteria, resulting to 75 patients.

Results: Every year, stage IV and III are the most common findings. In total, the number of prostate cancer staging are dominated by stage IV (n=39) followed by stage III (n=35). Abnormal in clinical exanimations are enlarged prostate (n=26), abnormal prostate surface (n=28) with mostly are positive nodules (n=25) and hard consistency (n=24); abnormal PSA level examination (n=71) with mostly are in the range of > 100 ng/mL (n=33); and on biopsy results, grade 5 (n=40) is the highest.

Conclusion: The number stage III and stage IV are the most common findings each year with the highest total number is stage IV.

Keywords: *Stage Presentation, Prostate Cancer, Prostate.*

Introduction

The number of prostate cancer cases worldwide in 2012 was ranked 2nd, around 1.112.000 of cases with 307.000 deaths[1]. In Indonesia, prostate cancer is the 4th in all cancer cases. In 2014, there were 13,663 cases of prostate cancers with 9,176 deaths[2]. Prostate cancers have divided into epithelial tumours, neuroendocrine tumours, mesenchymal tumours, hematolymphoid tumours and miscellaneous tumour; being adenocarcinoma (included in epithelial tumour) is the highest incident rate[3,4]. The population who have risk factors of prostate cancers are more prone to develop prostate cancer[5].

The diagnosis of prostate cancer must be conducted through biopsy. Prostate Specific Antigen (PSA)> 4 ng/mL and/or abnormality in Digital Rectal Examination

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(DRE) are indications for biopsy. Biopsy is taken to determine the pathologic characteristics by means of Gleason score. After biopsy, CT scanis used to determine whether it is metastatic or not. The whole examination results are used to determine the staging[6,7].

It is important to know the staging distribution of prostate cancer for monitoring and evaluation of prostate cancer incidence in order to increase awareness on prostate cancer. However, what is the statistical description of prostate cancer in General Academic Hospital Dr. Soetomo is still unknown. Some cancer patients who are diagnosed with a higher stage has a less chance of survival. It may be caused by the patients themselves who are not aware of the symptoms that they have, the primary care doctors who do not suspect cancer for such symptoms, or the suspected cancer patients are not quickly referred and treated correctly in secondary care[8].

Samples and Method

This study is an observational descriptive study with a retrospective design.

Collection of Medical Records: The data were medical records taken from Communication and Information Technology Installation (IT), central medical record and for Cancer Development & Services Center (PPLK) sections. The medical records of prostate cancer, ICD-10: C.61, patients in General Academic Hospital Dr.Soetomo were from 1 of March 2014 – 31 of May 2018. Samples were taken by *total sampling* from both outpatients and hospitalized patients.

Selection of Medical Records: The inclusion criteria were all medical records of prostate cancers, ICD-10: C.61. Then, the data that has not either PSA, Biopsy Results, or TNM-staging were excluded, resulting to 75 medical records.

Staging and Risk Group Determination: These data were inputted and processed in Microsoft Excel 2016. The data of PSA and TNM-staging were used to obtain Staging Distribution based on AJCC eighth edition and Risk Group based on National Comprehensive Cancer Network (NCCN) 2018 guideline.

Results

Demographic Data of the Patients:

Number of Patients: There were 75 patients from 2015 to 2018 that the number increases each year being 2015 (n=9) was the lowest, 2016 (n=18) and 2017 (n=18) were similar and 2018 (n=30) was the highest.

The age distribution: Most of the patients were aged 60-69 years (n=38) and there was no patient aged 30-39 years. The data had the mean of 63.64 (SD ± 9,41) years and the median of 63 years. The youngest patient was 23 years and the oldest patient was 83 years being the data had the range of 23-83 years.

The patient's education distribution: The education of the patients was mostly Senior High School (n=38), followed by Elementary School (n=14) and Junior High School (n=8). There were patients not finished their education from Elementary School (n=2). 8 patients were higher degree than Senior High School, diploma (n=3) and bachelor's degree (n=5). 5 patients were written others.

Clinical Examination Findings: There were five variables in this section—DRE, PSA, biopsy, staging and risk group.

Digital Rectal Examination:

Table 1: Enlargement, surface and consistency of prostate from DRE

DRE Findings	Number (n)	Percentage (%)
Enlargement		
Enlarged	26	34.66%
Not Enlarged	21	28.00%
No data	28	37.33%
Nodularity		
Lumpy	3	4.00%
Nodule +	25	33.33%
Nodule -	29	38.67%
No data	17	22.67%
Consistency		
Hard	24	32.00%
Soft	24	32.00%
No data	27	36.00%

The abnormality found was enlarged (n=26); nodule + (n=25) and lumpy (n=3); and hard (n=24).

PSA level in blood: The level of PSA was classified into 4 level being < 4 (n=4) was normal and the others (n=71) were abnormal. The abnormal levels were in the range of 4-10 (n=6), 10-100 (n=32) and > 100 (n=33). 34 Out of 71 patients were also found abnormality in DRE.

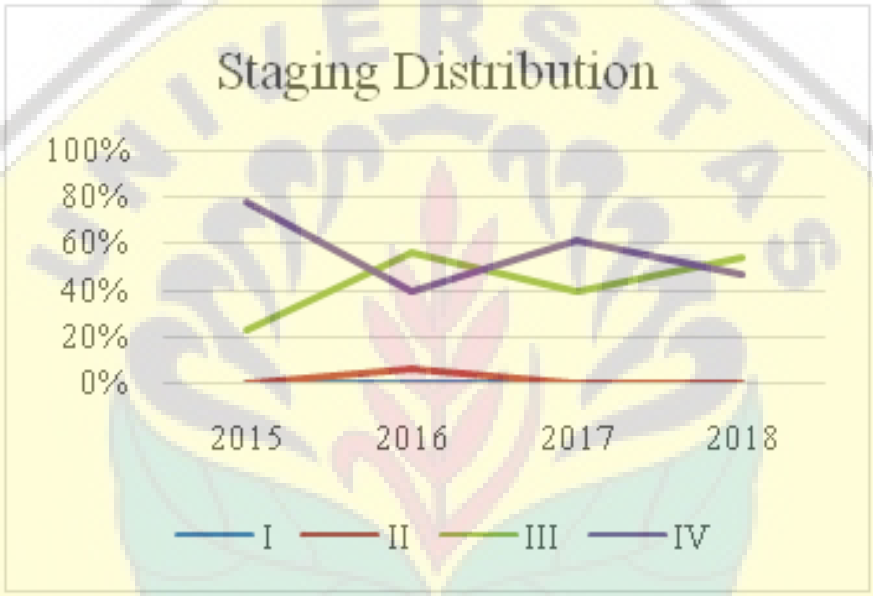
The PSA level data has the mean of 386,44 ng/mL with the lowest level was 0.04 ng/mL and the highest level was 3781 ng/mL.

ISUP Grade Group: The biopsy result was written in Gleason score which was converted into 5 grades according to ISUP Grade Group. The most common finding was grade 5 (n=40) and the least common finding was grade 3 (n=2). There was 1 data that was written as high grade (n=1). This data could not be converted into ISUP Grade Group.

Table 2: The histopathology distribution of the prostate tissues according to ISUP Grade Group.

Grade	Number (n)	Percentage (%)
Grade 1	6	8.00%
Grade 2	8	10.67%
Grade 3	2	2.67%
Grade 4	18	24.00%
Grade 5	40	53.33%
High grade	1	1.33%
Total	75	100%

Staging and Risk Group Distribution:



Picture 1: The staging distribution of prostate cancer patients from 2015-2018

Table 3: The staging distribution of the prostate cancer patients.

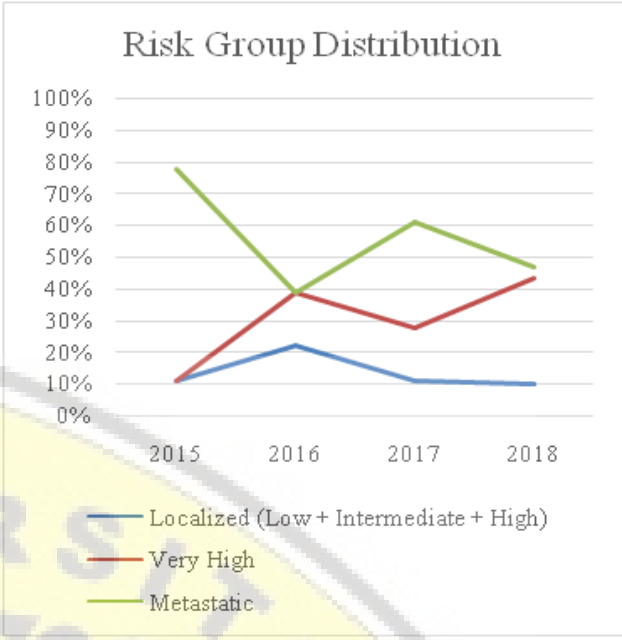
Staging Distribution	Number (n)	Each Year Percentage (%)
2015		
Stage I	0	0.00%
Stage II	0	0.00%
Stage III	2	22.22%
Stage IV	7	77.78%
2016		
Stage I	0	0.00%
Stage II	1	5.6%
Stage III	10	55.56%
Stage IV	7	38.89%
2017		
Stage I	0	0.00%
Stage II	0	0.00%
Stage III	7	38.88%
Stage IV	11	61.11%
2018		
Stage I	0	0.00%
Stage II	0	0.00%
Stage III	16	51.52%
Stage IV	14	42.42%
Total		
Stage I	0	0.00%
Stage II	1	1.33%
Stage III	35	46.67%
Stage IV	39	52.00%

Table 4: The Distribution of Risk Group of the prostate cancer patients.

Risk Group	Number (n)	Each Year Per-centage (%)
2015		
Low	0	0.00%
Intermediate	0	0.00%
High	1	11.11%
Very High	1	11.11%
Metastatic	7	77.78%
2016		
Low	0	0.00%
Intermediate	1	5.56%
High	3	16.67%
Very High	7	38.89%
Metastatic	7	38.89%
2017		
Low	0	0.00%
Intermediate	0	0.00%
High	2	11.11%
Very High	5	27.78%
Metastatic	11	61.11%
2018		
Low	0	0.00%
Intermediate	0	0.00%
High	3	10.00%
Very High	13	43.33%
Metastatic	14	46.67%
Total		
Low	0	0.00%
Intermediate	1	1.33%
High	9	12.00%
Very High	26	34.67%
Metastatic	39	52.00%

The staging distribution was grouped each year. The stage level of each year was put in table 3 and a diagram (Picture 1) to see the trend of the stage in each year. The stage was determined according to AJCC eight edition by considering PSA level, biopsy finding or Gleason score and TNM finding. The data found that in each year, stage III and stage IV were always dominating.

The risk group was determined according to NCCN 2018 based on the PSA level, Gleason score and TNM findings. The risk groups were group each year and the results were put in the table 4 and a diagram (picture 2). The risk group of low risk, intermediate risk and high risk are localized.



Picture 2: Risk group distribution of the prostate cancer patients.

Discussion

Demographic Data of the Patients: Age is one of the main risk factors for prostate cancer[9]. There were about 85% of patients diagnosed with prostate cancer aged 65 years old or more. Another research stated that only 10% of new cases of prostate cancer were patients with age less than or equal to 55 years old[10].

The youngest patient age in this research was 23 years old. This finding shows that prostate cancer can emerge at a young age. Besides age, other factors such as genetic may increase the risk, up to 40%[11]. BRCA-2 and HOXB13 mutations played a role in the emergence of prostate cancer lesions at a young age. BRCA-2 and HOXB13 mutations increased the risk of prostate cancer at <55 years old by 23 and 8 times, respectively[12].

Over time, findings of prostate cancer cases in younger age groups tend to increase. Epidemiological studies of prostate cancer cases from 1973 to 2008 showed an increase of new case of prostate cancer in the age group of 55 years old and below up to 5.7 times (95% CI: 5.0-6.7)[13]. Research on autopsy of prostate showed that 27% of 30-years-old men had cancer lesions, 40-years-old men had a percentage of 30%, while 60-years-old men had 50% and in 85-years-old men and over had 75% or more. This finding was in line with epidemiological data on the case of new cases in patients with age of <55 years old which had increased

considerably since the introduction of screening method using PSA.[12,10,13]

There were 60 patients with education level of senior high school and below. Education level affects morbidity and mortality rate in prostate cancer patients that a man with a higher level of education had a lower mortality rate[14]. This might be the reason why the risk group findings of very high and the metastasis had a large percentage.

Clinical Examination Findings: There were 37 patients with abnormality on DRE alone and 71 patients were found to have abnormal PSA level with 34 out of 71 patients had abnormality in DRE.DRE and PSA results will determine the prognosis. When an abnormality was detected only on either DRE or PSA level, the patient had a better prognosis than that of patients whose abnormality was detected on both examinations. Patients whose the abnormalities were in both DRE finding and PSA levels had a worse clinical and pathological characteristic[7].

Blood PSA levels in this research were mostly in the range of > 100.0 ng/mL (n = 33, 44.00%). There was a significant correlation between PSA and stage levels. It was reported that the results of the PSA mean value at T1N0M0 was 8.9 ng/mL; at T2N0M0 was 12.9 ng/mL; at T3-4N0M0 as 29.9 ng/mL; and at T3-4N0-3M0-1 was 317 ng/mL[15].

Of 75 patients, 6 were not written in numerical form but in the range of numbers. A total of 5 medical records were written > 100 ng/mL and 1 was written > 1000 ng/mL so that the average of PSA levels data only involved 69 patients with a result of 357.44 ng/mL. This high number was probably caused by a wide range and the presence of several outliers.

There was 1 patient whose results cannot be converted to Grade Group because the results were not written in the Gleason score, but was written in high grade according to the older classification rules. In the older classification, high grade was defined as cancer with a Gleason score of 8-10. But now, the Gleason 8 score is classified into group 4 and the Gleason score 9-10 is classified into group 5[16]. Therefore, this data cannot be determined whether in group 4 or group 5.

Stage level data in this research were dominated by stages III and IV each year. In 2015 and 2017, most patients were patients with stage IV. In 2016 and 2018, most patients were patients with stage III. In total, number of patients with stage IV (n=39, 46.67%) was greater. This means that the case of prostate cancer in General Academic Hospital Hospital Dr. Soetomo was dominated by patients with high stages.

The above results have similarities in prostate cancer research at Cipto Mangunkusuma Hospital (RSCM) and Dharmais Cancer Hospital (RSKD) Jakarta. In the research, the highest percentage was stage IV with 67.17%, followed by stage II with 28.08%, while the lowest percentage was stage I with 0.57%[15]. Data from the Indonesian Society of Urologic Oncology (ISUO) 2011 in the National Guidelines for Prostate Cancer Management Medical Services by the Ministry of Health states that 50.5% of prostate cancer patients are stage IV[17]. Unlike in US, Epidemiology of localized prostate cancer data was 77%, regional 13%, distant 6% and unknown 4%. In addition, the 5-year relative survival rate in general were 98%[18]. This shows that the health condition regarding prostate cancer in Indonesia is still poor. For this reason, policies that support health promotion efforts regarding prostate cancer need to be improved.

The classification of patient risk groups according to the NCCN 2018 criteria was divided based on the results of PSA, ISUP Grading and TNM. Low, intermediate and high-risk groups were localized; very high-risk groups were locally advanced; and metastatic groups were with the presence of N1 or M1 findings. This classification served to classify patients based on the risk of reoccurrence or development of the disease and was used as a treatment determination for prostate cancer patients[19].

Conclusion

Based on the findings of the number of prostate cancer stages, stage III and stage IV were the most common findings in each year with the highest total number being stage IV. The distribution of stages and risk groups each year fluctuated but did not show a significant decrease or increase.

Conflict of Interest: The authors declare that there is no conflict of interest in this study.

Source of Funding: This study was funded by the authors.

Ethical Clearance: The Ethical Clearance is taken from Ethical Committee of General Academic Hospital Dr.Soetomo, Surabaya, Indonesia.

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Collaboration of Academic Community of Health Polytechnic of Healthministry Palu Post Flash Flood Disaster: A Case Study in Bangga Village, Sigi Regency, Indonesia

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Abstracts

Health Polytechnic of Health Ministry Palu is one of the institutions that implement interprofessional education in the health sector such as midwifery, nursing, environmental health and nutrition. Interprofessional education and collaborative practices are needed by health professionals to deal with natural disasters. The flash flood disaster has hit South Dolo Subdistrict, Sigi Regency, Central Sulawesi on April 28, 2019. This study aims to describe the collaboration of the Academic Community of the Health Polytechnic of Health Ministry Palu in reducing health risks after a flash flood disaster. This study was a case study conducted in the Bangga Village of South Dolo Subdistrict from April 29 to May 2, 2019. The location of the study and informants was determined purposively. Data collection through observation and interviews of 25 students of Health Polytechnic of Health Ministry Palu, 5 lecturers, 5 families affected by disasters, Bangga Village secretary, officers of the Social Service and Sigi District Health Office, each one person. The results showed that on the first day a number of mineral water supplies, basic food needs, cooking utensils, toiletries, adult clothing, children's and baby clothing had been collected and assessments had been performed on refugee needs, refugee physical health conditions, environmental health conditions of refugee tents.

Keywords: *Interprofessional Collaboration, Disaster, Refugee, Flash Flood.*

Introduction

Floods and problems related to flooding are becoming increasingly rampant throughout the world which causes failures, infrastructure damage and epidemics every year[1]. Indonesia is a disaster-prone area. Disasters can occur due to nature or human activity. One of them is the flash flood. These conditions need mitigation efforts including help, rescue, providing temporary shelter, meeting basic needs, health services and clean water and sanitation needs [2]. Flash flood which struck five villages (Bangga, Balongga, Walanata, Omu and Tuva) in South Dolo Subdistrict, Sigi District, Central Sulawesi, resulting in severe damages.[3] The Sigi District Regional Disaster Management Agency reported since Sunday night April 28, 2019, after a flash flood and mud incident at least 500 housing units, a resident died after being washed away by flooding and 2,400 residents or 640 families forced to leave their homes and flee to more secure places[4]. Disaster events result in disaster victims having to evacuate with all limitations[5]. Health risks associated with flooding are diseases transmitted through vectors and water [6]. Following the flood, the risk of disease outbreaks such as hepatitis E, digestive diseases and leptospirosis increased, especially in areas with poor hygiene and densely populated refugee populations[7]. After the flood, related to loss of jobs, severely damaged housing, traumatic babies, children's education and poor health[8]. Research in Yogyakarta that explores the effectiveness of interprofessional education programs in the context of disaster management involves 72 medical, nursing, health and nutrition students[9].

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Interprofessional competencies have to be integrated into disaster preparedness education[10] Health Polytechnic of the Ministry of Health Palu is one of the institutions responsible for interprofessional education in the health sector, such as midwifery, nursing, environmental health and nutrition.

This study aims to describe the collaboration of the academic community of the Health Ministry Polytechnic of Palu in reducing the risk of post flash flood disaster (Case study of South Dolo Subdistrict, Sigi Regency).

Material and Method

This study is a case study in Bangga Village, South Dolo Subdistrict, which was conducted on April 29 to May 2, 2019. This type of study is qualitative descriptive, where field data relies on observations, information, views and perceptions of informants. The location is specifically determined, namely the area affected by natural disasters in the South Dolo district. The selection of informants was done purposively by considering the condition/suffering of the people affected by a flash flood at the same time because they lived in the same area with the same conditions. Data collection is done through in-depth interviews. Data collection through observation and interviews of 25 Health Polytechnic of Health Ministry Palu students, 5 lecturers, 5 families affected by disasters, Bangga Village secretary, officers of the Social Service and Sigi District Health Office, each one person. Observations were made on the condition of the environment and community activities, then study documentation, namely studying documents related to flash flood. Ethical Clearance; Polytechnic of Health Ministry Palu, City of Palu, Indonesia.

Result and Discussion

The distance between the village and the capital of South Dolo Subdistrict varies, the village furthest from the sub-district capital is Jono Village with a distance of 8 km while the village closest to the sub-district capital is Bulubete and Rogo Villages with a distance of 1 Km each. Based on data from the age group in the South Dolo sub-district the productive age group reached 63.54% of the total population of the South Dolo sub-district or around 4,960 people. Demographic and socio-economic conditions, the total population of Dolo Selatan District is 15,763 people, with an area of 664.78 km^2, the population density reaches 24 people/Km^2[11]. Flash flood disaster is part of the hydrometeorological disaster which indicates a significant impact on life and property[12].The main factor of a flash flood is triggered by the intensity of extreme rain[13].

Information about the flash flood in Dolo Sigi Subdistrict was first obtained from the news[14].The participation of student executive bodies (BEM), student associations majoring in nursing, midwifery student associations, environmental health student associations and nutrition student associations, the missionary institution of As-Syifa campus, Health Ministry lecturer Polytechnic Palu strongly supports the distribution of aid to flash flood victims in Sigi. On April 29, 2019, the first step taken was the head of the Health Polytechnic of Health Ministry Palu instructing the research and community service unit, Chairpersons of the Department to disseminate flash flood information and collect assistance for victims of flash floods[15] In line with the Sendai Disaster Risk Reduction Framework 2015-2030 which states that disaster management needs to be shifted to disaster risk management rather than reactive response[16] than in the case of the flash flood disaster in Sigi, on the first day an assessment was carried out to minimize the health risks after the flash flood disaster.

The results of assessments of refugee needs, physical health conditions, environmental health conditions of refugee tents showed that on the second day bottled water supply increased, coming from donors, but there was still inequality especially for areas that were difficult to reach.Observing the physical health conditions of refugees in the field shows that refugees suffer from itching due to bathing in rivers with dirty water. Learning from the Bangladesh flood experience, In flood victims, the most common problem is fever (63.6%), followed by respiratory problems (46.8%), diarrhoea (44.3%) and skin problems (41.0%). Because of public health problems caused by flash floods and changes in weather, strategies are needed to raise awareness of potential sources of contamination and motivate preventive behaviour[17]. Observations on the health conditions of refugee tents showed that tents had been installed from the BPPD in Sigi district, as well as tents made from tarps using bamboo and wood. Learn from the Kamal study in Bangladesh that shows that poor people are very vulnerable to flooding, but also more adaptive and resilient; while middle-income households are vulnerable because they are reluctant to take any jobs and rely more on assistance, while rich households, although less adaptive, can recover from floods due to wealth[18]. Other observations in the field show that the preparedness of the Baluase Community

Health Center as the flash flood area controller is quite good.On the first day after the flash flood, health workers from the Baluase Health Center have provided services to the victims. Other Aceh research shows that there is a significant relationship between attitudes and knowledge of health workers on preparedness to face the risk of flood disasters at the Pidie Jaya Regional General Hospital[19]. Cooperation between the Village Government and BPBD Sigi is the steps that need to be taken to increase community capacity and reduce vulnerability, Learn from the results of research conducted in Aceh that disaster preparedness is one of them by setting up non-governmental organizations to deal with disasters, increasing the role of the government in policy-making to reduce disaster risk and developing disaster curricula in schools[20].Due to the sudden onset of the disaster and to the detriment of many aspects, disaster anticipation needs to be prepared. Disaster training and emergency simulation training are therefore needed to improve preparedness. The results of the Palan study (2019) showed an increase in preparedness in nursing students after counselling and emergency simulation training[21]. On a small scale, disaster problems, as well as the application of occupational safety and health in the campus environment, have not received attention, so that the risk of accidents and diseases to lecturers, education staff, students, janitors, campus visitors can still occur[22]. The results of this study also indicate problems related to lack of supply, low quality of drinking water and the existence of inequality in the supply of drinking water, an important strategic issue to be developed by the institution is increasing coordination efforts on partnerships between institutions, efforts to determine the amount of drinking water supply in accordance with the needs of the community, improving the performance of the local government to restore the trust of donors, as well as efforts to monitor the condition of the fulfilment of drinking water needs for people in need, especially vulnerable communities[23].

In relation to urban communities and the flash flood issue, Bodoque's research shows variations in people's perceptions. In particular, 60.8% of those interviewed had low-risk perceptions and low awareness (cluster 1); 24.4% had high-risk perceptions and low awareness (cluster 2), while the remaining 14.8% had high long-term risk perceptions and high awareness (cluster 3).

The characterisation of social security is very important in flash flood-prone urban areas to ensure the success of emergency management plans.[24]. Variations in the potential danger of flash flood disaster in an urban city can use the Wetness Index and the Urban Heat Index.An urban flash flood potential is disproportionate at different times of the year[25]Flood risk integration in spatial planning is also seen as a means of increasing the city's resilience to increased flood hazards[26].

Using a disaster response could improve student engagement, comprehension and perception of interprofessional collaborative practice. In the post-workshop survey, there has been an increase in understanding and perceptions of interprofessional collaboration and practice. In the pre-workshop survey, the students had a limited understanding of the collaborative practice and its importance in everyday practice[27]

They can observe role modelling at the workplace and assume that studying with other professions will help them to become more effective members of the health care team[28]. The benefits obtained from this case study in the scope of lecturers-students, students between departments, students with disaster prepared cadets, Health Polytechnic of Health Ministry Palu with health services is an application of inter-professional collaboration. According to Prihatiningsih, disaster management by the interprofessional education approach has the benefit of educating students from different backgrounds to be able to better interact and cooperate with other professions[29]. Training in participatory method is needed to link technical knowledge with everyday practice in emergency management. Lessons learned will form the basis for future interventions to prepare health professions and emergency preparedness and response programs to implement community-based emergency preparedness strategies[30].

Conclusion

Interprofessional education aims to improve teamwork and communication skills. The collaboration of the Palu Ministry of Health Polytechnic Community as a form of interprofessional education in reducing risks after the flash flood disaster is an example of a case study of a health professional to deal with flash flood disasters in South Dolo Subdistrict, Sigi Regency. From this case study, students have a number of opportunities for inter-professional education. They can observe role modelling at the workplace and assume that studying with other professions will help them become more effective members of the health care team.

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Health Care Accessibility of Migrants in Border Areas of Northeast, Thailand

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Abstract

Access to health care among migrants groups is major concerning in Thailand. This study aimed to explore the situation of health care accessibility of migrants in the border land in the Northeast of Thailand. This quantitative survey research was conducted in 72 migrants in the border areas in the Northeast of Thailand. Collecting data was using a created questionnaires whose ever been accessed in healthcare service in the system.

The results showed that migrants, there were four nationalities comprised such Laos (77.8%), Cambodia(16.7%), Myanmar (2.8%) and stateless (2.8%) respectively. Most of them came to Thailand without the resident's visa and illegal immigrant as 73.6%. There was only only 29.6%has registered with Thai health insurance scheme which was seperated in Universal care coverage for migrant 47.6%, Social Security scheme for migrant worker 38.1% and Others 14.3%. The major problem of migrants was poor opportunity to access in health care service due to their inability to pay. In the other hands, group with health insurance system was facing to continue their right and maintaining.

In conclusion, this finding is most of the migrant workers could not access health services. Legal status has important for applying for a health management system. Obstacles to accessing the health service system due to the lack of legal status which affects various aspects of the migrant population. The Thai government should develop a system for a registration system for a migrant in the health system without regardless of legal status.

Keywords: *Healthcare access, Migrant, Border Areas, Northeast of Thailand.*

Introduction

With regards to human rights in health as international concerned due to living conditions of migrants are considered a vulnerable group with specific medical requirements. The issue of health and migration is becoming, particularly in Thailand, a recognized interested in the nation policy. Migration affects individuals physically, mentally and socially. It particularly affects the health of the migrants and everyone else around them(1). The situation of migration in Thailand during the transition to the 21st century has caused various changes. There is a major challenge for the Thai health system to provide citizens from neighboring countries with healthcare service(2). Thai policies to promote the international trade of Thailand has resulted in an increased migrant population. There werea lot of people crossing the Thai border from countries with differences in race, ethnicity, beliefs,

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cultures and traditions and this movement may result in various health problems[3,4]. These might be major contagious problems, emerging and re-emerging infectious diseases, maternal and child health problems, accessing healthcare and treatment problems. Contagious diseases, especially, need careful management including information about the migrant population and planning for disease prevention[2,3,5,6].

Ubon Ratchathani is an important border province that connects three countries: Thailand, Cambodia and Laos. Consequently, there is a lot of immigration, especially illegal immigration into the province. Between 2015 and 2018 the number of migrant workers registered with the Ministry of Labor in Ubon Ratchathani was 1,951 2,850 3,315 and 3,145 for each year respectively[7]. There seems to be a general increase every year. The migrant workers' health insurance card sales from 2015 to 2018 was 3,242 cards. Some migrant workers were seasonal workers for unskilled employment but were not registered correctly with the system[8].

In Ubon Ratchathani from 2013 to 2015, the surgical treatment expenses, unable to charge 32,820,640 baht, 23,749,532 baht and 35,987,383 baht respectively [7]. Between 2016 and 2018 the Ministry of Public Health found the expenses from both in-patients and out-patients incurred by citizens without Thai nationality were as high as 6,945,271,654 baht, of which only 40 percent was able to be charged for [6]. Considering the above-mentioned health expenses, the increasing trend of migrant patients has caused the hospital to bear the burden of expenses, resulting in a financial crisis. Ubon Ratchathani Provincial Public Health Office's guidelines were to set up a budget to compensate hospitals that bore the burden of caring for migrant patients and experiencing a financial crisis, especially hospitals with areas along the borders. With a limited budget, however, it was impossible to maintain all hospitals.

In 2014, the major incidence of infectious diseases in Ubon Ratchathani was malaria. 877 patients were accounting for 47.75 per 100,000 population, of which 5.47 percent of all patients are Lao nationality. Most of them have no welfare for medical treatment. Most were found in Na Chaluai District, Buntharik District and Nam Yuen District. These hospitals have a crisis of medical expenditures because of migrants who did not have health insurance.

The allocation of healthcare professionals and various aspects of management has become inefficient [9, 10]. The situation of these migrants revealed that the solutions to the health problems of the migrants did not cover all migrant groups. All people are entitled to human rights, however, the legal restrictions affect access to healthcare. The plans to solve the inefficient health problems regarding migrant workers complied with the policies set by the Thai government. The Ministry of Public Health has policies that link to complex health systems and migration by establishing a guideline for the health of migrants using the factors determining social health (Social Health Determinant: SDH). Therefore, to focus on the health of the migrant workers dynamically, this paper investigates the circumstances, context and difficulties in accessing the healthcare system.

The objective of this study is to investigate the situations access of migrants to healthcare systems in the border areas in the Northeast of Thailand

Material and Method

The research applied quantitative studie. Collect the data in 72 migrants whose ever been access health care service in 6 months in Ubon Ratchathani Province. Data were collected from October 2016 -April 2017.

The questions developed from the literature review and synthetic reviewapproach from previous topicfrom 6 sources [10, 13-17]with comprehensive information of two main factors, which included 1) demographic data with regarding to sex, age, time for stay in Ubon Ratchathani, nationality, education, earn per month, type of immigration, cause of migration and intended duration of stay. 2) Accessing to health service of migrants regarding health insurance, type of health insurance, pay for migrant health insurance, the distance between the hospital and the house, traveling to the hospital, payment of medication and suggestion for improving services, etc. 3) The attitude of migrants toward the quality of health care services regarding the quality of the health service, health work forces, place, technology, medicines and expert health professionals.

The questionnaire was tested for content validity by 5 experts, with the straightness of 0.89 and the reliability of the Cronbach alpha coefficient equal to 0.92.The descriptive statistics analyzed to demographic data and health service access.

Ethical Consideration: The study was obtained from Mahasarakham University Research Ethics

Committee (PH 020/2016). Written informed consent was attained from all study participants.

Finding:

Demographic Characteristics: The results showed the migrants were mostly female (59.7%); aged 33-49 years old (37.5%); Laotian (77.8%), Cambodian (16.7%), Myanmar (2.8%) and stateless (2.8%). Mostly, they were uneducated (55.6%) and average earn 6,136.11 bath/month. Type of immigrations are undocumented (without the resident's visa and illegal) (53.6%), with documents (23.6%) and unresponsive (2.8%). Cause of migrations mostly as political conflict based immigrant (62.5%), family-based immigrant (15.3%), employment-based immigrant (12.5%) and others (9.7%). The intended duration of stay in Thailand, mostly they think to stay in Thailand for a lifetime (80.6%).

Accessing to health service of migrants: The migrants mostly do not have health insurance 70.4%and have health insurance 29.6%. The migrants, who have health insurance, pay for health insurance including a migrant health insurance card (47.6%), social security card (38.1%) and others 14.3%. The most migrants accessed health care services in health-promoting hospitals (37.2%), district hospitals (19.5%) and private clinics (12.4%) respectively. The time they traveled from home to the hospital was mostly less than 30 minutes, 91.5% and 43.7% traveling on a motorcycle. When they went to see the doctors at the hospital, most pay the full cost of 66.7% and pay some medical expenses 29.6%. The sickness that went to see the doctors in 6 months ago including cold/stuffy nose (29.5%), crick (27.9%), headache (27.9%) and others (14.7%). In the past 12 months, 81.9% were admitted to hospitals and 28.1% were not admitted. The symptoms they were admitted include colds, malaria, dengue fever and chronic obstructive pulmonary disease. The suggestion to improve services include want to access to medical treatment without having to buy a health insurance card and want to obtain Thai nationality and Thai nationality card.

The attitude of migrants toward the quality of health care services: The migrants had an attitude toward the quality of health care services regarding the quality of services, environment, medicines and medical supplies, health work forces and medical technology. The top 3 attitudes of migrants regarding are 1) confidence in the quality of the public health service according to international standards (4.58) 2) the Surrounding environment of health services that are safe (4.48) and 3) the medicines and medical supplies have quality and standard (4.45). The last 3 attitudes towards services are 1) medical technology is modern and standardized (4.15) 2) the migrants are confident in maintaining confidentiality and respect for patient rights (4.14) and 3) the health work forces are sufficient for providing health services (4.07) show in table 1.

Table 1: Attitude of migrants toward quality of health care service

Attitude of migrants toward quality of health care service	Mean	SD
1. Confidence in the quality of the public health service according to international standards	4.58	0.63
2. The Surrounding environment of health services that are safe	4.48	0.58
3. The Medicines and medical supplies have quality and standard	4.45	0.63
4. A health workforce providing health services for the migrants without discrimination in the context of race, culture, religion, age and gender	4.42	0.60
5. A health workforce listen to problems, understand the feelings of clients and give advice for health care appropriately	4.37	0.67
6. The health service places a good, clean, tidy and well-ventilated environment.	4.37	0.67
7. The migrants are confident in the diagnosis and treatment plan of the doctor.	4.27	0.72
8. A health workforce have expertise and expertise under professional standards.	4.26	0.77
9. The migrants are confident in receiving health services at selected health facilities or near their home.	4.25	0.67
10. A health workforce treat and provide health services to migrants with respect and equity.	4.24	0.75
11. Medical technology is sufficient for service.	4.17	0.77
12. Medical technology is modern and standardized.	4.15	0.73
13. The migrants are confident in maintaining confidentiality and respect for patient rights.	4.14	0.76
14. The health workforces are sufficient for providing health services.	4.07	0.87

Discussion

This paper reveals the barriers of migrant to obtaining access to healthcare in border areas of

Northeast, Thailand. Lack of health insurance is one of the most important barriers in accessing healthcare services among migrant populations as often public health insurance is linked to documentation status [17]. Although the government provides public health rights under the national health insurance system to all people in the Kingdom of Thailand whereas only the migrants who have documents were accepted[18]. Many migrant people do not have access to health services because they do not have enough money to maintain both health checks and treatment when sick. Although the health check service is basic, the migrant population cannot access these services.The lack of health insurance and extremely low incomes make it difficult for migrant to afford health care. The migrant illegal wants to remain anonymous. They do not seek health care community hospitals because of their inability to pay, that can be affected to migrants health[19].

The Thai government should develop a system for a registration system for a migrant in the health system, especially those in the low skill and undocumented migrant are not able to access health services for the benefit of public health primarily without regardless of legal status. It should be linked data to all departments and at every organization level by systematically distributing information through existing channels.[4,17,23-25]

Conclusion

The most immigrants in the research areas were Laotian nationals who moved into Thailand for political asylum. They came without legal permission and intended to live in Thailand for the rest of their lives. Although they knew the information and were interested in having a health insurance card, but considering the annual price, they thought that it is not worth it because most will not have a serious illness. In the case of chronic diseases, they went to receive medical treatment at the Health Promotion Hospital, which does not have any cost for treatment, so they are not interested in purchasing the health insurance card. In the case of those who have a history of illness and being admitted to hospitals, it is necessary to purchase a migrant health insurance card because of the unavoidable illness and the need of purchasing a health insurance card when the illness occurred only.

Legal status has important for applying for a health management system. Obstacles to accessing the health service system due to the lack of legal status which affects various aspects of the migrant population themselves, such as financial barriers, basic welfare and health welfare. The limitations of this paper is to lead to discussion of the problems related to data of migrant to health care access. This study supports the need for further research to develop the database system of migrants, including an update of migrant health policy in Thailand.

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Effects of Maternal Weight Gain and Macronutrients Intakes During the Third Trimester of Pregnancy on Birth Weight: A Prospective Cohort Study in Pregnant Women in Sleman, Indonesia

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Abstract

Ensuring optimum nutrition before and during pregnancy is a critical concern for both mother's and infant's growth. However, the evidence is inconsistent on the effects of maternal diet and weight gain (GWG)during a specific period of pregnancy on low birth weight (LBW) which this study aimed to investigate during late-term pregnancy. This cohort followed 139 pregnant women in Sleman, Indonesia during late-term pregnancy until delivery. Macronutrients intake was assessed using Semi Quantitative Food Frequency Questionnaire (SQ-FFQ). Maternal body weight was measured using a digital scale while pre-pregnancy anthropometry and birth weight were taken from pregnancy books. Statistical analysis was done using simple and multiple Poisson regression test with adjustment model. We found no effect of GWG on LBW. After adjustment for mother's education, parity and intakes of total energy, fat and carbohydrate, inadequate and excessive protein intakes reduced the risk of LBW by 78% (ARR 0.22; 95%CI 0.07-0.74) and 84% (ARR 0.16; 95% CI 0.03-0.99), respectively. In contrast, a6-fold increase in risk of LBW was found among mothers with inadequate fat intake (ARR 5.82; 95% CI: 1.08-31.50).During late-term pregnancy, GWG does not affect LBW while inadequate fat intake is a risk factor of LBW.

Keywords: *Gestational weight gain, maternal nutrition, late-term pregnancy, low birth weight.*

Introduction

Nutritional status of a newborn is greatly affected by the mother's nutritional status before and during pregnancy.[1] Lower pre-pregnancy body mass index (BMI) is associated with lower maternal weight gain (GWG).[2] During pregnancy, inadequate GWG as a result of poor dietary intake has been linked to increased risk of small-for-gestational-age (SGA) neonates and LBW.[3,4] Thus, ensuring a balanced diet before and during pregnancy is a critical concern for both mother's and infant's growth.

There is a strong evidence cohort studies to support the association between maternal nutrition, especially during the later period of pregnancy and birth weight.[3,4] One of the most infamous studies is The Dutch Famine birth cohort study which indicated a significant reduction in birth weight from mothers who were exposed to the famine during their third trimester.[5] However, results from studies regarding the association between specific macronutrient intake such as protein and carbohydrate, GWG and birth weight, are inconsistent [3]. In a study, lower dietary protein intake was associated with smaller size at births[6] while another study indicated

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that no maternal macronutrient intake was correlated with birth weight.[7] In contrast, a study demonstrated negative association between protein intake and GWG.[8] Meanwhile, animal studies demonstrated compromised offspring phenotype from poor intake of protein[9] resulting in reduced birth weight in ratsby 40%.[10,11]

Based on the aforementioned studies, it is known that evidence is inconsistent on the correlation between dietary intake during pregnancy and the pregnancy outcome. Additionally, we focused our observation on anthropometry and macronutrient intakes associated with birth weight in later period of pregnancy. Therefore, the aim of this study was to investigate the effect of macronutrient intakes and anthropometric measurements during the third trimester of pregnancy on birth weight.

Materials and Method

Population and subjects: This was a prospective cohort study conducted across 14 community health centres (PUSKESMAS) in Sleman, Indonesia selected purposively based on prevalence of LBW and stunting at birth. Recruitment process began with listing pregnant women entering the third trimester of pregnancy based on the database at PUSKESMAS. Prospective subjects meeting the inclusion criteria were then enrolled in this cohort: aged 20-40 years and had estimated date of delivery (EDD) in December 2017. Women with multiple birth or premature delivery were excluded from this study. A total of 151 subjects who met the criteria were enrolled in this study. By signing informed consent. Ethical clearance was obtained from the Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada (approval no KE/FK/0986/EC/2017).

Measurements: Data was collected by trained enumerators during home visits in early, mid and late third trimester. Dietary intake was measured through interview using Semi Quantitative Food Frequency Questionnaire (SQ-FFQ). Subjects were asked to inform consumed food items and supplements within the last month including average portion size. Pictures were provided for common food items in household measurements to help quantify food items consumed in gram. Intakes of total energy (TEI) in kcal, carbohydrate, protein and fat in gram were calculated using a Nutrisurvey with Indonesian food database (http://www.nutrisurvey.de).

Body weight was measured by enumerators using digital scale with precision of 0.1 kg. Height and pre-pregnancy body weight was taken from subjects' pregnancy books. Mid-upper arm circumference (MUAC) was measured using a non-elastic measuring tape. GWG was calculated by reducing body weight taken during the third trimester with pre-pregnancy body weight. Birth weight was recorded from verified birth reports. Additionally, demographic data as well as number of pregnancy, type of delivery and food security were also collected by interview.

Data analysis: Statistical analyse were done using Stata SE15 software. Correlations between each independent variable and birth weight were analysed using simple Poisson Regression test. Simultaneously, multiple Poisson Regression analysis was conducted with adjustment form other's formal education, parity and intakes of total energy, protein, fat and carbohydrate. A p-value of <0.05 were considered statistically significant.

Results

In total, 151 pregnant women signed informed consent. However during the cohort, 2 participants had miscarriages, 4 dropped out of the study and 6 moved out of town. Finally, data of 139 subjects was analysed. Baseline characteristics of subjects are presented in Table 1. Mean age of subjects was 29.6 year old. Before pregnancy, subject's mean nutritional status was normal based on BMI (22.6 kg/m^2) and MUAC (27.2 cm). The averages of GWG during the cohort were 12.8 kg. Subject's TEI was 2281.2 kcal in which intake of carbohydrate contributed to the majority of TEI (55.2%). Meanwhile, protein and fat contributed to 13.0% and 34.3% of TEI. Upon delivery, mean birth weight was normal (3101.1 gram).

Table 1. Characteristics of participants (n=139)

Variable	Mean (95% CI)
Age (years)	29.6(28.8–30.4)
Pre-pregnancy BMI (kg/m^2)	22.6(21.9–23.4)
Mid-upper arm circumference (cm)	27.2(26.6–27.8)
Maternal weight gain (kg)	12.8(11.9–13.8)
Total energy intake (TEI) (kcal)	2281.2(2138.2–2424.1)
% Protein to TEI[a]	13.0(12.4–13.6)
% Fat to TEI[a]	34.3(33.3–35.4)
% Carbohydrate to TEI[a]	55.2(54.1–56.3)
Birth weight (g)	3102.1(3030.1–3174.0)

[a]Relative contribution of macronutrient to total energy intake

Table 2 demonstrates the distribution of participants based on sociodemography, anthropometric measurements and nutrition. About 54.7% participants had income above the minimum regional wage standard. About half of participants were either nulliparous (26.6%) or multiparous (25.9%) while 47.5% had previously given birth once. Before pregnancy, BMI of 49.6% of participants was normal while 41.0% was overweight. During the cohort, most participants (89.2%) had normal MUAC. While 41.7% of participants had excessive GWG, 21.6% had insufficient GWG. About half of participants consumed inadequate intake of total energy (45.3%), protein (44.6%) and carbohydrate (48.9%) but excessive intake of fat (50.4%).

Table 2. Distribution of participants

Variables	All (n=139)	
	n	%
Mother's Formal Education		
High	36	25.9
Low	103	74.1
Household Income		
High	76	54.7
Low	63	45.3
Parity		
Nulliparous	37	26.6
Primiparous	66	47.5
Multiparous	36	25.9
Smoking Exposure		
Non-smoker	52	37.4
Passive	87	62.6
Pre Pregnancy BMI		
Underweight	12	8.6
Normal	70	50.4
Overweight	57	41.0
MUAC		
Normal	124	89.2
Low	15	10.8
Maternal Weight Gain		
Insufficient	50	36.0
Sufficient	44	31.7
Excessive	45	32.4
Total Energy Intake		
Inadequate	60	43.2
Adequate	36	25.9
Excessive	43	30.9
Protein Intake		
Inadequate	59	42.4
Adequate	27	19.4
Excessive	53	38.1
Fat Intake		
Inadequate	36	25.9
Adequate	29	20.9
Excessive	74	53.2
Carbohydrate Intake		
Inadequate	65	46.8
Adequate	33	23.7
Excessive	41	29.5

Our study reported 10LBW cases (Table 3).Simple Poisson regression test was first done to analyse the unadjusted risk relative (RR)of LBWwhen mothers exposed to each independent variables. None of the independent variables affected the risk of LBW, including all anthropometric measurements and micronutrient intakes. Additionally, multiple Poisson regression tests was performed to analyse the adjusted risk relative (ARR) of LBW from mothers with differentGWG. There was consistently no effect of GWG on risk relative of LBW. However, we found that inadequate and excessive intake of protein were protective factors of LBW. Relative to optimum intake of protein, inadequate protein intake reduced the risk of LBW by 78% (ARR 0.22; 95%CI 0.07-0.74) while excessive intake reduced the risk by 84% (ARR 0.16; 95%CI 0.03-0.99). Conversely, there was a greater risk of LBW from mothers with inadequate fat intake compared to adequate intake (ARR 5.82; 95%CI: 1.08-31.50).

Table 3. Non-adjusted (RR) and adjusted risk relative (ARR) analyses using simple and multiple Poisson regression test

Independent Variable	Normal (n)	LBW (n=10)		
		n	RR (95%CI)	ARR (95% CI)
Mother's Formal Education				
High	31	5	1.00	1.00
Low	98	5	0.35 (0.11-1.14)	0.30 (0.09-1.07)
Parity				
Nulliparous	35	2	1.95 (0.18-20.71)	2.20 (0.19-25.89)
Primiparous	59	7	3.82 (0.49-30.05)	3.73 (0.31-44.84)
Multiparous	35	1	1.00	1.00
Pre-pregnancy BMI				
Underweight	10	2	1.94 (0.44-8.58)	
Normal	64	6	1.00	
Overweight	55	2	0.41 (0.09-1.96)	
MUAC				
Normal	115	9	1.00	
Low	14	1	0.92 (0.12-6.80)	
Maternal Weight Gain				
Insufficient	47	3	0.53 (0.13-2.09)	0.71 (0.17-3.03)
Sufficient	40	4	1.00	1.00
Excessive	42	3	0.39 (0.08-1.92)	0.51 (0.11-2.30)
Total Energy Intake				
Inadequate	55	5	3.00 (0.36-24.86)	1.76 (0.33-9.24)
Adequate	35	1	1.00	1.00
Excessive	39	4	3.35 (0.39-28.86)	5.56 (0.71-43.85)
Protein Intake				
Inadequate	55	4	0.61 (0.15-2.55)	0.22 (0.07-0.74)*
Adequate	24	3	1.00	1.00
Excessive	50	3	0.51 (0.11-2.37)	0.16 (0.03-0.99)*
Fat Intake				
Inadequate	32	4	3.22 (0.38-27.49)	5.82 (1.08-31.50)*
Adequate	28	1	1.00	1.00
Excessive	69	5	1.96 (0.24-16.18)	1.35 (0.18-10.44)
Carbohydrate Intake				
Inadequate	60	5	2.54 (0.31-21.01)	1.61 (0.24-10.65)
Adequate	32	1	1.00	1.00
Excessive	37	4	3.220.38-27.66	2.38 (0.52-10.90)
Pseudo R^2				0.17
AIC				88.27

Discussion

In our cohort following pregnant mothers throughout their third trimester we found that insufficient GWG during late pregnancy was not a risk factor of LBWin both unadjusted and adjusted models. However, in adjusted model, inadequate and excessive intakes of protein were protective factors of LBW while inadequate fat intake increased the risk of LBW.

The present study was conducted in rural and semi-urban areas of Sleman, Indonesia. Most of our participants were high school graduates and nearly 50% had income below the regional minimum wage standard. LBW occurred in 7.2% of deliveries. This prevalence was lower compared to a body of evidence reporting that pregnant women in rural area are more likely to experience small-for-gestational-age (SGA) and small size at birth[12]due to poverty[13] including a study in Lombok, Indonesia.[14]

GWG has been reported to be independently associated with birth size specifically in third trimester.[15] However, our study found no effect of GWG on birth weight. During the cohort, participants gained adequate GWG (12.8 kg) according to the recommendation for pregnant women with normal pre-pregnancy BMI (11.5-16.0 kg).[16] Compared to previous study conducted in Central Java, a similar location to our study, our participants had higher total GWG by 3.4 kg.[17]

Insufficient foetal nutrition is inclined with undernutrition to the foetus.[18] However, evidence for the effects of dietary composition on birth weight is inconclusive. In our study, when analysed using simple Poisson regression test, neither TEI nor single macronutrient intake affected birth weight. Howeverin the adjusted model of multiple Poisson regression including GWG, mother's formal education, parity, intake of total energy, carbohydrate and fat, inadequate or excessive intake of protein during late-term pregnancy reduced the risk of LBW. This result is in contrast with previous studies reporting adverse birth weight from both low[10,11] and high protein intake.[19] Mean while in terms of fat intake, our study indicated that inadequate fat intake was a risk factor of LBW in the fully adjusted model. This particular result is in agreement with evidence from animal studies reporting that both inadequate and excessive intake of nutrition resulted in reduced birth weight.[20]

The average TEI of our participants during the cohort was 2281 kcal which is slightly higher compared to result from a review of studies conducted in low- and middle-income countries (2055 kcal)[21] including in China (2043.8 kcal) which was also observing pregnant women in third trimester.[22] Although higher, this intake is lower than the guideline recommending pregnant women aged 19-29 years to consume 2250 kcal with an added energy intake of 300 kcal during the third trimester. However, our participants still managed to have an adequate GWG despite not meeting the minimum recommendation.

Our results should be interpreted with regards to several strengths and limitations. Dietary intake was assessed using an FFQ, thus information highly relied on participant's memory. Determination of participant's GWG was calculated from body weight data measured using different instruments. Body weight during cohort was measured directly while pre-pregnancy body weight was taken from a secondary data at local PUSKESMAS. Additionally, although our analysis was adjusted for potential confounders, it is worth noting that there were some other confounders that we weren't able to capture in our study such as meals frequency, family support, pregnancy gap, consumption of anthelmintic and antibiotics.

Conclusion

In our prospective cohort, we found no effect ofGWG during late-term pregnancy on birth weight. Meanwhile, inadequate intake of fat is a risk factor of LBW.

Conflict of Interest: The authors declare no conflict of interest.

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Combined Versus Single Method for Induction of Labor

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Abstract

Objective: Assess the efficacy and safety of combined intracervical Foley catheter and low dose vaginal misoprostol for induction of labor in comparison with the use of misoprostol alone and Foley's catheter alone.

Materials and Method: A prospective interventional open-label study, it includes 120 pregnant women admitted for induction of labor (IO) at a tertiary care center. Women are primigravida, ≥37 gestational weeks with a singleton fetus in cephalic presentation, intact membranes and a Bishop score of <4. The patient divided into three groups (40 patients each); Foley catheter and misoprostol group, only misoprostol group and only Foley catheter group. The primary outcome was the induction-to-delivery interval the secondary outcome variables included rate of vaginal deliveries, uterine hyperstimulation, cesarean section rate, Apgar scores at 1 and 5 min, neonatal intensive care unit admissions and chorioamnionitis

Results: The most common cause of IOL was postdated 43.33%, followed by hypertension 20.83% and Oligohydramnios 20% then gestational DM 12.5 %. The mean induction to the delivery interval was statistically significant shorter in misoprostol – Foley combination 17.48 ± 4.65 hr., in comparison with Foley only 21.84 ± 5.50 hr and only misoprostol 19.62 ± 3.62 hr (p = 0 . 003).Regarding successful induction, the combination had the highest rate of 77.5%, followed by intravaginal misoprostol (72.5%) then Foley catheter only (62.5%). Uterine hyperstimulation, chorioamnionitis and fetal distress were not statistically different among the groups,while the rates of meconium-stained liquor were significantly higher in intravaginal misoprostol 30% and 12.5% in Foley receiving women and 7.5% in the combination p = 0.018.

Conclusion: There is a significant reduction in the induction-to-delivery interval by concurrent use of Foleys' catheter with vaginal misoprostol,rates of meconium-stained liquor was significantly higher in the vaginal misoprostol group.

Keywords: *Misoprostol, Foleycatheter, hypertension, induction of labor, combined therapy.*

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Introduction

Induction of labor (IOL) defines as the process by which labor is started prior to its spontaneous onset by artificial stimulation of uterine contractions and/or progressive cervical effacement and dilatation, leading to active labor and birth[1]. Augmentation refers to the enhancement of spontaneous contractions that are

considered inadequate because of failed cervical dilation and fetal descent[2]. The term IOL generally refers to a procedure performed in the third trimester but may be applied at gestations greater than the legal definition of fetal viability,when the fetal survival is an anticipated outcome, any procedure performed prior to this gestation may be classified as a termination of pregnancy [3].

The induction of labor became an important part of the modern gynecological procedure which occurs in 15% of all pregnancies. The status of the cervix constitutes an important factor that affects the success of labor and it had been established that its status predicts the inducibility of labor [3]. "The most effective method for inducing labor has not been established in the medical literature "This is likely due, in part, to the lack of head-to-head studies comparing multiple induction agents [4]. The current study aimed to assess the efficacy and safety of combined intracervical Foley catheter and low dose vaginal misoprostol for induction of labor in comparison with the use of misoprostol alone and Foley's catheter alone.

Method

Study Setting: This prospective non-blinded open-label trial was conducted in Obstetrics and Gynecology Department at Al- Yarmouk teaching hospital in the period from March 2017 to December 2017, including 120 pregnant women admitted for induction of labor at a tertiary care center. Written informed consent was obtained from participants in the trial prior to enrolment. They were primigravida with gestational age ≥37 weeks single viable fetus, cephalic presentation with intact membranes, absence of labor and a modified Bishop score of <4 done by same examiner women with multiple pregnancy, non-reassuring fetal heart rate trace, ruptured membranes, active genital infection, previous uterine surgery (including cesarean section), intrauterine fetal death, low-lying placenta and estimated fetal weight >4000 g were excluded.

Data Collected: Demographic details, prior medical and obstetric history, baseline non-stress test (NST), the course of labor and indication for induction were documented.

Study Design: The patient divided randomly into three interventional groups 40 patients in each group, patients in Saturday and Tuesday received Foley catheter and misoprostol, in Sunday and Wednesday received misoprostol only and in Monday and Thursday received Foley catheter only

The first group received a Foley catheter and misoprostol (combined method) for the induction of labor. A 16-Fr Foley catheter was inserted into the endocervical canal under direct visualization during a sterile bivalve speculum examination 30ml of sterile water was injected into the balloon once the catheter passed the internal os. Traction was applied by taping the end of the catheter to the medial side of the knee or thigh. After securing the catheter in place, a 25-µg moistened misoprostol tablet (Vagiprost) was inserted into the posterior vaginal fornix under aseptic precautions. The Foley catheter was retained in situ till spontaneous expulsion or for a maximum duration of 12 h.

The cervix was assessed every 4 h by Bishop score and a 25-µg misoprostol tablet was inserted 4-hourly, up to a maximum of eight doses if the score was ≤6. The Foley catheter was removed if any of the following occurred: non-reassuring fetal heart rate (FHR) and spontaneous membrane rupture.

In the second group patient received only misoprostol, 25-µg misoprostol tablet (moistened with normal saline) was inserted into the posterior vaginal fornix The cervix was assessed every 4 hours by Bishop score and a 25-µg misoprostol tablet was inserted 4-hourly, up to a maximum of eight doses. The patient in the third group received only Foley catheter without misoprostol. The Foley catheter was retained in situ till spontaneous expulsion or for a maximum duration of 12 hours.

The fetal condition and assessment of uterine contractions were monitored in both groups by CTG half an hour prior to each scheduled dose of misoprostol and continues fetal monitoring during active labor. The final Bishop score was noted when the patient was taken into the labor ward. Active management of labor was done with amniotomy followed by low-dose oxytocin augmentation.

Oxytocin (Syntocinon) infusion was started at the rate of 1 mU/min and escalated every 30 min until regular uterine contractions were achieved or up to a maximum of 20 mU/min. The progressing of labor monitored by partogram. If the patient failed to achieve efficient uterine contraction or changes in Bishop's score, the subsequent management of those women was individualized.

Outcomes of the study: The primary outcome was the induction-to-delivery interval. The secondary outcomes of interest included rate of vaginal deliveries, uterine hyperstimulation incidence of cesarean section, neonatal outcomes (birth weight, Apgar scores at 1 and 5 min, neonatal intensive care (NICU) admissions) and chorioamnionitis.

Statistical Analysis: Discrete variables presented using there number and percentage used to present the data, chi-square test used to analyze the discrete variable, one way ANOVA used to analyze the differences between more than two groups (if they follow a normal distribution with no significant outlier). SPSS 20, Graph Pad Prism 8.1 software package used to make the statistical analysis, p-value considered when appropriate to be significant if less than 0.05

Results

There was no significant difference among the different groups of the study in their age, BMI, Bishop Score and gestational age at delivery. There was no significant difference in the outcome of induction of labor; however, the combination had the highest success rate (77.5%), then low dose vaginal misoprostol (72.5%) and least Foley with (62.5%). Both combination and vaginal misoprostol had a significantly higher rate of delivery within 24 hours (67.5% and 62.5%) compared to Foley only (32.5%) as illustrated in table 1.

Table 1: Assessment of maternal clinical data

Variables	Foley Only	Vaginal Misoprostol	Combination	P value
Number	40	40	40	-
Maternal age (y), mean ± SD	21.08 ± 4.54	20.93 ± 4.21	21.68 ± 4.42	0.722
BMI (kg/m^2), mean ± SD	23.75 ± 3.40	23.46 ± 2.94	24.35 ± 3.74	0.489
Bishop score, mean ± SD	1.78 ± 0.77	1.80 ± 0.82	1.68 ± 0.76	0.753
1	17 (42.5%)	18 (45.0%)	20 (50.0%)	-
2	15 (37.5%)	12 (30.0%)	13 (32.5%)	
3	8 (20.0%)	10 (25.0%)	7 (17.5%)	
Gestational age (weeks), mean ± SD	39.34 ± 1.64	39.54 ± 1.55	38.53 ± 5.85	0.423
Induction of labor				
DM	4 (10.0%)	5 (12.5%)	6 (15.0%)	0.850
Hypertension	9 (22.5%)	8 (20.0%)	5 (12.5%)	
IUGR	4 (10.0%)	1 (2.5%)	2 (5.0%)	
Oligohydramnios	8 (20.0%)	8 (20.0%)	8 (20.0%)	
Postdates	15 (37.5%)	18 (45.0%)	19 (47.5%)	
Outcome of induction				
Successful	25 (62.5%)	29 (72.5%)	31 (77.5%)	0.323
Not successful	15 (37.5%)	11 (27.5%)	9 (22.5%)	
Delivery within 24 hours				
>24 hours	27 (67.5%)	15 (37.5%)	13 (32.5%)	0.003
≤24 hours	13 (32.5%)	25 (62.5%)	27 (67.5%)	
BMI: Body mass index, SD: standard deviation				

Women using combination therapy had the shortest time to achieve delivery (17.48 ± 4.65), followed by low dose vaginal misoprostol (19.62 ± 3.62) than women using Foley having the longest time (21.84 ± 5.50) as illustrated in figure 1.

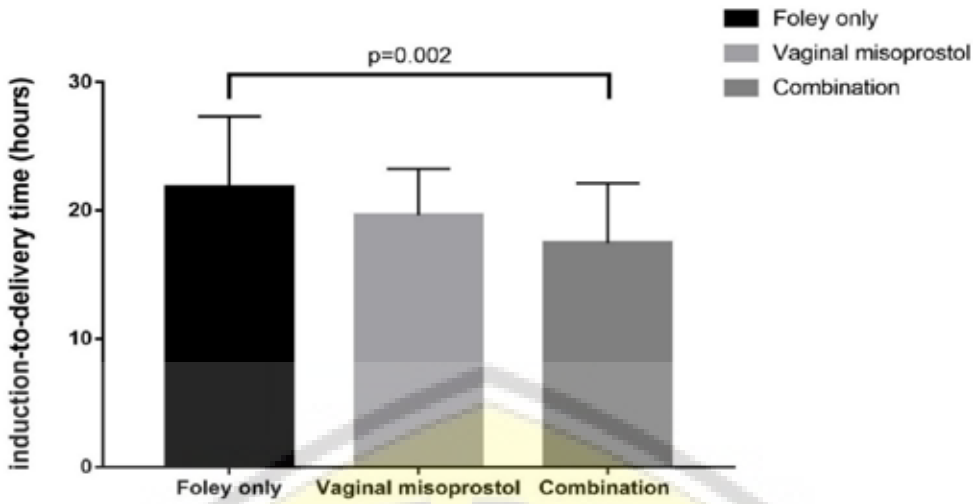

Figure 1: Histogram of mean time to induction for different groups

Vaginal misoprostol had significantly the highest Meconium stained liquor rate (30%) compared to both Foley only (12.5%) and combination (7.5%) p = 0.018. about 30% of Vaginal misoprostol and combination require oxytocin while 40% of Foley receiving women and there was no significant difference between the groups, C/S rate was lowest in combination followed by Vaginal misoprostol and Foley and there was no significant difference between them, Chorioamnionitis was lowest in Vaginal misoprostol there was no significant difference between them as illustrated in table 2.

Table 2: Labor details and complications

Variables	Foley only	Vaginal misoprostol	Combination	P-value
Number	40	40	40	-
Require oxytocin	16 (40.0%)	12 (30.0%)	8 (20.0%)	0.149
Uterine hyperstimulation	3 (7.5%)	5 (12.5%)	3 (7.5%)	0.670
C/S	15 (37.5%)	11 (27.5%)	9 (22.5%)	0.323
Meconium stained liquor	5 (12.5%)	12 (30.0%)	3 (7.5%)	0.018
Chorioamnionitis	2 (5.0%)	1 (2.5%)	4 (10.0%)	0.346
Fetal distress	3 (7.5%)	6 (15.0%)	2 (5.0%)	0.272
Chi-square test				

There was no significant difference in APGAR score after 1 minute and after 5 minutes, fetal weight and neonatal care unit admission between the groups as illustrated in table 3.

Table 3: Neonatal outcomes

Variables	Foley Only	Vaginal Misoprostol	Combination	P value
Number	40	40	40	-
APGAR 1 min	6.90 ± 1.11	7.08 ± 1.00	7.05 ± 0.88	0.691
≥7	35 (62.5%)	31 (77.5%)	30 (75.0%)	
<7	15 (37.5%)	9 (22.5%)	10 (25.0%)	
APGAR 5 min	8.85 ± 1.05	8.95 ± 0.99	9.13 ± 0.76	0.406
≥7	39 (97.5%)	40 (100.0%)	40 (100.0%)	
<7	1 (2.5%)	0 (0.0%)	0 (0.0%)	
Fetal weight (kg)	3.04 ± 0.40	3.13 ± 0.30	3.16 ± 0.25	0.228
Neonatal care admission	4 (10.0%)	6 (15.0%)	2 (5.0%)	0.329
One-way ANOVA				

Discussion

In the current study the most common indication for labor induction was postdate, followed by hypertension and Oligohydramnios (both equal proportion) then gestational diabetes mellitus, our findings were in agreement with recent guideline of Society of Obstetricians and Gynaecologists of Canada revealing similar pattern of cause of labor induction[5], Al-Ibraheemi et alreported that postdate, Oligohydramnios and hypertension were the most common indications for labor induction[6], while Lanka et al reported in addition to postdate, Oligohydramnios, hypertension gestational diabetes mellitus as common indications[7].

In the current study misoprostol – Foley combination offeredshorter time of induction of labor in comparison with misoprostol only and Foley only (17.48 ± 4.65 hours versus 19.62 ± 3.62 hours) and (17.48 ± 4.65 versus 21.84 ± 5.50 hours) respectively, it was statistically significant. Regarding successful induction, the combination method had the highest rate of 77 . 5 % , followed by intravaginal misoprostol (72.5%) than Foley catheter only with (62.5%) success ; however no significant difference was found, also there was no significant difference in the rates of cesarean section 22.5%, 27.5%, 37.5% respectively between the study groups.

Chunget al which includes 146 patients, 49 patient was assigned to misoprostol, 54 were assigned to Foley only and 43 were assigned to combined therapy and reported no statistical difference in the rate of vaginal delivery (57 – 63%), induction to delivery time with combination having the faster time 16.6 hours followed by misoprostol only 17.5 hours and Foley only 19.5 hours[8], Kashanian et al which include 300 patients divided into three groups (misoprostol only Foley only and Foley with misoprostol only) 100 patients for each group and reported a controversial findings of intravaginal misoprostol being the shortest compared to combination and Foley only in which they reported 10.5, 12.3 and 11.7 hours in the misoprostol, Foley and combination and the difference was statistically significant among the groups, while similar to our findings and others the rates of vaginal delivery was (60 – 65%) with no statistical difference between the groups[6].

Lanka et alwhich includes 126 patient divided into two groups (misoprostol only and misoprostol with Foley) 63 patients for each group andreported no significant in the time from labor to induction between combination and misoprostol only 26.5 vs. 27.6 hours and the rate of vaginal delivery (65.1% vs. 65.1%)[7]. A combination of method for induction of labor is more effective than a single method, according to results from the randomized Foley or Misoprostol for the Management of Induction (FOR MOMI) trial by Levine et al[9], this study included 492 patients divided into four groups (misoprostol only, Foley only, Foley with misoprostol and Foley with oxytocin), 123 patients, for each group anddesign their study in attention to treat principle and they reported that women using either Foley or misoprostol only are 50% less likely to deliver before women receiving combination of both (HR = 0.52, HR = 0.53, respectively), median time to delivery 13.1, 17.6 and 17.7 hours for combination, misoprostol and Foley respectively which is in agreement with our findings and no significant difference in the rate of vaginal delivery among the groups.Al-Ibraheemi et alwhich includes 200 patients divided into two groups (misoprostol only and misoprostol with Foley) 100 patients for each group and reported similar findings to the current study in which combination had a significantly shorter time to delivery 16.0 hours vs. 18.9 hours in the misoprostol group, additionally no significant difference in the mode of delivery was found[10]. Possible explanation of this discrepancy in the time from induction to delivery is due to difference in the study design in which the two recent studies[9, 10], which published in 2016 and 2018 and had both design with sufficient power of detection (i.e. 80% and type I error of 5%) and intention to treat principle design were in agreement with our finding, while older studies[6-8], were in disagreement with our findings, while in term of rates of deliveries all these studies were in agreement with the current study.

Conclusion

Our study reported a statistically significant reduction in the induction-to-delivery interval by concurrent use of Foley's catheter with vaginal misoprostol and the rate of meconium-stained liquor was significantly higher in vaginal misoprostol

Conflict of Interest: None

Ethical Clearance: Informed written consent was obtained from all the participants in the study and the study and all its procedures were done in accordance with the Helsinki Declaration of 1975, as revised in 2000. The study was approved by the Iraqi Board of Medical Specializations.

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Oral Health Knowledge among Public School Students in Pondok Labu Sub District South Jakarta

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Abstract

Oral health of children are strongly influenced by level of knowledge. The purpose of this research is to study the level of oral health knowledge among public school students 01 in Pondok Labu Sub District, South Jakarta. This research method was cross sectional study. The research subject is 76 students of fifth grade. Measured variables are class, age, sex, number of siblings and mother's employment status of respondents. Data were collected using a questionnaire on May 2017. Data is analyzed by using chi square and logistic regression. Results show that the research population consists of 76 respondents between 10-12 years old. The knowledge of oral health respondents 75 % is good. Analysis multivariate showed that there is significant relation between level of knowledge and grade of class (p value 0.03). However, there are no significant relation between level of knowledge and age, sex, the number of siblings and mother's employment status of respondents. Knowledge of respondents is less good on advantage of toothpaste containing flour, symptoms of toothache and types of snack which damage teeth. We recommend giving education program to improve oral health knowledge of students at school age groups.

Keywords: *Knowledge, oral health, school student.*

Introduction

Oral health is an important issue in public health with a major impact on the general health status of individuals[1,2]. Oral health is one of the health aspects that need to be focus, including in children[3,4]. Child's oral health is part of physical health can affect child development. The most common oral health problems are dental caries, periodontal disease and dental trauma. Oral health promotion in schools recommended by the World Health Organization (WHO) to improve the knowledge, attitudes and behaviors related to oral health as well as doing prevention and control of dental diseases in school age children[2].

Oral health education provides knowledge of proper oral hygiene, to improve attitude of oral health and apply that knowledge and attitudes into practice[5]. Knowledge is derived from information which is accepted to be translated into action which in turn becomes a habit. A good knowledge about oral health is important for oral health behavior[6].

Research on level of oral health knowledge at primary school students in Indonesia is quite often conducted to write thesis. However, they are published on limited number. Those have shown inconsistent results in level of students' knowledge, due to differences in socio demographic characteristics of population. Elementary school students in Indonesia were varied into public primary schools, national private schools, Islamic private schools, Catholic private schools, etc. A public school is open to children from different socioeconomic classes. Thus, the purpose of this study was to obtain an overview of oral health knowledge among student of public-school in Pondok Labu Sub District, South Jakarta.

Method

The study design used is cross sectional studies. Research was conducted in March to June 2017 in

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public school number 01 in Pondok Labu Sub District, South Jakarta. Population was all students in public school number 01 in Pondok Labu Sub District, South Jakarta. Sample is determined by purposive sampling which taken from fifth class as many as 80 students. Response rate is 95% therefore the number of samples is 76 respondents. Public school number 01 is school which has UKGS (dental health unit of school) under jurisdiction of Pondok Labu's Community Health Centre.

Instrument used in study is a questionnaire arranged by 10 questions to measure the level of oral health knowledge. Questionnaire has been tested by validity and reliability test in 50 students and showed that there were 10 items are valid questions to be used (Cronbach alpha = 0.729) and reliable (r table - 0273). Variables that measured are characteristics of respondents such class, age, gender, a few siblings and maternal employment status of the respondents. Data is analysed using chi square test and logistic regression.

Results and Discussions

Public school number 01 in Pondok Labu Sub District, South Jakarta is located next to Pondok Labu Community Health Centre. This school has done maintenance activity for UKGS through some counseling but never assed level of success of those activities.

These results indicate that the sample consisted of 76 students aged 10-12 years. Students who responded to the fifth-class students are divided into two classes: class VA and VB. Distribution of respondents by sex is almost evenly between men and women. There are 59.2% of the respondents came from planed family which at most two number of child and has a mother who worked as much as 60.5%. Characteristics of students can be seen in Table 1.

This study aimed to describe the level of oral health knowledge of students which is measured using a questionnaire. Results in Table 2 shows that there are still some items that questions cannot be answered correctly, especially on the benefits of fluorine-containing toothpaste, tooth pain symptoms and types of snacks that can damage teeth.

Table 3 shows that the level of knowledge of good oral health majority of respondents (75%) and the rest are not good. The level of knowledge can be influenced by several factors such as the division of class, age, gender, a number of siblings of students and employment status of the mother. Table 4 shows the relationship between the characteristics of respondents with the level of oral health knowledge. It shows that there are two characteristics that are likely to significantly affect the level of the student's knowledge of class divisions and gender ($p < 0.25$).

Table 1. Respondents Characteristics

Variable		Total	
		n	%
Class	5A	40	52.6
	5B	36	47.4
Age	≤ 11 yo	68	89.5
	> 11 yo	8	10.5
Sex	Female	40	47.4
	Male	36	52.6
Number of children	≤ 2	45	59.2
	>2	31	40.8
Maternal employment status	Employed	30	39.5
	Unemployed	46	60.5

Table 2. Answers for each question.

Question	Answer (%)	
	True	False
Dental health understanding	90.8	6.7
How to clean plaque	98.7	1.3
Healthy habit for dental health	89.5	10.5
Right time for brushing	94.7	5.3
Kind of healthy food for dental health	82.9	17.1
Snacks which can damage teeth	81.6	18.4
Part of teeth surface that should be brushed	92.1	7.9
Flour benefit	50	50
Cavity symptom	72.4	27.6
Purpose of dental examination	84.2	15.8

Table 3. Level of Knowledge

Knowledge	Total	
	n	%
Less	19	25
Good	57	75

Table 4. Level of Knowledge toward Characteristics

Variable	Level of Knowledge				OR (95% CI)	P value
	Good		Less			
	N	%	n	%		
Class						
5A	26	65	14	35		
5B	31	86.1	5	13.9	3.34 (1.06 – 10.51)	0.03*
Age						
≤11 yo	51	75	17	25	1 (0.18 – 5.43)	0.60
>11 yo	6	75	2	25		
Sex						
Female	29	80.6	7	19.4	0.56 (0.19 – 1.64)	0.20*
Male	28	70	12	30		
Number of siblings						
≤ 2	33	73.3	12	26.7	1.25 (0.43 – 3.64)	0.45
>2	24	77.4	7	22.6		
Maternal employment status						
Employed	35	76.1	11	23.9	1.05 (0.51 – 2.15)	0.50
Unemployed	22	73.3	8	26.7		

Table 5. Final Modelling of Multivariate for Significant Variables

Variable	B	SE	Wald	P Value	OR	CI 95%	
						Lower	Upper
Class	-1.206	.585	4.247	.039	.300	.095	.943

The final analysis of multivariate as shown in Table 5 shows a significant correlation between the class division with the level of knowledge (p value = 0:03) but not significantly associated with age, gender, a few siblings and maternal employment status of students. Class divisions are extrinsic factors of student characteristics that occur due to interference by other parties therefore some class membered by smart kids. Whereas, the intrinsic factor of student character has no significance.

The results of this study are arguing study in Jeddah Saudi Arabia in 2013 which reveal that gender affects the level of knowledge of elementary school children. Girls are more aware of the gums (P 6: 0001); the effect of oral health general health (P = 0.004); the importance of dental examination (P 6001) and more aware of the colour of the teeth (P = 0.05), than men[6]. However, when comparing the results of this study with research conducted on students International Branch of Shiraz University of Medical Sciences with a more mature age, results did not reveal any significant relationship between oral health knowledge and gender (P> 0.05) [1].

According to research in India[2] oral health education can change the behavior of students. Therefore, primary public-school number 01 needs to be educated for increasing the knowledge and behavior of students in oral health. Education would be more effective to use interactive learning media. It proved to Aborigines in 2011 found an increased knowledge of dental care after educational intervention[1].

Conclusion

The level of knowledge in oral health at student of primary public school is good (75%). There is a significant relationship between the class divisions and level of oral health knowledge. We suggest doing oral health education continuously to improve and maintain the resistance of students' knowledge.

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Competing Interest: The authors have no conflict of interest to declare.

Ethical Clearance: Taken from Health Research Ethics Committee, Poltekkes Kemenkes Jakarta I.

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The Development of the Thesis-Writing Perfectionism Inventory

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Abstract

Previous studies proved that perfectionism is one of the factors causing procrastination in thesis writing. Unfortunately, no inventory that specifically measures perfectionism in the context of thesis writing had been developed. Therefore, this study aimed to develop an inventory of thesis-writing perfectionism that meets several psychometric requirements. The inventory was constructed through four steps: (1) specifying the construct of perfectionism; (2) constructing the measurement model; (3) performing confirmatory factor analysis; and (4) testing the validity of the measurement model. 200 subjects were involved in the study. The validity and reliability of the inventory were examined using exploratory and confirmatory factor analysis and Cronbach's alpha. These steps successfully validated 10 of 20 initially constructed items.

Keywords: *Perfectionism, procrastination, thesis writing, assessment, research and development.*

Introduction

Procrastination in academic tasks can be found widely in many education settings. A study reported 40–50% of students to be in the chronic level of procrastination [(1)]. In detail, it was also reported that 87% of students have delayed in preparing and submitting their assignments, 68% in presenting assignments and 62% in preparing themselves for the exam[(2)]. Moreover, other studies conducted in Indonesia also affirm similar results. A study conducted in Universitas Surabaya found that 30.9% of 316 subjects conducted academic procrastination at high to very high level [(3)]. A similar research conducted in Universitas Pendidikan Indonesia also discovered that 44.08% of students were always procrastinating, 53.55% occasionally procrastinating and only 2.07% never procrastinating[(4)].

One of the most often postponed academic assignments by undergraduate students is thesis writing. According to data obtained from the Office of Information Center of Universitas Negeri Malang in January 2018, there are 3.687 (12.45%) of 29.613 bachelor's degree students were delaying their graduation. 96% of them graduated late due to their procrastinated thesis writing. Moreover, it was also reported in a study conducted in Institut Agama Islam Negeri Antasari that thesis writing was one of the factors delaying the graduation of the students [(5)]. The similar result was also observed at the Faculty of Psychology, Universitas Surabaya[(6)].

Perfectionism is one of the predictors of procrastination. Several studies showed that it has a direct effect on procrastination[(7,8)]. Other studies also proved that perfectionism is a good predictor of academic procrastination through self-efficacy [(9)], self-regulation [(10)] and motivation [(11)]. Based on the studies, it can be concluded that perfectionism is one of the variables that must be considered in the procrastination intervention.

Unfortunately, there are no assessment tools that can measure the perfectionism in the context of thesis writing specifically. The existing perfectionism scales only measure the perfectionism in the general context[(12–15)]. The scales are widely used in various research and counseling/psychotherapy services and have adequate psychometric eligibility in their own

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respective contexts. However, because of the general context they use, measuring perfectionism in the thesis writing context using these instruments is not really appropriate.

Based on the discussed background, this study aimed to develop a scale called the *Thesis-Writing Perfectionism Inventory* (TW-PI). The inventory was developed based on the construct of self-oriented perfectionism proposed by Hewitt & Flett [12,16] and two main indicators of perfectionism proposed by Rice, et al.[17] *High standard* refers to an individual's tendency to adhere to standards that are excessively high about his/her performance, while *discrepancy* refers to the belief that he/she will find the standards difficult to achieve. In order to measure the perfectionism in thesis writing context specifically, the items of the TW-PI was constructed in the context of thesis writing.

Material and Method

The study applied research and development design. To develop the scale, the study followed the steps of: (1) defining the construct of perfectionism; (2) developing the construct measurement model; (3) conducting confirmatory factor analysis (CFA) to empirically evaluate whether the developed construct confirms the theory or not; and (4) evaluating the validity of the measurement model [18].

200 undergraduate students of Universitas Negeri Malang (UM) writing their thesis participated in the study. The number was obtained by multistage cluster sampling. Firstly, the researcher identified the number of students writing the thesis in eight faculties at UM. Based on subjects grouping according to their faculties, 25% of departments from each faculty were randomly chosen as representatives of the faculties. Finally, the researcher randomly selected 200 students writing the thesis in the representative departments to determine the final sample. Selected subjects were then contacted by telephone or e-mail to fill out the online or offline prototype of the scale.

Table 1. The Initial Blueprint of the TW-PI

Variable	Indicators	Items
Thesis-Writing Perfectionism	High Standard	1. I want to write an extraordinary thesis
		2. Writing an ordinary thesis makes me uncomfortable
		3. I will try to write a thesis as perfect as possible
		4. I will not show the thesis to my supervisor before it is well written
		5. I feel disappointed in myself if my supervisor finds weaknesses in my thesis
		11. I don't care about the quality of the thesis, my goal is to get it done immediately
		12. For me, the thesis does not need to be perfect
		13. Reaching the minimum standard is enough for my thesis
		14. The ideal thesis will only complicate myself
		15. It is fine if the quality of my thesis is mediocre
	Discrepancy	6. I find it difficult to write a thesis with a standard that I set
		7. The thesis I wrote is not enough to reach the standard I set
		8. With the remaining time, it seems difficult to write a thesis according to my standards
		9. Even though I have come this far, I feel that my thesis has not reached the standard I have dreamed of
		10. It turned to be very difficult to carry out the thesis writing plan I made
		16. I think I have reached my target in writing a thesis
		17. It's not too difficult to reach the standard I want in writing a thesis
		18. I am satisfied with my thesis
		19. I am happy with my achievement in thesis writing
		20. My thesis is currently sufficient to represent the standard I want

Favorable Items: 1-10; Unfavorable Items: 11-20

The construct validity of the scale was evaluated using *the exploratory factor analysis* (EFA) by checking the *Kaiser-Meyer-Olkin Measure of Sampling Adequacy* (KMO-MSA) value. If the KMO-MSA value is ≥ 0.5 with $p \leq 0{,}05$, the analysis can be continued. In addition, if the value of the MSA for a particular item is ≥ 0.5, it can go for further analysis. The next step is extracting the eligible items with the *varimax method*. The item that has a loading of ≥ 0.5 for an indicator will be regarded as a good item. However, the item will be regarded as not meeting the theoretical assumptions if it is extracted into an incorrect indicator. Thus, the item must be discarded even though it has a loading of ≥ 0.5 statistically. Furthermore, indicators that have a loading of ≥ 0.5 for a developed construct will be determined as an eligible indicator. Valid items and indicators based on the EFA will then be tested for their reliability with the *Cronbach's alpha*. The coefficient of *Cronbach's alpha* used in the study is > 0.7. The next is performing CFA with a second-order technique. The analysis will test the unidimensionality of the TW-PI. In this study, it will be determined by *The Root Mean Square Error of Approximation* (RMSEA) of ≥ 0.08. The validity of an item for an indicator and an indicator for a construct will be determined by the *Lambda* of ≥ 0.4.

Findings:

The Initial Blueprint of the TW-PI: Based on the review of the main indicators of perfectionism and the context of thesis writing, the researcher constructed 20 items extracted from two indicators: *high standards* and *discrepancy*. Detailed descriptions of indicators and items are displayed in table 1. Four Likert answer choices were provided for each of these items, ranging from disagree to strongly agree.

The Result of EFA, Cronbach's Alpha and CFA: The EFA of 20 items of the TW-PI showed that the ten of them had a loading factor of ≥0.5, while the other ten (items 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10) had a loading factor of <0.5. Therefore, the ten were categorized as valid items, while the rests were invalid. Likewise, both TW-PI indicators had a loading factor of 0.758 on the Thesis-Writing Perfectionism variable. The EFA also grouped the ten valid items into two appropriate indicators. Items 11, 12, 13, 14 and 15 were grouped in *high standard*, while items 16, 17, 18, 19 and 20 in *discrepancy*. Cronbach's alpha analysis was then performed on the ten to evaluate their reliability. The result showed that the items were completely reliable since they have the *Cronbach's alpha* coefficient of >0.7. The detail results are summarized in table 2.

The items were then tested using CFA to evaluate the unidimensionality of the measurement model and the validity of each item. The details of the results are shown in table 2. It can be seen in table 2 that the RMSEA was 0.073 which means that the measurement model was good. The value of *Chi-Square* was 201.41 with a probability of 0.05303 which means that the measurement model had obtained adequate empirical support. Furthermore, *The Lambda* of all items and indicators was >0.4, which means that the items and indicators were valid.

Table 2. The Result of EFA, Cronbach Alpha Analysis and CFA

Indicators	EFA		Cronbach's Alpha		CFA			
	Item Grouping	Loading Factor	Cronbach's Alpha	Corrected Item-Total Correlation	Lambda	RMSEA	Chi-Square	P
High Standard (Loading Factor = 0,758; Lambda = 0,72)	11	0,802	0,857	0,639	0,62	0,073	201,41	0,05303
	12	0,921		0,726	0,75			
	13	0,878		0,473	0,52			
	14	0,811		0,396	0,54			
	15	0,897		0,711	0,62			
Discrepancy (Loading Factor = 0,758; Lambda = 0,59)	16	0,821		0,628	0,55			
	17	0,865		0,512	0,51			
	18	0,876		0,376	0,60			
	19	0,915		0,572	0,51			
	20	0,923		0,587	0,69			

Source: Processed Primary Data

Discussion

Perfectionism is individual's tendency to set high standards excessively for him/herself so that it makes him/her hesitate to act immediately [19]. He/she demands him/herself to always be competent, great and excel in all fields he/she considered important[20]. This definition refers to the unidimensional construct of perfectionism. However, after 1990s, the concept of perfectionism shifted from unidimensional to multidimensional[21]. One of the most popular concepts of multidimensional perfectionism is that put forward by Hewitt & Flett [12,16] and Frost, et al.[13]

Hewitt & Flett said that perfectionism has three dimensions: (1) *self-oriented perfectionism*; (2) *other-oriented perfectionism*; and (3) *socially prescribed perfectionism*[12,16]. In anothe side, Frost et al. also stated that it has six dimensions: (1) *concern over mistakes*; (2) *doubts about action*; (3) *personal standards*; (4) *parental expectations*; (5) *parental criticism*; and (6) *organization* [13]. Compared to the dimensions proposed by Hewitt & Flett which contain the classification of the actors of perfectionism, the dimensions by Frost, et al. seems to explain the indicators of perfectionism. However, Egan, et al.[22] criticized these dimensions because they do not represent the core dimensions of perfectionism. They categorized *parental expectation* and *parental criticism* as causes of perfectionism and not the perfectionism itself. *Concern over mistakes* and *doubts about action* were also criticized because both were considered to be a same construct so they must be put together. Furthermore, Frost et al. also doubted *organization* as a dimension of perfectionism[13]. In conclusion, the remaining two dimensions are considered to be the core dimensions of perfectionism, namely: (1) the combination of *concern over mistakes* and *doubts about action*; and (2) *personal standards*.

The results of the study reinforce the criticism of Egan, et al. that the six indicators of perfectionism proposed by Frost et al. are not entirely correct. Confirming the criticism, the results of this study show that *high standards* (*personal standards*) and *discrepancy* (the combination of *concern over mistakes* and *doubts about action*) have a high loading factor for the thesis-writing perfectionism variable. Therefore, these two indicators are appropriate to represent the thesis perfectionism construct. This is also proven by items grouping on the two appropriate indicators which means that the items are extracted correctly from the two. These results confirms the previous research by Rice, at al. that found *high standards* and *discrepancy* as the main dimensions of perfectionism.[17]

Psychometrically, the TW-PI has conditions that must be owned by a scale. The results of EFA, CFA and *Cronbach's alpha* showed that the scale is valid and reliable. When compared to similar instruments, this scale has the advantage of a small number of items. That way, the scale can serve simple assessment that is increasingly needed lately. As known, counseling services which lately tend to be brief require assessment instruments that are also brief and simple. However, because the TW-PI is in its early stages of development, one of its shortcomings is that it has not been proven to correlate with a similar scale. Therefore, the convergent validity of this scale is still unknown. The task of the next research is to examine the correlation of the TW-PI with other similar scales.

Conclusion

The development and validation process of the TW-PI had selected ten valid and reliable items and eliminated the other ten that do not meet the psychometric requirements. These items are only intended to measure the level of perfectionism in the context of thesis writing. Therefore, the score resulted is the total score of perfectionism in thesis writing. The higher the score, the higher the perfectionism tendency of the subject. On the contrary, the lower the score the lower the perfectionism tendency. Compared to similar instruments, the TW-PI has several advantages: (1) it only contains 10 items so that it is very efficient to use; and (2) it is very appropriate to be used in counseling setting. One of the disadvantages of the TW-PI is the number and homogeneity of the samples used in the development process. This sample number limits the use of the TW-PI only to the population of subjects involved.

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Marital Status and Sexually Transmitted Infections in Internal Medicine Polyclinic and Dermatology & Venereology Polyclinic of Undata General Hospital of Palu in 2018

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Abstract

Introduction: The increasing number of incidents and prevalence has made Sexually Transmitted Infections (STIs) a particular highlight and problem for the Indonesian government. STI transmission is generally due to dangerous sexual behavior. According to the WHO, there are at least 1 million cases of STIs found every day. In 2017, there were 276 cases of syphilis and 383,290 cases of HIV-AIDS in Central Sulawesi, as well as Undata General Hospital in Palu reported 102 cases of HIV. Objective :This study aims to determine the risk factors in the form of age, gender and marital status of the incidence of sexually transmitted infections (STIs) in patients of Internal Medicine and Dermatology & Venereology Polyclinic in 2018. Research method :This research study is quantitative with a case-control approach. The sample in the study was 152 with a ratio of 1:3 consisting of 38 case samples and 114 control samples; taken using the simple random sampling method. The data were obtained from medical records of patients in the Undata General Hospital in 2018.

Results: The study produced the following data: <25 years old (OR = 3.165; 95% CI = 1.482-6,761), female sex (OR = 1.873; 95% CI = 0.887-3,959) and marital status (OR = 3.175; 95% CI = 1,471-6,857). Conclusion :Age, sex and marital status were the risk factors caused sexually transmitted infections (STIs) in patients of Internal Medicine and Dermatology & Venereology Polyclinic in 2018. Health workers are expected to be able to increase counseling related to STI issues as a preventative measure so that the number of cases can be reduced.

Keywords: *Sexually Transmitted Infection, Age, Gender, Marital Status.*

Introduction

Sexually Transmitted Infections (STIs) are one of the most critical public health problems in developed and developing countries. The asymptomatic nature of some STIs and difficult diagnostic procedures show that many cases of STIs remain difficult to detect[1]. STIs are also associated with symptoms of serious illnesses such as pelvic inflammation, infertility, ectopic pregnancy, cervical cancer, neonatal death, prematurity and congenital deformity. In addition, STIs are also often considered to facilitate the transmission of the HIV and Hepatitis B (HBV) virus[2,3].

Sexually transmitted infections have a prominent impact, for example, about one third of pregnant women infected with Syphilis give birth to adverse outcomes including stillbirth and infection of Human Papillomavirus (HPV). This causes around 266,000 deaths from cervical cancer per year and some STI bacteria lead to pelvic inflammatory disease, female infertility, premature birth and low birth weight babies[4].

Every year, there are about 131 million chlamydial infections, 78 million gonorrhea infections, 5.6 million Syphilis infections and 143 million trichomoniasis infections[5]. The most common STI virus is genital herpes simplex virus infection (affecting around 500 million people worldwide) and Human Papillomavirus

(HPV) infection (affecting 290 million women and up to around 500,000 cases of cervical cancer every year)[6,7].

In Indonesia, based on the Integrated Survey and Biological Behavior (STBP) Report by the Indonesian Ministry of Health (2011), the prevalence of sexually transmitted diseases (STDs) in 2011 was 179% of gonorrhea and chlamydial infections and 44% of syphilis. The case of Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) for the last eight years starting from 2005 - 2012 showed an increase from 859 cases to 21,511 cases. The newest AIDS issues increased from 2,639 to 5,686 cases[8].

General Hospital of Undata reported that there were 102 cases of HIV in 2018. There were 68 cases for male and 34 cases of female (8). Therefore, the researcher conducted an analysis related to "Risk Factors of Sexually Transmitted Infections (STIs) in Patients of Internal Medicine and Dermatology & Venereology Polyclinic at Undata General Hospital of Palu in 2018".

Materials and Method

This research study is quantitative using an analytical design with a case-control study approach. The dependent variable was sexually transmitted infections (STIs), while the independent variables were gender, age and marital status. The location of this study was in the Medical Record Room of the Undata General Hospital of Palu from 23 February to 8 March 2019. The populations in this study were all patients who got medical record data by visiting and conducting examinations at the Internal Medicine and Dermatology & Venereology Polyclinic in Undata General Hospital of Palu in 2018. The total population was 16,373 patients. All 152 samples were collected using a simple random sampling method. The sample was divided into 2 parts; 38 case samples and 114 control samples. Chi-square test was applied to analyze the data with a significance level (α) of 5% and confidence level (CI) of 95%.

Results

The distribution of respondents' characteristics according to age, sex, marital status and sexually transmitted infections (STIs) can be seen in table 1.

Table 1 explains the greatest number of respondents of STI sufferers. The greatest numbers are 35 people in the age group of 20-24 years old and the least are in the age group of 15-19 years old and 30-34 years old. The biggest numbers of respondents who suffer STIs are male with 97 respondents. The respondents who suffer STIs have a status of married with 84 people.

Table 1. Characteristics of Respondents

Variable	n	%
Age (Year)		
15-19	18	11,8
20-24	35	23,0
25-29	21	13,8
30-34	18	11,8
35-39	19	12,5
≥ 40	41	27,0
Sex		
Male	97	63,8
Female	55	36,2
Marital Status		
Not Married	68	44,7
Married	84	55,3
Sexually Transmitted Infections		
HIV/AIDS	25	16,4
Anogenital (Venereal) Warts	10	6,6
Herpes	3	2,0
Other	114	75,0

Table 2 also explains of the 38 respondents who experienced STIs there are 52.6% of respondents with low-risk sex and for high-risk sex and have a lower value of 47.4%, whereas of 114 respondents who did not experience STI, there is 67.5% with low-risk sex and 32.5% have high-risk sex. The results of the statistical test found an OR of 1.873 in 95% CI 0.887-3,959, meaning the female have a risk of sexually transmitted infections 1,873 times greater than the male. Because OR> 1, female was a risk factor for STI incidents. But, because the lower limit value of the sex does not reach the value of 1, the study of sex has not been able to explain the meaningful relationship between sex and the incidence of sexually transmitted infections.

Table 2 explains of the 38 respondents, who experienced STIs, 65.8% occur in respondents with high-risk marital status and 34.2% with low-risk marital status. From the 114 respondents who did not have STIs, 62.3% are the highest scores and respondents with low-risk marital status. Moreover, there are 37.7% of respondents with high-risk marital status. The results of statistical tests showed OR of 3.175 and 95% CI (1,471-6,857), meaning unmarried respondents have a risk of 3.175 times greater having sexually transmitted infections compared to respondents who are married.

Because the value of OR> 1, the unmarried marital status is a risk factor for the incidence of sexually transmitted infections.

Table 2. Risk Factors for Sexually Transmitted Infections (STIs) in Patients of Internal Medicine and Dermatology & Venereology Polyclinic in Palu 2018

	Occurrence of Sexually Transmitted Infections (STIs)				Total	OR (CI 95%)
	Cases		Control			
	n	%	n	%		
Age						
High risk	21	55,3	32	28,1	53	3,165 (1,482-6,761)
Low risk	17	44,7	82	71,9	99	
Sex						
High risk	18	47,4	37	32,5	55	1,873 (0,887-3,956)
Low risk	20	52,6	77	67,5	97	
Marital Status						
High risk	25	65,8	43	37,7	68	3,175 (1,471-6,857)
Low risk	13	34,2	71	62,3	84	

Discussion

The results of the analysis indicated the age was one of the risk factors for the incidence of sexually transmitted infections (STIs). Age was an important variable in influencing one's activities. In carrying out sexual activities, more mature people have better consideration than younger ones[9,10].

Sexuality is closely related to health at an older age. As previously reported, the prevalence of erectile difficulties was higher at an older age as younger age[11,12] so that older adults with medical problems could affect sexual function. This indicated that young age had a more active sexual activity compared to older age, seen from the health status and frequency of having sex[10,13].

Young people are more vulnerable to be infected by STIs. The reason is that young people tend to change partners, keep up with the trends of today's youth, coupled with the vulnerability of immature reproductive organs and lack of awareness for the cleanliness of intimate organs. Hence, the risk of STI incidence is higher[14,10]

Small opportunities to get marriage in young age and the rapid flow of information have been the influence of sexual behavior in teenagers. It often stimulates a teenager's sexual hormones. These stimuli encourage teenagers to have sex before marriage. During adolescence, sexual hormones begin to become active. This triggers teenagers to engage in sexual behavior since they sense an interest to the opposite sex[6,15].

Sex is also a factor in sexually transmitted infections (STIs). Many cases of STIs in women are asymptomatic, which results in slow diagnosis and treatment[16]. The manifestation of clinical symptoms of sexually transmitted diseases in men is more evident, so it provides an opportunity for patients to use advanced health services. The cause is the differences in anatomical structures of certain organs[17,16].

Based on the results of the statistical test analysis, female sex was more at risk of suffering from sexually transmitted infections compared to men[18,1]. This was because women were physically-disproportionately affected by all sexually transmitted infections. The rate of transmission from men to women was higher than from woman to man; partly because of exposure to columnar epithelium[19]. However, signs of infection in women can remain hidden until it is too late to take care. In addition, women were more vulnerable to infection due to gender-based power inequality[20,21].

Most infection incidents around the world tend to occur in women due to a number of factors like transmission of male to female STIs,which is more likely to happen than transmission of women to men. Sex trafficking is also one of the aspect since women want to earn money or to support themselves as well as

lack of protective equipment controlled by women and the initial phase of STI that often causes no symptoms in women[22].

The incidence of STIs is higher in people who are not married, divorced or people who are separated from their families compared to married people. Transmission of STI disease usually occurs because of frequent sexual intercourse. Marriage should be regarded as a sacred relationship that must be maintained. Therefore, the status of marriage is a barrier for a person to have sex freely and if the status is not married, it can be easier to bring a person to a menacing sexual behavior, which does not consider the danger of STIs[17,12].

Based on the results of statistical test analysis, it showed unmarried respondents were more at risk of suffering from sexually transmitted infections than to married respondents. Unmarried and divorced/separated people from their family had more sexual issues and lead them to have a sexual partners; increasing the risk of the incidence of sexually transmitted infections (STIs)[15,25].

Marital status is related to deaths from HIV, which is one of the sexually transmitted infections. Divorced and separated people have a higher risk of dying from STIs than married people. Single/never married people are more likely to die of STIs than married people[23,15].

Marriage gives limits and many other benefits those other statuses. One of the main benefits of marriage is a stable sexual activity. The term sexual activity describes a group of individuals connected through sexual contact[20,24]. Sexual activity plays an important role in the dissemination and acquisition of sexually transmitted diseases. In simple terms, individuals with more sexual partners are at higher risk of contracting sexually transmitted diseases (including AIDS) than those who have a reliable partner. This means that unmarried and divorced/separated people from their family have a wider sexual connection, which contributes to have more sexual partners and in turn increases the risk of STIs & HIV/AIDS and then dies of it[26]

Conclusion

The study concluded that gender and marital status were risk factors for the emergence of sexually transmitted infections (STIs) in patients of Internal Medicine and Dermatology & Venereology polyclinic at Undata General Hospital of Palu. Thus, it is expected that there will be prevention efforts from the government, the community and the family. The attempts in this regard, one of them is promoting condom use for both men and women.

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Zinc and Probiotic Combinations: Balancing Blood Sugar and Blood Fats in Children OBES and Bows

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Abstract

The prevalence of fat and obesity in the world population increases with the times. Fat and obesity increase not only in adulthood but also in children and toddlers. This is due to the increasing social and economic status accompanied by technological advancements so that all clothing and food needs will be easier to obtain without having to spend a large amount of energy, so fat accumulation increases without significant activity which causes everyone to become fat and obese. This study aims to analyze the effect of zinc and probiotic supplementation (supplement is Lactobacillus casei) on blood sugar levels, total cholesterol, triglycerides, LDL (Low-Density Lipoprotein) and HDL (High-Density Lipoprotein). This type of research is an experiment with pre-post test design. The population is all children in the Perumnas I and IV Elementary Schools of Makassar City. The sample used was all obese and obese children as many as 8 students. The supplements used are zinc and L. casei, which are given once a day on school days. The research variable used was a serum sample derived from blood in mg/dl units and analyzed at the Tajuddin Chalik General Hospital Makassar. Data analysis uses paired t test. The results showed that there was a significant decrease in blood sugar levels while total cholesterol, triglyceride, LDL and HDL levels did not decrease significantly. Suggestions for using zinc and L. casei supplements in obese and obese children should be balanced with exercise so that triglyceride levels can drop to normal levels.

Keywords: *The combination of zinc and L. casei, blood sugar, blood grease.*

Introduction

Obesity is now an important problem in the world of health. The impact on health problems is huge. Obesity increases the risk of heart disease, diabetes mellitus (diabetes), joint disease and also cancer. If it occurs in children, obesity can also cause other problems that adversely affect the child's quality of life such as sleep disorders and impaired foot limb growth. In addition, in social life, obesity makes people feel less confident. Many people compete to go on a diet to maintain ideal body shape. It is quite difficult for someone to restore their ideal body weight when they are obese. Therefore, the intervention must actually begin when still in childhood. Several studies have shown that children and adolescents who are overweight, are twice as likely to be obese as adults compared to children who were not obese as a child. Maintaining an ideal body weight during childhood and adolescence can reduce the risk of obesity in adulthood. Unlike adults who can choose food, children and adolescents are more influenced by the environment when choosing food. In children, the main factor causing obesity is parents who provide food in excessive portions. This will cause the process of gaining weight very quickly. Parents play an important role in choosing foods to be consumed by children and regulate the daily physical activity of children. The results of research on obese and obese children who received zinc supplements showed blood sugar levels dropped significantly ($p < 0.05$), but those who used L. casei supplements dropped not significantly ($p > 0.05$) 7. Research conducted on obese and obese children who

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get zinc and L. casei significantly decreased cholesterol levels (p <0.05) on total cholesterol levels 5,6,7. For triglyceride and LDL levels the use of zinc and L. casei did not decrease significantly (p> 0.05). HDL levels in obese and obese children were significantly decreased (p <0.05) that received zinc supplements and dropped not significantly (P> 0.05) in children who received L. casei7 supplements. Based on the results of these studies whether the combination of zinc and L. casei can reduce blood sugar levels when, total cholesterol, triglycerides, LDL and HDL in a balanced way?.The purpose of this study: to analyze the effect of a combination of zinc and L. casei on the decrease in blood sugar levels when, total cholesterol, triglycerides, LDL and HDL in a balanced way.

Material and Method

This research is an experimental research with pre post test only design. This research was conducted in 2018. The population was all obese and obese students in Perumnas I and IV Elementary Schools, while the samples were grade 2 and 6 students who were obese and obese and healthy, Bugis and Makassarese, residing in Makassar City. The number of samples as many as 8 people. Primary data that is anthropometric data, nutritional intake and levels of blood sugar, total cholesterol, glycerides, HDL and LDL will be collected before and after the intervention for 1 month. Secondary data in the form of sample characteristics were collected at the same time. As much as ± 3 cc of blood drawn in the sample. After that centrifuged to get the serum. The serum was examined using Cobas C111 made by Roche to determine levels of blood sugar, Total cholesterol, Glyceride, HDL and LDL each in mg/dl units at the Tajuddin Chalik General Hospital Laboratory Makassar. The analysis test used paired 2-sample t test with the data requirements normally distributed using the Shapiro Wilk test. Data is presented in tabular form with narrative description.

Findings: The table above shows that observations on body weight, height, nutritional intake in this case intake of protein (p> 0.05), fat (p> 0.05), energy (p> 0.05) and zinc (p> 0.05) as a control variable in this study did not show differences. This shows that there is no difference in nutrient intake, body weight and height, meaning that the variable of nutrient intake and weight are controlled. Based on the results of this study indicate that.

Table 1: Distribution of Changes in when blood sugar Profile, Total Cholesterol, Triglycerides, LDL and HDL in Fat Children and Obes who Obtain Combination of Zinc and L. Casei Supplements in SD Inpres Perumnas I and IV Makassar City in 2018

Suplement	Grade (mg/dl)		t	p
	Before	After		
When blood sugar	99,88±12,62	85,88±8,95	2,98	0,021
Kolesterol Total	190,13±37,29	181,5±40,34	0,747	0,480
Trigliseride	221,37±106,52	181,5±97,96	0,967	0,366
LDL	104,75±27,32	102,03±28,72	0,356	0,806
HDL	49,25±5,65	47,63±7,52	0,492	0,638

Based on table 1 above shows that there was a significant decrease in blood sugar levels (p <0.05) from an average of 99.88 to 85.88 mg/dl, for total cholesterol levels dropped from an average of 190.13 to 181 .5 mg/dl, triglycerides decreased from an average of 221.37 to 181.5 mg/dl, LDL dropped from an average of 104.75 to 102.03 and HDL dropped from an average of 49.25 to 47.63 mg/dl which was statistically significant decrease (p> 0.05).

Discussion

The use of probiotics has long been used to make fermented milk products. Probitik is a microorganism in the form of bacteria that is given in a sufficient amount to provide health benefits to the host[15]. Bacteria that are commonly used are Lactic Acid Bacteria (BAL) for fermentation such as milk fermented foods, cheese and plant-based foods[13,14]. This is because the administration of L. casei which functions to inhibit the enzyme alpha

glucosidase found in intestinal microphiles as explained by Jain and Nerves (2010) that BAL class bacteria can act as inhibitors of the alpha glucosidase enzyme and can cause a decrease in blood glucose levels in mice so that it can applied to humans. The work of zinc also synergizes together with L. casei to reduce GDS levels in obese and obese children so that it can be used as a prevention in increasing the body's resistance in counteracting free radicals.[11] Probiotic strains of Lactobacillus casei Shirota are lactic acid bacteria that have benefits for increasing the immune system, as antioxidants and have the ability to reduce cholesterol levels. Some recent research results indicate that shows that zinc is an important nutrient in the incidence of obesity. Recent studies report that adults with a history"Yo-Yo" syndrome (gradually decreases, then gets worse)[10]. Zinc supplementation is significantly helpful[12]. In one study, zinc levels in obese and obese subjects were inversely proportional to their body mass index, this shows that the important role of zinc in the development of obesity. In general, the higher the body mass index, the lower the zinc[9]. The mechanism of cholesterol reduction can occur because the lactic acid present in yogurt can degrade cholesterol into coprostanol. Coprostanol is a substance that cannot be absorbed by the intestine. Thanks to yogurt, the coprostanol and the remaining cholesterol can be excreted with feces. In other words, the amount of cholesterol absorbed by the body becomes low. A report on this subject explained that the reduction of cholesterol by lactic acid bacteria (Lactobacillus) could reach around 27-38%[8] ·High fat consumption will increase sterols in the large intestine and increase secretion of bile salts, which will then be metabolized by bacteria in the intestine to produce carcinogenic compounds (cancer triggers). Cholesterol in food through the stomach to the duodenum and in the intestine in the triacylglycerol oil phase[16].

Bile acids are absorbed from the bottom of the ileum and back to the liver. This is hepatic circulation. Collection of bile acids in the liver approximately 3.5 grams is circulated 6-10 times per day. Every time 1%, which is about 500 milligrams/day, escapes absorption and is excreted through feces. Furthermore the body's cholesterol is secreted through the intestine by the intestinal wall. Bile salt is wasted through feces and causes more cholesterol to be needed to synthesize bile salt again, thereby reducing body cholesterol levels[17]. The results showed that there are several benefits of probiotics in the body that play a role in reducing cholesterol levels, where bifidobacteria produce niacin which contributes to the reduction in cholesterol. The cholesterol-lowering effects of lactic acid bacteria (LAB: Streptococcus, Lactobacillus and Bifidobacterium) are well known. Lactic acid bacteria are found in yogurt. These bacteria form colonies and create an environment in the digestive tract in such a way that can prevent the growth of pathogenic bacteria that enter the body. This study shows the results that LDL levels in obese and obese children do not decrease significantly if given a supplement of zinc, L casei and a combination of zinc + L.casei, if it refers to the significance value, obese and obese children who get L. casei supplements have a decrease in value the lowest significant. This means that zinc and L. casei can reduce LDL levels in fat and obese[18,19].

This is consistent with the results of research which resulted that the L. casei strain Shirota strain reduces LDL levels in rodents (mice)[20]. The results showed that high significance in overweight and obese children who received zinc and L. casei combined supplements had a significant decrease in HDL levels. Lactic acid bacteria can also prevent urinary tract infections, reduce the risk of cancer or gastrointestinal tumors and other organs, reduce blood serum cholesterol levels, reduce the risk of coronary heart disease, stimulate the formation of the immune system, help sufferers of lactose intolerance in consuming milk and facilitate the elimination of waste defecate. Lactic acid produced by bacteria with a pH value of 3.4-4 is sufficient to inhibit a number of destructive bacteria and spoilage of food and beverages. However, during the fermentation process, it not only produces lactic acid and lactobacillin. Also produced certain compounds that can increase the organoleptic value of food and drinks, including tastes and odors that invite taste and improve appearance. The process of forming cholesterol and carcinogens (tumor-triggering compounds) starts from fat which will turn into bile acids which then become a series of enzymes. Then change the carcinogen into a carcinogen, which among others triggers colon, breast, prostate and pancreatic cancer. The process of forming bile acids from fat is stimulated by fecal bacteria or coli bacteria that come from feces or feces.[2,3] But in the presence of lactobacillin, the faecal bacteria become inactive so that the process of changing fat into bile acids also stops. Another compound of lactate bacteria is NI (not yet identified or unknown). However, this compound has been known to play a role in inhibiting the formation of cholesterol. NI works by inhibiting the enzyme 3-hydroxy 3-methyl glutaryl

reductase which will convert NADH to nevalonic acid and NAD. Thus, a series of other compounds that will form cholesterol are also inhibited. Because it can be said that the presence of foods and beverages that are naturally acidified by the fermentation of lactate bacteria, can help their consumption prevent cholesterol and cancer. The role of Zn not only affects the antioxidant enzymes, but Zn[1,2]also influences blood glucose levels[2]. Several previous studies explain the administration of Zn at different doses beneficial for the blood glucose levels of hyperglycemic rats. A 2014 study gave Zn a dose of 5 mg/kg body weight (BB) in hyperglycemic mice for 3 months and proved that Zn played a role in stimulating protein kinase B phosphorylation and activating glucose metabolism so that blood glucose levels decreased[3,4].

Conclusion

By supplementing the combination of zinc and L. casei, reducing blood sugar levels when significant under normal circumstances, there was a decrease in levels of total cholesterol, triglycerides, LDL and HDL which were not significant, where the decrease in triglyceride levels had not reached normal levels. We recommend using zinc and L. casei supplements with appropriate activities and adequate fat intake.

Conflict of Interest Statement: There is no conflict of interest between the researcher and the investigator.

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Ethical Clearance: The Makassar Health Polytechnic Research Ethics Commission has issued research ethics based on the protocol reviewed by reviewers.

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Adolescents' at Risk with Crime Risk Behavior in Malaysia: A Correlation Analysis

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Abstract

The purpose oft his study is tome a sure the relationship of crime risk behaviors among adolescents with social support (family, peer, school), socioeconomic status, resilience, coping skills, empathy, aggression, academic achievement, truancy and involvement in school activity. This survey study was carried out using the In strum en Remaja Berisiko Jenayah (IRBJ) that was developed from this study. The face validity value of the IRBJ is .91 and the value of the Cronbach alpha reliability is .75. The survey involved 300 students from Klang (urban areas: 150) and Kedah (rural areas: 150). The survey data was analyzed using correlation analysis. The results of the survey show that there is a significant relationship between social support from family, social support of peer, social support from school, resilient, coping skills, empathy, aggressive, truancy, academic achievement, involvement of school activities and crime risk behaviors. The information on adolescents' characteristics at risk of crime risk behavior and the empirical nature of exploration is expected to open a new chapter in understanding the development of adolescents in various aspects, particularly the criminal aspects of juvenile behavior in Malaysia.

Keywords: *Social Support (Family, Peer, School); Socioeconomic Status; Resilience; Coping Skills; Empathy; Aggression; Academic Achievement; Truancy; Involvement in School Activity; Crime Risk Behavior; Adolescent.*

Introduction

Problem Statement: For every country, children and adolescents are future national assets. In Malaysia, we put greats hope on them to continuing survival of this country's prosperity and success to become a well-developed country by 2020. So, their well-being and success in life and education is paramount to achieve the national goals. However, there is a small group of children and adolescent who are caught up in a variety of social problems and crime even though majority of children and adolescents has been successful in various fields such as education, sports, arts and soon.

According to statistics released by Ministry of Education Malaysia, truancy recorded the highest number of discipline problem committed by students in 2017, followed by smoking, criminalized and bullying [1]. This finding was parallel with finding by Health Ministry study which they found that 16 per cent of the country's teenagers were involved in bullying,13 percent smoked, seven percent in sexual activities and six percent in suicide attempts[2]. Besides, research has shown that an average of 18,000 teenage girls in Malaysia get pregnant each year and out oft his number, 25% orabout 4,500 cases involve pregnancy out of wedlock[3]. This further explains why today's juvenile and school crime issues need to be taken seriously by the government.

Factor Contributed to Crime Risk Behavior: Many studies have been conducted to understand the issues related to crime risk behavior. In the past years research, they found that there are several factors that give rise to crime risk behavior which are socials up port, socioeconomic status (SES), psychological aspect, truancy, academic achievement and involvement in school activity[4-6].

Currently in Malaysia, most of the study that had been conducted tend to highlighted only a single issue

related to crime risk behavior in a single study. These studies that had been conducted investigate the role of these factor which are social support, SES, psychological aspect, truancy, academic achievement and involvement in school activity separately[7-14].

Past research revealed that crime risk behavior has a significant relationship with social support from family[15-16], social support from peer[17-18], social support from school [18-19] and SES[20-21]. Moreover, there are several psychological aspects that give rise to crime risk behavior among adolescents which are low level of resilience[5, 22], inefficiency of copings kills[23-24], low level of empathy[25-26] and high level of aggression[4, 10].

Lastly, at the school level, there are three factors contributed to crime risk behavior that can be identify by school counselor orc lass's teacher which are low academic achievement[27-28], low involvement in school activity[29-30] and high involvement in truancy[12, 31].

Methodology

Sample: In this study, 300 secondary school students in standard 1 and 2 (13 and 14 years old) were recruited through purposive random sampling technique. All sample came from two area which were Klang (urban areas: 150) and Kedah (rural areas:150).

Procedure

Permission was obtained from Education Planning and Research Division, State Education Department and principals of the school that had been selected. Before we collect the data of this study, we explained about any risk or benefit that they will get from this study and after that, we obtained the consent from the participant. We admitted the questionnaires in quite space that had been set up by the school and took up around 45 minutes to complete.

Measure: All construct in this study were measured using self-report measured known as Instrumen Remaja Berisiko Jenayah (IRBJ)[32] that was adopted from Instrumen Remaja Berisiko[33]. This instrument consists of 87 items in total with 12 constructs and in Malay language which are social support (family, peer, school), socioeconomic status, resilience, coping skills, empathy, aggression, academic achievement, truancy, involvement in school activity and crime risk behavior. For this instrument, from the face validity analysis that had been conducted, it shows that this measure has face validity (.91). We continue with reliability analysis of the measure and it was conducted through internal consistency analysis. Overall Cronbach alpha value is .75. DeVellis[34] said that according to general rule of thumb, the ideal Cronbach alpha value are above .70 (good), .80 (better) and .90 (best).

Data Analysis: Correlation analysis was performed to measure there lationship between all construct in this study and was conducted using SPSS version 23.

Results

Correlation Analysis: The relationship between all variables in this study was investigated using Pearson product- moment correlation coefficient and can be seen in Table 1. A correlation of 0 indicates no relationship at all, a correlation of 1.0 indicates a perfect positive correlation and a value of -1.0 indicates a perfect negative correlation. According to Cohen [35], he suggests that the correlation strength between two variables can be interpret as .10 to .29 (weak), .30 to .49 (medium) and .50 to 1.00 (large). From the analysis that had been conducted, there was a large, positive correlation between social support from family with resilience (r = .56) and coping skills (r = .55), between social support from peer with social support from school (r = .52), between socials up port from school with resilience (r=.52) and between resilience with coping skill (r = .72) and empathy (r =.58).

Besides, there also medium, positive relationship between social support from family with social support from peer (r = .38), social support from school (r = .43) and empathy (r = .30), between social support from peer with resilience (r = .49), coping skill (r = .45), empathy (r =.47) and academic achievement (r=.30), between socials up port from school with coping skill (r = .47), empathy (r = .48) and academic achievement (r = .37), between academic achievement with socioeconomic status (r = .32) and resilience (r = .33), between empathy with coping skill (r = .49) and academic achievement (r = .36) and lastly between aggression with truancy (r = .30) and crime risk behavior (r =.42).

Next, there is weak, positive relationship between socioeconomic status with social support from peer (r=.12), aggression (r=.13) and truancy (r=.23), academic achievement with social support from family (r=.22) and copings kill (r=.27), between truancy and crime risk behavior (r = .26) and lastly between involvement in

school activity with social support from family (r= .21), social support from school (r = .18), resilience (r = .20) and coping skill (r = .17).

In addition, there is medium, negative relationship between resilience and aggression (r=-.30) and between crime risk behavior with social support from peer (r = -.30) and social support from school (r=-.31). Moreover, there is weak, negative relationship between aggression with social support from family (r = -.22), social support from peer (r = -.22), social support from school (r = -.28), coping skill (r = -.20) and involvement in school activity (r = -.23), between truancy and academic achievement (r = -.22), between involvement in school activity with socioeconomic status (r = -.14), truancy (r = -.29) and crime risk behavior (r = -.25) and lastly between crime risk behavior with social support from family (r = -.24), resilience (r = -.25), coping skill (r = -.15) and empathy (r =-.24).

Table 1: Correlation between All Constructs

Construct		1	2	3	4	5	6	7	8	9	10	11	12
1	Social support fromfamily	1	.38**	.43**	.06	.56**	.55**	.30**	-.22**	.22**	-.08	.21**	-.24**
2	Social support from peer		1	.52**	.12*	.49**	.45**	.47**	-.22**	.30**	.04	.06	-.30**
3	Social support fromschool			1	.07	.52**	.47**	.48**	-.28**	.37**	.02	.18**	-.31**
4	Socioeconomic status				1	-.01	-.01	.09	.13*	.32**	.23**	-.14*	.07
5	Resilience					1	.72**	.58**	-.30**	.33**	-.03	.20**	-.25**
6	Coping skills						1	.49**	-.20**	.27**	-.03	.17**	-.15*
7	Empathy							1	-.09	.36**	.06	.08	-.24**
8	Aggression								1	.03	.30**	-.23**	.42**
9	Academic achievement									1	-.22**	-.00	.02
10	Truancy										1	-.29**	.26**
11	Involvement in school activity											1	-.25**
12	Crime risk behavior												1

Discussion

In this current study, we only focused on our variables of interest as variables that have a relationship with crime risk behavior. Future studies may investigate the effects of other predictors or variables on crime risk behavior. Besides, this is cross-sectional study, future study may replicate this study by conducting a longitudinal research. Another thing is this study use Pearson correlation analysis to analyses the data. So next research can use more advance statistical analysis to investigate the significant predictor to crime risk behavior such as by using regression analysis, path analysis or Structural Equation Modelling (SEM). From the finding, we recommend school counsellors and psychologists who working with adolescents at schools or other institutions to undertake protective and preventive work to increase the social support that students receive from family, peers and school. Many programs can be held such as group guidance programs for peers and psycho educational programs to develop relationships between counsellors, students, families and teachers.

Ethical Clearance: Ethical procedure of this study was approved by the Educational Planning and Research Division, Ministry of Education Malaysia. Besides, the inform consent was acquired from the participant who agreed to participate in this study.

Conflict of Interest: There is no conflict of interest in this research.

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Influence of Superadded Fetal MRI on Prenatal Ultrasonography in Assessment of Fetal Ventriculomegaly

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Abstract

Background: Prenatal diagnosis in IVM is considered a challenge with great impact upon management.

Objectives: Estimating the value of adding fetal MRI to sonographically diagnosed IVM.

Patients and Method: Data were gathered prospectively from 60 pregnant women with ultrasound-diagnosed IVM referred for MRI between April, 2017 and September, 2018, followed by postpartum neonatal MRI brain examination to non-terminated, live birth cases.

Results: Of the sixty fetuses with IVM, Fetal MRI added findings to prenatal U/S imaging in 14 cases (23%) and most of these findings were identified in fetuses with severe IVM (about 50%). No additional abnormalities were identified by fetal MRI in fetuses less than 24 weeks gestation. Callosal and septum pellucidum lesions accounted for most common significant fetal MRI additional findings with percent (28.6 % of the additional findings). Management was changed according to the additional findings where Increased rate of termination was more associated with cases with additional abnormalities rather than the isolated VM cases.

Conclusion: This study recommend fetal MRI for sonographically diagnosed IVM to guide the clinical management.

Keywords: *Fetal MRI, Fetal ventriculomegaly, prenatal ultrasound, Intrauterineventriculomegaly.*

Introduction

Cerebral ventriculomegaly (VM) is one of the most commonly detected fetal anomalies at the mid-trimester ultrasound [(1)]. The classification of VM has varied in published studies, mild (10–12 mm), moderate (>12–15 mm) or severe (>15 mm) is a commonly accepted categorization[(2)].

Ultrasound is a favorable screening modality for fetal CNS abnormalities. However,On U.S. usage; some limitations hinder proper diagnosis as maternal obesity, oligohydramnios, fetal head engagement in late pregnancy or acoustic shadowing by surrounding bony structures[(3)].

Fetal MRI is being increasingly used as a complementary tool to U.S. in fetal CNS abnormalities assessment[(4)].

The aim of this study was to detect the impact of acceding fetal MRI to sonographically diagnosed IVM regarding confirming the diagnosis as well as detecting additional anomalies that my affect the choice of management and the outcome of the pregnancy.

Patients and Method

This prospective study was approved by the ethics committee of our institution during the period between

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April, 2017 and September, 2018. It included 60 pregnant women with their age ranging from 18 to 45 years & of gestational age ranging from 20 to 32 weeks at time of examination (sonographically and by MRI). This study was conducted in our radiology department for patients referred from the obstetrics and gynecology department. We performed fetal MRI to sonographically diagnosed fetal VM at the same setting with no time lag between the two modalities; followed by postnatal MRI brain to 15 (25 %) of our 60 cases, who weren't terminated & were live birth.

- Our Inclusion criteria were (2D/3D) Sonographically diagnosed IVM.
- Exclusion criteria were; MRI contraindication (as cardiac pace maker), Mother's refusal to do fetal MRI.

U/S technique: Sonographic examination was done in supine position using (Voluson E, Toshiba, Japan) with trans-abdominal transducer of a bandwidth 3.5 MHz associated with color Doppler added property.

MRI technique: MRI examination was performed on 1.5-Tesla MR scanner ((Ingenia 1.5 Tesla, Philips, Netherland) without maternal sedation. Mothers fasted 4 h before the examination. They were made to lie supine during the examination.

MRI was primarily performed, using a multi-channel phased array coil..An initial three plane localizer with single shot fast spin echo (TR 4960-TE 100 band width 50) is obtained to visualize the position of the fetus. Then neuroimaging examination was done for fetal brain imaging in three orthogonal planes (axial, sagittal and coronal plane)

Fetuses were imaged with a total scan time about 10-15 minutes in the following sequences:

- Single Shot Fast Spin Echo T2WI (SSFSE T2) which is useful to assess fetal anatomy and less susceptibility to fetal movements ..
- Gradient echo-planar T2-W images to detect hemorrhage. Images were acquired in 7 s, during a single maternal breath-hold, in the axial and coronal planes.

Postnatal MRI technique of the brain: MRI examination was performed on 1.5-Tesla MR scanner ((Ingenia 1.5 Tesla, Philips, Netherland) with infantile sedation. It was made in different pulse sequences and planes (sagittal T1WI, coronal T2WI, axial FLAIR and DWI) Image interpretation parameters:

- Ventriculomegaly was considered when atrial width equal to or greater than 10 mm, measured manually at the atria of the lateral ventricles at the level of the choroid plexus on an axial image in ultrasound and on coronal plane in MRI.
- VM was classified in to mild (10–12 mm), moderate (>12–15 mm) & severe (>15 mm) in both U/S and MRI modalities which was based on Gaglioti P et al 2005 and Yu-Han Huang et al 2013 classification.

Statistical analysis: Statistic Package for Social Sciences (SPSS v 17.0 for Windows, Chicago, IL) software was used for data entry and analysis.

Qualitative data were presented by numbers and Statistical significance was assessed using the chi square χ^2 test to compare differences between the two independent groups. Significance was interpreted as $p < 0.05$.

Results

Sixty pregnant females were enrolled in our study,80% of our pregnant females were above 35 years old which was statistically significant (p value =0.041) .

(Table I) is a comparison between MRI & U.S in degree of VM, showing agreement between the VM measurements of the ultrasound and the MR imaging with non-significant statistical difference between the VM grades in both modalities (of p-value about 0.105).

Regarding the gestational age (GA) of the involved fetuses, fetal MRI additional abnormalities & changing diagnosis were more pronounced after 24 weeks GA.

(Table II) shows a comparison between Fetal MRI & prenatal ultrasound with confirmatory Postnatal MRI to non-terminated & live birth cases (25%). In addition it showed the percent of each of the fetal MRI additional findings (23%), changed sonographic diagnosis (1.7%) & confirmed sonographic diagnosis (75%). The table also showed significance of adding fetal MRI modality to prenatal U.S. with p-value about 0.045.

The fetal MRI additional abnormalities in our study showed that the most commonly detected additional abnormalities were corpus callosal & septum pellucidumdysgenesis,followed by posterior fossa abnormalities and cortical malformations with their

percents (28.6%,21.5% and 21.5% of the additional findings) respectively. The additional abnormalities addressed by fetal MRI in the study changed the management, with higher rate of recommended termination by clinicians.

On the other side, the management strategy changed when no additional abnormalities were present in isolated VM cases in our study, where termination decision was limited to severely dilated ventricles.

The postnatal MRI was compared to each of U/S and Fetal MRI results, revealed results approaching those of fetal MRI with vast differences with U/S.;revealing superiority of fetal MRI upon U.S.in fetal VM assessment.

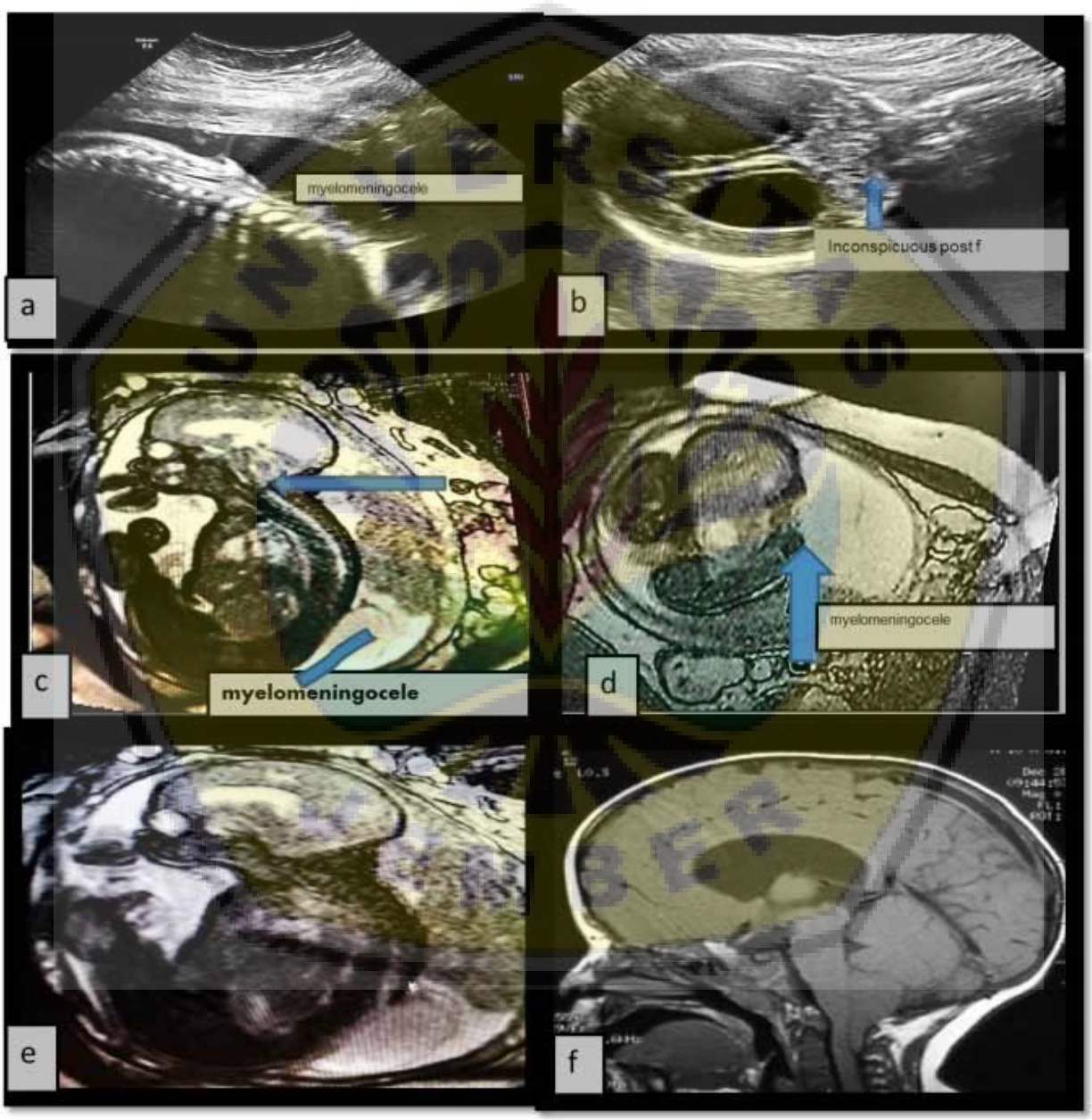

Fig. 1: Fetus 32 weeks GA (a) Sagittal U.S image shows myelomeningocele at the distal spine.(b) Coronal U.S image shows moderately dilated ventricles with inconspicuous posterior fossa suggesting Chiari II.(c),(d) and (e) MRI T2WI in sagittal and axial planes confirmed U.S findings with adding the degree of cerebellar tonsil herniation and the corpus callosaldysgenesis (d) postnatal MRI, showing the same findings as the fetal MRI.

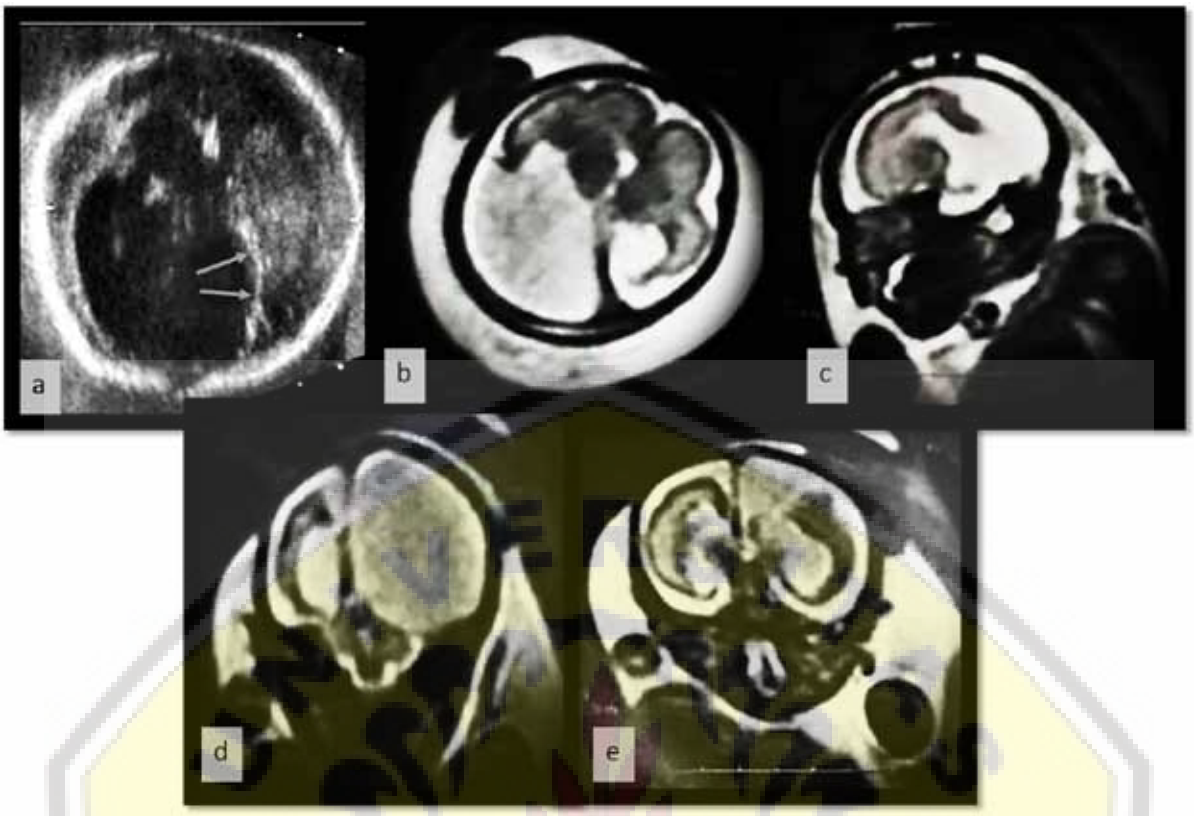

Fig. 2: Fetus of 26 weeks GA (a) axial U.S. image revealing asymmetrical ventricular dilatation, with bowed falxcerebri. (b,c, d, e) axial, sagittal & coronal cuts of the fetal MRI adding an inter-hemispheric cyst type I connected to one of the lateral ventricles associated with Corpus callosaldysgenesis.

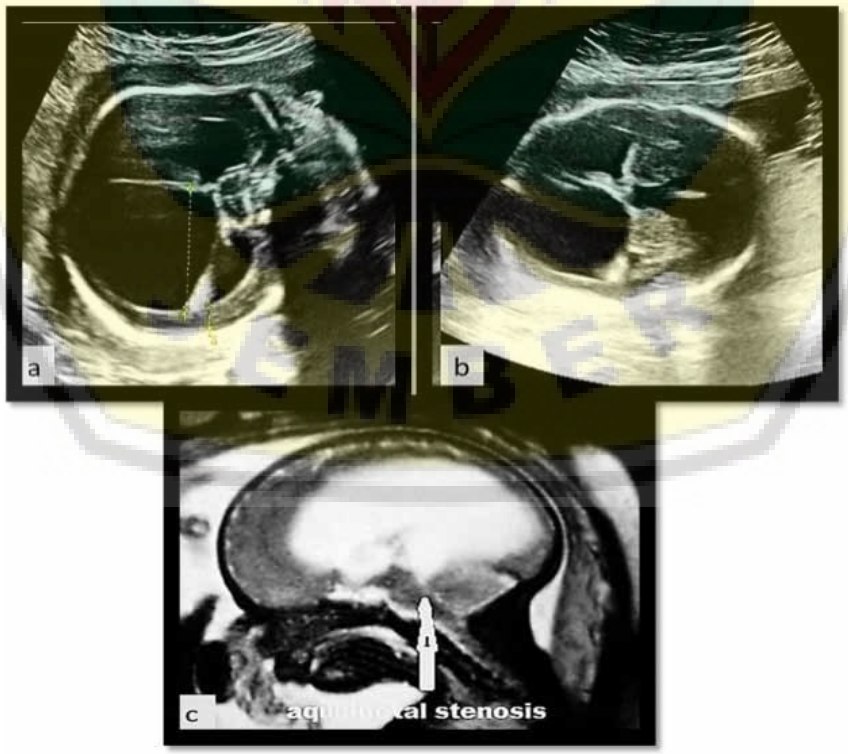

Fig. 3: Fetus of 24 weeks GA, (a, b) U.S (axial & coronal images) showing moderate dilatation of supratentorialvetricular system. (c) Fetal MRI in sagittal plane reveal the cause as aquiductal stenosis.

Table I: VM degree by US versus VM degree by MRI .

VM. Degree U.S.	VM Degree MRI			P -value	Significance
	Mild	Mod	Severe		
Mild	26	7	0	0.105	Not significant
Moderate	0	15	3		
Severe	0		7		

Table II: Comparison between fetal MRI and prenatal ultrasound with significance of adding fetal MRI modality to prenatal ultrasound.

VM degree	U.S. Diagnosis	Fetal MRI			Postnatal MRI to non-termi-nated & live birth cases	P–value	Signi-ficance
		Confirm diagnosis	Additional Findings	Change U.S diagnosis			
Mild	Isolated VM or incomplete imaging findings		4		As fetal MRI	0.045	Signi-ficant
Moderate			2				
Severe			8				
Mild	I.V. hemorrhage			Mild VM, No I.V. hemorrhage	Just mild VM		
Mild,	Isolated VM or with U.S additional findings	27			As Fetal MRI		
Moderate,		16					
Severe		2					
No and Percent		(45) 75%	(14) 23.3 %	(1) 1.7%	(15) 25%		

Discussion

No doubt that VM is one of the most common abnormalities found on prenatal ultrasound [(5)]. Fetal MRI has been shown to be a useful adjunct to ultrasound in suspected fetal anatomic abnormalities and is increasingly used for fetal brain imaging [(4)].

In our study, we figured out that the maternal age was of significance; where 80% of the pregnant females in our cases were older than 34 years old which denoted that advanced maternal age is directly proportional to increased risk of congenital anomalies including CNS anomalies. That was equivalent to the study conducted by Hollier LM et al, 2000[(6)], who reported that advanced maternal age beyond 25 years old was associated with significantly increased risk of fetuses having congenital malformations.

Similar to previous studies, our results revealed that MRI measurements of lateral ventricle size were on average of 1-2 mm greater than US measurements. However, no notable changes were detected in VM grading to mild, moderate and severe relative to ultrasound. These results perfectly matched those of Nicholas Behrendt et al, 2016 [(7)].

We yielded Fetal MRI additional abnormalities in 14 of 60 fetuses (about 23%) with changing sonographic diagnosis in one case (1.7%) which was mis-interpreted by U.S as being IV hemorrhage & proved by fetal MRI to be just choroid plexus. This result was in rapprochement to the study addressed by Parazzini et al, 2012[(8)] who stated that Fetal MRI additional findings were identified in 19.5% of fetuses in his study.

Regarding our cases, fetal MRI additional findings were more pronounced after 24 weeks GA which was in coherence with and based on what was postulated by ACR, 2010[(9)], that fetal MRI study may give limited diagnostic information in early gestational age due to the small size of the fetus and fetal movement.

In our study, the commonest detected significant fetal MRI additional findings were callosal and septum pellucidum lesions (28.6%), followed by posterior fossa abnormalities (21.5%) and cortical malformation (21.5%). That was to a great extent affirmed by many previous studies as that of Tejaswi Kandula et al, 2015[(10)] who stated that all fetal MRI significant additional abnormalities were Callosal and septum pellucidum lesions, malformations of cortical development and periventricular abnormalities.

Something to be considered in our results is that fetal MRI additional findings were more notably detected in severe VM (about 50%); which was in accordance with the study conducted by Morris et al, 2007 [11] who found out that 58% of the fetuses with severe VM had prenatal MRI additional findings.

That perfectly explains why it is highly recommended to perform fetal MRI to all fetuses with severe IVM (VM >15 mm).

The results in our study has proven that presence of structural CNS abnormalities with VM has high association with termination of pregnancy rather than the degree of VM dilatation,which proves the fact that associated CNS abnormalities act as a better predictor of outcome rather than degree of ventricular dilatation. That coped with many other studies as that conducted by Y Li et al, 2011[12].

In addition to aiding in management and prediction of the neurodevelopmental outcome, we also noted that fetal MRI additional abnormalities give a clue about the possibility of recurrence & the need for genetic testing .An example for this is two cases in our study which were formerly diagnosed by U/S as severe VM and lissencephaly;On the other hand fetal MRI additional findings rendered the diagnoses as Fowler and Walker Warburg (HARDE) syndrome respectively; which were proved to be autosomal recessive syndromes with the imminent need for genetic testing.

We have performed confirmatory postnatal MRI for non-terminated & live birth cases (about 25%) which revealed the same fetal MRI findings with nil additional findings & only changed diagnosis in one case that was mistaken by Fetal MRI as cortical dysplasia with mild VM whereas it proved to be mild VM only with no associated cortical dysplasia by postnatal MRI. That rendered fetal MRI superior to prenatal U/S regarding fetal VM assessment.

Our results are at variance with those of other studies. It coped with the study conducted by ManalHamisa et al, 2013 [13] where she reported the fetal MRI specificity, positive & negative predictive values were of 100% as a complementary tool to U/S in Fetal CNs anomalies. However, that was against the study conducted by Malinger et al, 2004[14] who described that dedicated trans-vaginal neuro-sonography is equivalent to MRI in the diagnosis of fetal brain anomalies.

Limitations in our study included the relatively narrowed number of the performed postnatal MRI owing to the high ratio of termination decision and the incidence of still births or IUFD.

Our recommendations in the future is adding fetal MRI to prenatal ultrasound in fetal VM; where it is of great value and it greatly manipulates the fetal outcome.

Conclusion

Prenatal ultrasound is unquestionably favorable modality for fetal screening. However; Fetal MRI proved to be a perfect complementary tool to ultrasound especially in assessing fetuses with IVM, where it confirmed sonographic diagnosis with depiction of additional CNS abnormalities far beyond ultrasound that affect prognosis and clinical management, giving a clue about recurrence rate and the need for genetic testing.

Declarations: Ethics Approval and Consent to Participate: This study was approved by the Research Ethics Committee of the Faculty of Medicine at EL Minya University in Egypt on April 2017.

Consent for publication :All patients included in this research gave written informed consent to publish the data contained within this study according to our institution rules for ethics committee

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Competing Interests: The authors declare that there is no conflict of interest.

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Nurses Communication Model to Increase Patient Satisfaction: Evidence from Indonesia Hospital

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Abstract

Communication is an effective and important model in the field of nursing services because it is the basis for nurses to foster interpersonal relationships with patients and families. Communication is one way that allows nurses to deliver and receive messages so that maintenance activities can run well. Patient dissatisfaction with communication reduces patient loyalty and patient trust in nurses and decreases patient comfort levels. The purpose of this study is to develop a nurse communication model to improve patient satisfaction. This study uses an observational analytic design, consisting of 100 respondents consisting of 5 adult inpatient rooms with sampling techniques using simple random sampling. Data were analyzed using Partial Least Square(PLS). The results of the study show that nurse factors, patient factors and good social factors can increase the interaction that occurs between nurses and patients. Increasing nurses' communication skills can be influenced by good interactions between nurses and patients in the adult inpatient Syarifah Ambami Rato Ebu hospital. Good communication skills carried out by nurses will increase patient satisfaction as users of hospital services. For further researchers to continue the research by implementing a nurse communication module to determine differences in communication skills of nurses and patient satisfaction before and after being given a nurse communication module.

Keywords: *Nurse communication, Nurse-patient Interaction and Patient Satisfaction.*

Introduction

Communication is an individual effort to maintain and retain individuals to continue to interact with others and important components in nursing practice. Therapeutic communication is an important tool for fostering therapeutic relationships and can affect the quality of nursing services. One of the goals of therapeutic communication is to form an interaction, interdependence with the capacity to give and receive. A nurse in carrying out therapeutic communication must have the ability, among others: sufficient knowledge, adequate skills and good communication techniques and attitudes. The good communication skills of nurses are one of the success factors in implementing the nursing process which includes the stages of assessment, formulation of diagnoses, planning, implementation and evaluatioz [1,2]

Nurses must improve their performance in providing nursing care, especially when communicating with patients. Nurses are one of the health workers who are often in contact with patients so that patients communicate more with nurses. Lack of communication between hospital staff and patients is one reason for the general complaints of patients in hospitals. Patients are often dissatisfied with the quality and amount of information received from health workers[1,3]

The phenomenon that occurs in the Indonesia hospital is a breakdown of the communication of nurses, namely that the communication carried out by nurses has not yet fully paid attention to the techniques and

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stages that are good and right, so that the client lacks the correct information, or lacks the proper service. This is supported by the results of research conducted that, four nurses' errors were identified when implementing communication namely, non verbal (eye contact, facial expression and paralanguage), verbal (active listening and incorrect choice of words) and content (poor quantity and quality of information provided); and bad attitude (lack of respect and empathy)[2]

The results of a preliminary study conducted at Indonesia hospital, 9 patients (60%) considered that nurses were more focused on treatment activities so that they lacked attention and ignored the importance of communication. A total of 10 patients (66.7%) were still dissatisfied with nurse communication. Some things that also influence nurse communication are nurse factors, patient factors and social factors. A dissatisfied patient will, in turn, produce an attitude that is not compliant with all nursing procedures and medical procedures such as refusing to insert an IV, refusing to take medication, refusing to be compressed hot or cold and so on. Eventually, the patient will leave the hospital and look for quality services elsewhere.

The solution that can be done to increase patient satisfaction starts by increasing the ability and skills. These skills must be learned and trained continuously through the ability to learn independently, refresh and training. Besides that, an increase in the understanding of nurse and patient factors is also needed to improve nurse communication[2,3]. Interaction of nurses with patients must also be considered in order to form therapeutic communication between patient nurses. Enhancing nurses' communication skills will increase patient satisfaction[1,4]

Materials and Method

This study used an observational analytic design, consisting of 100 respondents consisting of 5 adult inpatient rooms with sampling techniques using simple random sampling. Variables in this study include nurse factors, patient factors, social factors, patient-nurse interactions and nurse communication in providing nursing care. The research instrument used a questionnaire. Research data were analyzed using *Partial Least Square(PLS).*

Findings

Description of Research Variables:

Table 1: Frequency distribution of nurse factors, patient-nurse interactions and nurse communication skills in developing nurse communication models to improve patient satisfaction

Variables	Good		Fairly		Less		Total	
	F	%	F	%	F	%	F	%
Nurse factors	16	16	54	54	30	30	100	100
Nurse patient interactions	19	19	44	44	37	37	100	100
Nurse communication skills	16	16	34	34	50	50	100	100

Based on table 5.4 shows that the development of nurse communication models in inpatients at ambulances in the ambassador rato ebu hospital in the nurse-patient interaction shows almost half are in the sufficient category at 44%. On communication skills, nurses showed half of them in the category of less, namely 50%.

Analysis of the measurement model (Outer model):

Table 2: Results of convergent validity on the development of the nurse communication model to improve patient satisfaction at the Syamrabu Bangkalan Regional Hospital in 2019

Variable Name	Indicator	Loading Factor	Category Category
Nurse Factor (X1)	X1.1 Perception	0.950	Valid
	X1.2 Decision	0.942	Valid
	X1.3 Actions	0.959	Valid
Patient Nurse Interaction (Y1)	Y1.1 Interaction	0.999	Valid
	Y1.2 Communication	0.983	Valid
	Y1.3 Transaction	0.995	Valid
	Y1.4 Role of	0.995	Valid
	Y1.5 Stress	0.975	Vlid
Communication Capability of Nurse (Y2)	Y2.1 Attending skill	0.919	Valid
	Y2.2 Emphaty	0.954	Valid
	Y2.3 Respect	0.832	Valid
	Y2.4 Responsivness	0.970	Valid

Table 2 can be known Indicators with outer loading values> 0.5 indicate that these indicators in the structure have met the validity test. The conclusion of this analysis is that the indicator above validly measures its latent variables and shows the criteria of goodness of a measurement model (outer model).

Table 3: Results of Average Variance Extracted (AVE), composite reliability and Cronbach's alpha model for developing nurse communication models to improve patient satisfaction in Syamrabu Bangkalan Hospital in 2019

No.	Variable	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)	Description
1	X1	0.940	0.962	0.894	Reliable
2	Y1	0995	0996	0979	Reliable
3	Y2	0941	0957	0847	Reliable

Table 3 value composite reliability and Cronbach's alpha showed> 0.7 so that it can be concluded that all the latent variables (factors nurse, nurse-patient interaction and communication skills of nurses) have met the reliability test. The next check of convergent validity is the average variance extracted (AVE) value. AVE values above 0.5 are highly recommended. Based on the table above, the AVE value for all constructs or latent variables is above 0.5.

Testing the structural model (inner model):

Table 4: Hypothesis test results of the development model of nurse communication models to improve patient satisfaction at the Syamrabu Bangkalan Hospital in 2019

No.	Variable	T-statistic	Remarks
1	Effect of nurse factors (X1) on patient-nurse interactions (Y1)	2,916	There is an influence
2	Effect of patient-nurse interaction (Y1) on nurse communication (Y2)	2.897	There is an Influence of

Table 4 Nurse factors (t statistic 2,916> 2.0), so the nurse factor has a significant influence on patient-nurse interactions. Interaction of patient nurses (t statistic 2.897> 2.0) so that it has a significant influence on the patient's nurse communication skills.

Discussion

The Influence of Nurse Factors on Patient Nurse Interactions in Adult Inpatient Rooms Syarifah Hospital Rami Eato Bangkalan

Based on the results of the study showed the influence of nurse factors on nurse interactions. T-test results obtained t value t = 2.916 greater than 2.0. Nurse factors with variable perceptions, decisions and actions influence the interaction of nurse patients with indicators of interaction, communication, transactions, roles and stress. This is consistent with King's theory that nurse factors can influence patient-nurse interactions[1,2,4]

The most determining factor for nurses is an indicator of nurses' actions in providing nursing care with the value of cross loading 0.959. Indicators on nursing actions such as nurses ask complaints that are felt by patients, nurses provide information related to patients, deliver plans of action to be taken, ask permission when taking action and ask patient complaints when taking action. Nurses are required to carry out therapeutic communication in performing nursing actions so that patients or their families know what actions will be performed on patients in a way that nurses must introduce themselves, explain the actions to be taken, make a time contract for nursing actions[5,6]. One of the goals of communication carried out by nurses is to convey ideas or information to patients. By providing information carried out by nurses and delivering action plans to be taken, this is one way to equate ideas that are in the minds of nurses and patients. If this has been done, the nurse will be able to foster a trusting relationship and will make it easier for nurses to carry out and succeed in the treatment program[7,8,9].

There are 3 main elements that interact with each other in performance namely patient (Customer), nurse officer (customer service) and management (management). One of the important things in the interaction between patient nurses is the performance of health care workers or nurses. Interaction between officers and patients is a very deep thing that patients feel when receiving service[10,11,12,13]. This process is strongly influenced by the behavior of nurses in carrying out services or carrying out nursing actions. Communication by nurses when performing actions has optimal results to increase the interaction of nurses and patients[11,13,15].

The Influence of Patient Nurse Interactions on Communication Capabilities of Nurses in Adult Inpatient Rooms Syarifah Hospital Ambami Rato Ebu Bangkalan

Based on the results of the study showed the influence between interactions nurses to nurse communication skills. T-test results obtained t value = 2,897 greater than 2.0. Nurse-patient interactions with indicators of interaction, communication, transaction, role and stress indicators influence nurses' communication skills with attending skills, respect, empathy and responsiveness indicators. This is consistent with King's theory that improving nurses' communication skills can be influenced by patient-nurse interactions[14,16,17,18]

The most decisive interaction factor is an indicator of the interaction itself namely the patient's perception of the nurse's behavior when communicating with the patient during nursing care with the value of cross loading 0.999. Indicators of nurse interaction include nurses maintaining eye contact with patients, nurses showing honest faces, nurses facing patients, nurses bowing toward patients and nurses respecting patients.

Positive interactions conducted by nurses such as visual eyes that looked at the eyes of the patient while the nurse was next to the patient, proximity with speech were nurses standing at least as far as the patient's arm when interacting with the patient. This must be done by nurses to improve their communication skills[17,18].

Maintaining proper eye contact is a powerful way to communicate respect and that nurses pay attention to patients. The eyes that are not focused on the patient give meaning as loss of interest or attention. Proper eye contact is very different from staring. Staring is insensitive and sometimes breaks up. Nurses must always have eye contact readiness when interacting with patients. In depressed patients, they will always look down. If they momentarily look up and the nurse's eye contact does not look at the patient, then the patient will lose confidence in the nurse[20,21].

Nurses are required to have good interactions with patients. Presence or attitude really exists for patients, is part of the interaction. Nurses must not look confused; instead, the patient must feel that he is the nurse's main focus during the interaction. In order for nurses to play an active and therapeutic role, nurses must analyze

themselves which include self-awareness, clarification of values, feelings and being able to become a responsible model. All behaviors and messages conveyed by nurses should be therapeutic for patients. An interactive process between patients and nurses that helps patients overcome stress while living harmoniously with others, adjusting to something that cannot be changed and overcoming psychological obstacles that hinder realization[19,23,24] .

The results showed that the communication skills of nurses who made the most decisive contribution were indicators responsiveness with cross-loading 0.970 which included nurses paying attention to and responding to complaints submitted by patients, when patients had difficulties in facing their health problems nurses offered assistance without asking, after the nurse submitted the nursing plan patients, nurses ask things that can be helped, nurses come immediately when called patients and nurses look at patients to ask and check the patient's condition without being asked.

According to Egan (1998) in his book skilled helper one of the therapeutic communication indicators is responsiveness. ability Responsiveness (responsiveness), the attitude and behavior of hospital personnel to immediately serve when needed. If this is not done well, patients will feel less appreciated so that patients feel dissatisfaction, especially in terms of nurses' responsiveness in caring for patients[13,14,24].

Conclusion

Nurse communication model has been developed in the hospital by producing nurse communication modules in providing nursing care. The nurse communication model is influenced by nurse factors by mediating patient-nurse interactions.Nurse factors which include good perceptions, good judgment and good actions by nurses will increase interaction between nurses and patients Goodinteractions between nurses and patients will improve nurses' communication skills in providing nursing care.

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Relationship between Satisfaction with Nurse Work Performance in Health Services in Hospitals

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Abstract

Background: Of the current era of globalization suggests that market mechanisms will be increasingly dominated by business organizations that provide services or produce superior products that have good competitiveness and take advantage of market opportunities. Providing quality service is inseparable from human resources that produce good performance and achievement. One of the factors that correlates nurses' performance or work performance is the lack of a person's satisfaction with their work.

Method: Descriptive analytic research with cross sectional approach. Information and data in this study were collected through a questionnaire on all nurses who worked at the hospital. After the data is obtained then an analysis is carried out to find whether there is a relationship between job satisfaction and the work performance of implementing nurses.

Results: Show that nurses who have good job satisfaction are 15 people (57.7%), showing good job performance. This shows that nurses who have good job satisfaction will have the desire to provide more energy and responsibility in supporting the success and welfare of the hospital. Multivariate analysis shows that the independent variables are related to the dependent variable. The results of the analysis obtained job satisfaction of 0.50 then it can be stated to have a significant relationship to work performance.

Conclusion: There is a relationship between satisfaction with nurse work performance. There is a significant relationship between job satisfaction with work performance working in a hospital treatment room. In providing good and quality health services, both in terms of service, care and also good facilities for patients. Job satisfaction is proven to provide a relatively good relationship to the improvement of work performance, it also does not rule out the possibility for companies to consider other factors that can provide convenience in the field of health services.

Keywords: *Satisfaction, Achievement, Nurse.*

Introduction

The current era of globalization suggests that market mechanisms will be increasingly dominated by business organizations that provide services or produce superior products that have good competitiveness and take advantage of market opportunities. Providing quality service is inseparable from human resources that produce good performance and achievement. Job performance is something that is done or a product or service produced by a person or group, how the quality of work, accuracy and neatness of the work, assignments and fields of work, use and maintenance of equipment, initiative and creativity, discipline and work spirit (honesty, loyalty, a sense of oneness and responsibility and interpersonal relationships[4].

Employee performance appraisal is included in one of the activities of human resource development

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(Human Resources Development) in every company organization, both in service industry organizations and in the manufacturing industry. Human resources, which are also a factor of production, are never free from appreciation, either because of their ability to do any work, or because of their work achievements in the form of promotion, promotion, salary increase, incentives and so forth. Giving awards, besides rewarding for an achievement, it is also a motivation for employees who have not performed well, so that in the future, their achievements can be improved[4].

Job satisfaction can be identified as an accumulation of the results of interactions that occur continuously between the person and the work and environment where he works in a certain period of time. Therefore, job characteristics and organizational climate are factors that are very closely related to job satisfaction and commitment and will ultimately have an impact on work performance or achievement[3].

Lack of individual factors (commitment, motivation and work ethic) and organizational factors (compensation, human resource development, leadership, supervision and working conditions) will relate to nurse performance as measured by measuring RATER (Reliability; Assurance, Tangible, Emphaty, Responsiveness) which is an indicator of nurse performance that will directly relate to hospital performance[11].

Job Satisfaction: The first person provides an understanding of the concept of job satisfaction. They assume that job satisfaction can be suspected from a person's attitude towards his job. Job satisfaction depends on what a person wants from his job and what is obtained. The people who are least satisfied are those who have the most desires, but get the least. While the most satisfied are people who want a lot and get it [2 7 9].

At the most basic mind, job satisfaction is a positive emotional state from evaluating one's work experience. Dissatisfaction arises when these expectations are not met. Job satisfaction has many dimensions. In general, the observed stages are satisfaction in the work itself, salary, recognition, the relationship between supervisors and workforce and opportunities for advancement. Each dimension produces feelings that are satisfied overall with the work itself, but work also has a different definition for others [6].

Work Performance: Job performance is also called performance or in English it is called performance. In principle, there is another term that better describes achievement in English, the word "achievement". But because the word comes from the word "to achieve" which means to achieve, then in Indonesian it is often interpreted as achievement or what is achieved ". Based on the understanding of work performance is the result of one's work, we need a system of measuring work performance or what is called work performance appraisal. Almost all ways of measuring work performance take into account quantity, quality and timeliness[5].

Job performance shows the work achieved by someone. said that work performance is a result of work achieved by a person in carrying out the tasks assigned to him based on skill, experience and earnestness of time. In other words that tangible work performance in a situation achieved by employees with better results increases than before [13].

Performance appraisals are carried out to obtain information that is useful in decision making related to other human resource management (HR) activities, such as planning and career development, compensation programs, promotions, transfers, pensions and dismissals. Performance appraisal in the context of the development of human resources is very important. This reminds us that in organizational life we want to get respect and fair treatment from the leaders of the organizations concerned. In the life of an organization there are several assumptions about human behavior as human resources that underlie the importance of assessing work performance [8].

Nurse: A nurse is someone who has completed a nursing education program both domestically and abroad that is recognized by the Government of the Republic of Indonesia, is registered and given the authority to carry out nursing practice in accordance with statutory regulations [10].

Nursing is one of the professions in hospitals that plays an important role in the implementation of efforts to maintain the quality of health services in hospitals. The standard on evaluation and quality control explains that nursing services guarantee high quality nursing care by continually engaging in quality control programs in hospitals. The role of nurses is very important because as the spearhead of good or not the quality of health services provided to patients. Nurses are one of the professions in the hospital with the most dominant

number and the longest contact or contact (interact) with patients in inpatient services for 24 hours [1].

Materials and Method

The research design is analytic descriptive research with cross sectional approach. Information and data in this study were collected through a questionnaire on nurses working in hospitals. Human resources, which are also a factor of production, are never free from appreciation, either because of their ability to do any work, or because of their work achievements in the form of promotion, promotion, salary increase, incentives and so forth. The awarding, besides rewarding for an achievement, is at the same time a motivation for employees who have not performed well, so that in the future, their achievements can be improved. Job satisfaction can be identified as the accumulation of the results of interactions that occur continuously between the person with the work and the environment in which he works in a certain period of time. Job characteristics and organizational climate are factors that are very closely related to job satisfaction and will ultimately have an impact on job performance or performance [12 14].

Findings:

Table 1. Analysis of the Relationship between Job Satisfaction and Work Achievement of Nurses in the Nursing Room

Job satisfaction	Work performance				Total	
	Well		Less			
	N	%	N	%	N	%
Well	5	38.5	1	3.8	6	42.3
Less	10	19.2	10	38.5	20	57.7
Total	15	57.7	11	42.3	26	100

$\alpha = 0,05$ $p= 0,003$

Table 2. Multivariate Analysis of Job Satisfaction with Work Performance of Implementing Nurses in the Treatment Room

		B	Exp(B)
Step 1[a]	Job satisfaction	-2.996	.050
	Constant	.693	2.000

Discussion

Distribution of respondents based on job satisfaction of nurses implementing in treatment room II shows the number of respondents 15 people (57.7%) who have good work performance. This shows that nurses have loyalty and feel attracted to the values, goals and objectives of the hospital where they work. The discovery of 5 people (19.2%) of respondents had less job satisfaction. This shows that nurses and hospitals lack the same goals, values and targets or nurses do not want to involve themselves more closely with hospitals. Based on the results of bivariate analysis, it showed that nurses who had good job satisfaction 15 people (57.7%), showed good work performance. This shows that nurses who have good job satisfaction will have the desire to provide more energy and responsibility, in supporting the success and welfare of the hospital.

Nurses who have good job satisfaction will have little reason to leave the hospital for a long time. This job satisfaction will have an impact on nurse performance, where the better job satisfaction is, the better work performance. This is evident through the willingness to work beyond what is expected so that the hospital can develop. Primary data shows that most nurses feel that working at the hospital is their best choice in making decisions about the workplace. The similarity

of values and goals between nurses and the hospital allows no difficulties experienced by the implementing nurse in every decision determined. from the hospital. Executing nurses who lack job satisfaction will have underachievement because the effort or the resulting performance is not optimal due to the lack of a sense of shared interest in the hospital[15 16].

Beta value is the value indicating the independent variable associated with the dependent variable. The results of the analysis obtained job satisfaction of 0.50 then it can be stated to have a significant relationship to work performance.

Conclusion

Based on the results of research on the relationship of job satisfaction with the work performance of implementing nurses in hospital treatment rooms; There is a relationship between job satisfaction and work performance of nurses in hospital treatment rooms. There is a significant relationship between nurse job satisfaction with work performance in hospital treatment rooms. In providing good and quality health services, both in terms of service, care and also good facilities for patients, the company must maintain employee work performance.

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Flashcard Play Therapy for Pre-School Age on Reduction Stress Due Hospitalization

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Abstract

Stress due hospitalization of children is the main crisis situation actually founded in children that occurs because the child must stay at the hospital for some time, so that the child experiences stress due hospitalized. This study was conducted to evaluate the effect of giving flashcard therapy for the level of stress hospitalization at children of pre-school age. This is a pre-experimental analytical method with One Group Pre-Post Test design. The population were 40 children of pre-school period, aged 3-6 years, was conducted in children hospitalized at Syarifah Ambami Rato Ebu Hospital during April - May 2018. Data were analyzed using paired t test. Stress levels are measured using Holmes and Rahe's modified stress inventory scale. The results showed that stress levels due to hospitalization before and after giving flashcard play therapy had *P* value of 0,000 ($P<0.05$). So that it can be concluded that there was a significant differences in stress levels of hospitalization, it means that there was an effect of giving flashcard play therapy to reduce in stress levels at pre-school children due hospitalization. Flashcard play therapy can reduce the stress level of hospitalization in pre-school age children who are hospitalized.

Keywords: *Flashcard, Stress, Hospitalization, Preschool, Children.*

Introduction

During the children are hospitalized, it will make them feel threatened and stressed, this happens because the child is in an unfamiliar environment, also some medical procedures performed that can trigger fussy and angry children[1)]. Besides that, the different of new environments with their home cause anxiety and stress not only for children, but also for parents[2)]. Handling children who are stressed because they have to be hospitalized must be handled properly so as not to cause trauma. Nurses must be able to provide therapy that can relieve stressful conditions for children, one of which is playing therapy.

Playing becomes an important thing for children during hospital care[3)]. Playing can reduce the level of discomfort of children[4)]. Hospitalization will cause the child to experience trauma both short and long term[5)]. The child needs to be left to play so that the child can minimize the feeling of stress[6,7)]

Material and Method

This study was pre-experimental by using one group pre post-test, the childrens was measured the level of stress before being given flashcard play therapy and then measured again the stress level after playing flashcard therapy. The number of children was 40 children who were taken using simple random sampling and that were in accordance with the criteria of the study were children with a good level of consciousness, not in an isolated room and estimated length of stay in the hospital for about 4 days. This research was conducted after

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obtaining parental consent. The treatment of the first session was carried out when the second day the child entered the hospital, which was measured first using the questionnaire stress level, then performed flashcard play (shown by figure 1), the child was told to guess the picture held by the nurse, the picture was shown little by little, after the picture was guessed the nurse would tell a short story related to the image, then repeat the same thing until it reaches at least 5 open flashcard. The activity was carried out approximately 15-20 minutes, the next day the play therapy was continued, for the second session it was the turn of the child who had to tell about the picture on the flashcard. And the third session just like second session. Then after the third session the level of hospitalization stress was measured again. After the data were collected, then it's processed using IMB SPSS version and the data were analyzed using paored t test.

Figure 1: The Flaschcard

Findings: The description of the child who became the object of the study consisted of 18 boys and 22 girls with different age levels (shown by table 1) the results of the paired t test showed Mean 6.90, Standard Deviation 3,002 and P Value 0,000 (shown by table 2). So that it can be concluded that there were a significant effect of playing flashcard therapy on reducing the level of stress at preschool due hospitalization.

Table 1. Participants demographics characteristics

No.	Variables	N	%
1	Gender		
	Boys	18	45
	Girls	22	55
2	Age		
	3 year old	10	25
	4 year old	10	25
	5 year old	11	27.5
	6 year old	9	22.5

Table 2. The Analysis of level stress

No.	Stress level	N	Mean	SD
1	Pre Test	40	27.8	6.8
2	Post Test	40	20.9	5.4
	Paired T Test		P Value 0.000	

The results of the study showed that before being given flashcard therapy for stress levels due to hospitalization was quite high, this was triggered because the pre-school age was vulnerable to stress and fear while at the hospital. According to Selye's definition of stress [8]. Stress is a non-specific response of the body to any excessive environmental request. The reaction to stress is not directly related to the exposure of stressors but is facilitated by the individual emotional response. Stress is, in fact, a process embracing several components including stressors, defined as events that pose a challenge to the subject, psychosocial mediators, constructs that enable the subject to evaluate the nature of the situation and the stress response, typically a measure of the emotional reaction elicited in response to the stressor [9]. Stress related to diseases and hospitals can have a long-term effect on the development of children [10]. It's means that the principle of atraumatic care is very important to apply in to the child ward. In pre-school period children stress can be derived from nursing interventions, pain, being left alone, lack of information and instruments and equipment, separation from parents[11].

Children usually have a very good relationship with their mother, as a result of separation from the mother will leave a sense of loss in the child so that in the end will cause feelings of insecurity and anxiety. As a result of being sick and being treated in a hospital, children will lose their freedom in developing their autonomy. Children will react negatively to the experience, especially children will become angry and aggressive.

Playing in a hospital for the child being treated has several functions, one of the most basic things is that play is a pleasant recreation [12]. Play therapy is a therapy that helps overcome anxiety and conflict. Playing releases tension, allows children to overcome life's problems. Play therapy allows children to channel excess energy and release emotions that are held back and cannot be released beforehand. In therapy, play also provides an opportunity to analyze children's conflicts and how to deal with them. In a therapy session, children can feel not threatened and more likely to express their true feelings. Therapy plays also as an effort to stimulate growth and development. play as a media part to express feelings of relaxation and distraction of uncomfortable feelings. Efforts to involve children in play activities will give a sense of responsibility to children, releasing them for a moment from the passive role as recipients of constant things everything has been done for them.

Flashcard games can add insight, practice introducing new vocabulary or new information and increase imagination. Flashcard games can also give distractions to children because this game can provide comfort so that children's stress can be reduced [13].

A Nurse's role in minimizing stress due to hospitalization in children is very important, so that nurses need to know several ways to cope with stress due to hospitalization in children one of which is the nursing care approach to playing flash cards. The role of nurses in implementing flashcards is as partners and facilitators in the care of children in hospitals. Because the activeness of nurses can be positive for children who are hospitalized, inactive children can become active even accustomed to being independent. Children who are given a nursing care approach to play flashcard are involved in the process of independence of children such as children choosing to eat on their own, children managing their own sleep time. While parents accompany children 24 hours, parents also get an explanation of hospital policies, procedures and regulations.

Most children expressed happiness and joy after being given the approach to playing flascard because according to children the presence of parents in addition to children is needed by children and can improve the relationship between children and their parents. The reaction of parents to hospitalization such as feelings of fear, anxiety, guilt and sadness also greatly affects the child during treatment. Where if parents are stressed during child care, the child's stress level will increase

as well, so that while the child is undergoing treatment in the hospital the role and support of parents is very helpful in reducing the stress level of hospitalization in children [14].

Conclusion

Playing flashcard at preschool due hospitalization can reduce stress levels. Nurses and parent must be proactive to give children therapy, especially with flashcard.

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Pharmacological Activities and Chemical Constituents of Bryoniadioica L.: A Review

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Abstract

Bryonia is one of the genera belong the Cucurbitaceae family (gourd family). *Bryoniadioica* distribute in Western Europe, this plant flowering in May as small, greenish and three or four flowers together in small cluster the stamens and pistils are found separated therefore consider a dioecious plant–growth as separate plant into (male and female).The phytochemical constituents of Leavesare Luteolin, flavonoids (kaempferol),. alkaloids, Glycosides, phenol steroids,, Carbohydrates, anthraquinoine and terpenoids, while the part used of this plant (Roots) are Kempferol 3, 7-di-O-rhamnoside, polyphenols, sterols, triterpenes, alkaloids, heterosides-c, carbohydrates, saponins, terpenoids, flavonoids, tannins, alkaloids, quinones, reducing sugar and coumarin . The fruits containing triterpene, glucosides, calcium oxalate crystals and the flowers arePhenolic acid and flavonoids. The biological activity and pharmacological uses of all plant parts of *B.dioica* are antinociceptive effects, antimicrobial activities, antioxidant activity, hepatoprotective activity, Anticancer activity, hypercholesterolemia, diabetes and fertility disorders .

Keywords: *Bryoniadioica, phytochemical constituents, biological activity and pharmacological uses.*

Introduction

Bryonia is one of the genera belong the Cucurbitaceae family (gourd family) which is flowering plant[1,2]. The genus name Bryonia, came from the bryo word (Greek bryo), which means shoot, or appears of sprout according to the active growth of the plant stems[3]. The best-known common name is Bryony[4,5]. *B. dioica* distributed in Western Europe[6-8]. It has five-pointed leaves with different flowers like blue or white[9]. This plant flowering in May as small, greenish and three or four flowers together in small cluster the stamens and pistils are found separated therefore *B.dioica* consider a dioecious plant – growth as separate plant into (male and female) flowers with many petals (five greenish-white petals)[10]. Male flowers about 12 to 18 mm and having stalked bunches and loose. The stamens consist of one-celled and the anthers are yellow, while the female flowers about 10 to 12mm[11,12]. The fertile flowers, distinguish easily by the presence of an ovary beneath the calyx, in general without stalk (sessile) about two to five fertile flowers together. when the stem and leaves are withered, The berries, hang about the bushes, about peas size when ripe, take pale scarlet color containing six seeds in large size and filly juice[13]. The stems of *B.dioica* plant containing a long tendrils, which use for climb and its springing from the stalks of leaves and the tendrils between the shrubs and trees extend for many yards during the summer season and when the fruit is ripening the tendrils drying as vine shaped very rough with leaves and form like prick-hairs and its consider as general character for this plant[14-16]. The leaf blade is lobed, which is divided into five lobes and the middle one is longer than others, in general the leaves consider as curved stalked shape[17]. The part used of this plant is the root which collected in the autumn and used as fresh and dry state[18]. The fresh root take a dirty yellow or yellowish-white, when cutting the root obtain milky juice as a bitter and acrid taste. . The root is simple, like a carrot and some time forked into two parts.[19-20]

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The medicinal uses of *B. dioica* plant for Irritative, hydragogue and cathartic. But now don't recommended used as a purgative because its cause discomfortable and irritation [21-23]. It is useful in different diseases but in small doses used in cough, influenza, bronchitis, pneumonia, pleurisy and whooping-cough . Also used for cardiac disorders caused by rheumatism and gout, also in malarial and zymotic diseases [24] .

Vernacular Names: There are many common names for *B.dioica* plant like white bryony, mandrake, ladies' seal, Tetterbury, red bryony, Wild Vine, Wild Hops, Wild Nep. Tamus and in French Navet du diable[25-28].

Scientific Classification	
Kingdom:	Plantae
Clade:	Angiosperms
Order:	Cucurbitales
Family:	Cucurbitaceae
Subfamily:	Cucurbitoideae
Genus:	Bryonia
Species	Bryoniadioica L.

Figure (1) leaves and fruits of Bryoniadioica L. plant

Table (1) Phytochemistry review

Plant Part	**Constituent Reported**
Leaves	Luteolin, flavonoids (kaempferol)[29-31]. alkaloids, Glycosides, phenol steroids,, Carbohydrates and, anthraquinoine and terpenoids [32-35].
Flowers	Phenolic acid, flavonoids [36].
Fruit	Triterpeneglucosides and calcium oxalate crystals [37].
Root	Kempferol3, 7-di-O-rhamnoside[38], polyphenols, sterols, triterpenes, alkaloids [39], heterosides-c, carbohydrates, saponins, terpenoids, flavonoids, tannins, alkaloids,quinones, reducing sugar, coumarin [40-43].

Pharmacological and Biological Activities:

1. Antinociceptive Effects:

The antinociceptive activity of the leaves extract of Bryoniadioica plant confirm by hydroalcoholic extract of leaves by used standard test of tail flick and formalin which is one of the most common test used for measured the antinociceptive activity with acetic acid used as chemical stimulationthe results were observed that dose of 300 mg/kg with $P < 0.01$[44]. and the compared between the leaves extract and indomethacin shown that no significant difference between them at dose of 300 mg/kg of leaves extract and the results determined the LD50 of the plant extract was 4200 mg/kg[45].

2. **Antimicrobial activities:** The leaves extract of Bryoniadioica plant has a referred to antibacterial activity against many of pathogenic bacteria such as E.coli, K. pneumoniea and P. valgaris. the results significant that activity against gram negative bacteria.The maximum inhibition zone (MIC)was 227.3mg ml-1 against P. valgariswhile 186 mg ml-1 against K.pneumoniea and then against E.coli was 143.9 mg ml-1[46,47].

3. **Antioxidant activity:** The phenols and flavonoids in the B.dioica plant act as antioxidant activities those active compounds found in different parts of this plant (leaves, stem and flower) and those active compounds act as radical scavenging capacity, the flowers of B.dioica consider an important part used rich in phytochemical compounds and act as antioxidant this study done by measured the scavenging activity by colorimetric assay DPPH and presented by IC50 value, the polar stem extract concentration at 28.75 µg/ml shown highest radical scavenging activity and in non polar extract at 31.27 µg/ml, while in leaves extract were 76.08 µg/ml in polar and 83.62 µg/ml in non polar and finally in flower extract were 98.35µg/ml in polar and 91.54 µg/ml in non polar [48,49].

4. **Hepatoprotective activity:** The hepatoprotective action of leaves extract of B.dioica plant was investigated by used oral dose about 250mg/kg plant leaves extract for week this study was used Rats model by histopathological effect in Rats liver which induce hepatotoxicity by used $CCl_4$and investigated the hepatoprotective activity of this extract in serum tested as the biochemical marker for hepatotoxicity AST and ALT . The leaves extract shown decrease the enzymes level by decrease the CCL_4 cause the plant extract have very important constituents like flavonoids, alkaloids, terpenoids, sterols [50].

5. **Anticancer activity:** In Algerian study which proved the local population used the extract of B. dioica roots for treatment of breast cancer used this root extract only or by mixed this extract with honey and this study reported treat cancer 26% this study attributed to presence the major active compound :Kempferol 3, 7-di-O-rhamnoside which induced cell death in cancer cell line and also the same study reported the root extract treat hypercholesterolemia (22%), diabetes (18%), fertility disorders (14%)[51].

Conclusion

B. dioicaone of the medicinal plant which widely used in traditional medicine and distribution in different countries specially in Western Europe and containing many active ingredients in all types of plant specially in root which consider as part used in this plant such as Kempferol 3, 7-di-O-rhamnoside and polyphenols which responsible for many biological activity and pharmacological uses such as antinociceptive effects, antioxidant activity, hepatoprotective activity, Anticancer activity, hypercholesterolemia, diabetes and fertility disorders .

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Group-Based Education Program on Self-Care toward Reduction of Diabetic Foot Risk on Type-2 Diabetes Mellitus Patients

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Abstract

Diabetes mellitus patients are at risk of 15% having diabetic foot complications during their lifetime and 70% recurrence within 5 years. Studies show that educational programs can help improve self-care and reduce the risk of diabetic foot. Educational approach that is considered effective and efficient is education in groups. This study aims to determine the effect of group-based educational programs on self-care towards diabetic foot risk score in patients with type 2 diabetes mellitus. Design of quasi experiment research utilized the pre-test and post-test with control group. The intervention and control group was determined through cluster sampling on Garuda Central Healthcare Public area in Bandung City. Respondents were taken by purposive sampling as much as 68 respondents, which is intervention group (n = 33) and control group (n = 35). Data were collected using self-care questionnaires and diabetic foot risk screening. Data were analyzed by paired t test and independent t test. The result showed that there was difference of diabetic foot risk score between groups (p value 0.001). Self-care activities were also found to differ in the intervention group (p value 0.000) and control group (p value 0.001). Group-based education programs on self-care have an effect on decreasing the risk of diabetic foot. This program can be applied in public health care activities (*Perkesmas*) by improving self-care monitoring and diabetic foot risk in patients with diabetes mellitus.

Keyword: *Diabetes mellitus, group-based education, self-care, diabetic foot risk.*

Introduction

Diabetes mellitus is one of chronic diseases with increasing numbers of patients throughout the globe. The International Diabetes Federation proclaims in 2015 that 415 million adults worldwide were diagnosed with diabetes mellitus and this number will go up to 642 million in 2040[1]. Indonesia places the 7th in the world for the highest diabetes prevalence after China, India, America, Brazil, Russia and Mexico[1]. Based on the *Riskesdas* (Basic Health Research) (2013) West Java, an increase occurs from 1.4% prevalence in 2007 to 2% in 2013, along with the highest number of people (225.000) with diabetes mellitus but were left unchecked[2].

Public Health Centre (*Puskesmas*) Garuda is one of the community health centers with the highest number of diabetes mellitus patients in Bandung. This disease places the 10 most suffered disease and the highest number of deaths in Case Fatality Rate (CFR) (5.7%). The disobedience of diabetes mellitus patients in performing self-care could both worsen their conditions and trigger more complications[4]. One of the chronic complications occurs on their foot, or more commonly known as diabetic foot. It is a set of wounds on foot related to neuropathic damages and bloodstream disorder due to high glucose level[3]. Type-2 diabetes mellitus patients have a 15% risk of diabetic foot ulcer in their life and 70% risk of recurrence in 5 years[5].

The International Working Group on the Diabetic Foot claimed that 1 of 6 diabetes mellitus patients died due to this and each year 4 million people in the world are diagnosed with foot ulcer which can lead to amputation[6]. Foot screening check has come to be necessary to identify the foot risk condition[7]. A research by Reid et.al (2006) found that 82% of diabetes mellitus patients have the average of 3 foot problems for each individual[8]. Besides, Leese et.al (2006) claimed that high-risk patients have

86 times higher chances to suffer from foot ulcer while the moderate-risk ones have 6 times[9]. On the other hand, those who are in a low-risk group show 99.7% chance exempt from wounds for 2.5 years .

Previous study found that there is a relation between the patient's obedience in diet patterns, glucose level control, activity and foot treatment with diabetic ulcer phenomenon (p value = 0.000)[10]. In contrast, the disobedient patients have a 34 time higher chance to suffer from diabetic ulcer. Therefore, it is required that any prevention effort be done to reduce the risk of diabetic foot through independent self-care effort promotion[11].

A research by Kafaiae et.al (2012) found that education programs are impactful in the improvement of foot lesion (84%) and nails (62.8%)[12]. This corresponds to the result of systematic study that the health education program by foot checking, verbal and written instructions as well as discussions, prove effective in healing independent foot treatment and other pediatric problems such as neuropathy, disability, lesion, ulcer, *tineapedis* and callus[13].

The approaches used in various educational vary widely individually, group or family. Individual education requires more space and time for health workers to examine more in the patients specific needs, so this is seen as less effective and efficient[14]. Previous study found that educational interventions involving family can increase the knowledge, efficacy and behavior of patients in performing foot care (p value 0.000)[15]. But involving the family in the education process needs to pay attention to culture and family type.

Group-based education programs are an interactively designed and cost-effective strategy, through which the members of the group are allowed to discuss, communicate and exchange experiences in solving problems. Besides, each member of the group can actively participate during the process[16]. This research aims at identifying the impact of group-based education program about self-care on the risk of diabetic foot for type-2 diabetes mellitus patients in Public Health Centre of Garuda Bandung.

Material and Method

The design used in this research was that of "quasi experiment" with pre-post test with control group. The determination of intervention and control group used cluster sampling technique in Public Health Centre of Garuda Bandung. On the other hand, the respondents in each urban village were taken using purposive sampling technique. Through the numeric analytical research samples, along with Z_β 0.84; SD 1.8 and 0.9 minimum margin and 20% drop-out estimation, 37 respondents on each group were finally selected.

The variable in this research includes group-based education program and the risk of diabetic foot. The instrument used is Inlow's Screening Tools 60-Second Diabetic Foot from Canadian Association of Wound Care, as many as 5 indicators. On the other hand, the activity of self-care is measured using the Summary of Diabetes Mellitus Self Care Activities instrument[17].

The validity and reliability of Inlow's 60-second Diabetic Foot Screening Tool instrument have been tested by Murphy et.al (2012)[18]. Using *Kappa* test, the analysis result has found no different perception between tester 1 and 2 to the observed aspect (p value 0.000). For SDSCA instrument, it is obtained that r measured > r table (0.361) and the result of reliability analysis using *alpha Cronbach* is 0.76. Both results show that the instruments are valid and reliable[19]. The analysis done in this research included *t paired* and *independent test* with the trust score of 95% on the self-care scores and diabetic foot risks.

This research was done in hamlets by making educational groups consisting of 5 to 7 people each. Before intervention, each respondent is given questionnaires to be filled and screening for diabetic foot risk by 2 testers. The group-based educational intervention consists of 4 sessions each week (1 session/week). This educational program was conducted in 2 sessions for 60-90 minutes each through lectures and demonstration and using AVA and modules as the media.

At the end of each education activity, respondents are asked to set goal setting as follow up plan at home and record their self care activities on self report sheet each day. In the 3rd and 4th sessions in the interference group, sharing and discussion were also done by exchanging experiences, identifying the problems and looking for solution together. On the fifth week, an evaluation was done on self-care and diabetic foot for both groups.

Findings: From 74 chosen respondents, six of whom were not present during the research activity. Therefore, 68 respondents in total were divided into 33 people were in the intervention group and 35 in control group.

Table 1 shows the average age of intervention group of 61.85 and control group of 59.4. The majority of respondents are women in the intervention group (81.8%) and group control (82.9%). The education level are elementary school graduates in the intervention group (60.6%) and control (48.6%). Most of the respondents have suffered from diabetes mellitus for 1 – 5 years in the intervention group (48.5%) and control (45.7%). Based on the result of homogeneity test, it is obtained that all data from both groups are not significantly different in terms of statistics (p>0.05).

Table 1: Frequency Distribution of Respondents Characteristics and Result of Homogeneity Test on Intervention and Control Group (N=68)

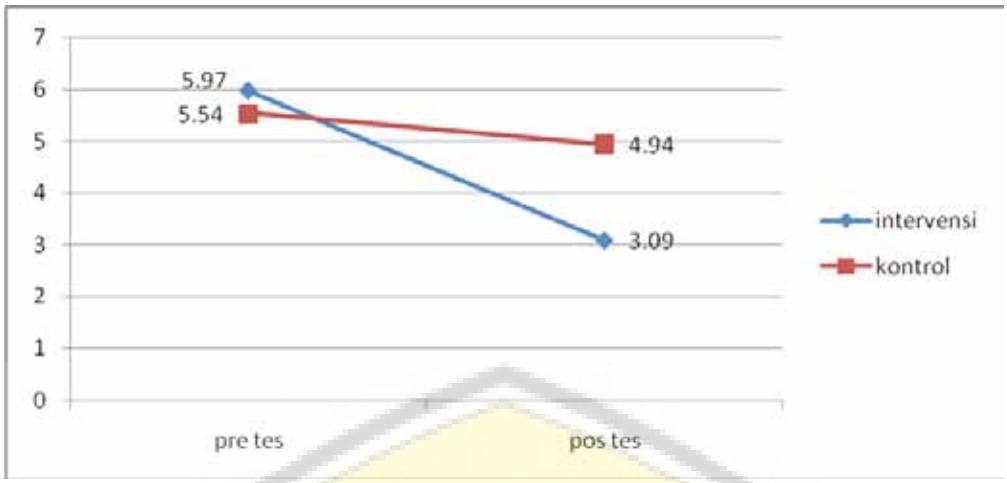
Characteristics	Intervention Group (n=33)		Control Group (n=35)		p value
	f	%	f	%	
Age	Mean 61.85 Min-Max 50-80		Mean 59.40 Min-Max 38-74		0.48a
Gender					
Male	6	18.2	6	17.1	0.56b
Female	27	81.8	29	82.9	
Education					
Elementary School	20	60.6	17	48.6	
Middle School	8	24.2	6	17.1	0.56c
High School	5	15.2	10	28.6	
University	0	0	2	5.7	
Sickness Period					
< 1 year	4	12.1	2	5.7	
1-5 year	16	48.5	16	45.7	0.99c
6-10 year	4	12.1	6	17.1	
> 10 year	9	27.3	11	31.4	

Homogeneity Test: a=Independent Test, b=*Fisher Exact*, c=*Kolomogorov Smirnov*

Table 2. Indicator Value Comparison of Pre-Test and Post-Test Self-Care Activity on Intervention and Control Group (N=68).

Activity Self-Care	Intervention Group (n=33)		Control Group (n=35)	
	Pre Test	Post Test	Pre Test	Post Test
	Mean	Mean	Mean	Mean
Eating Pattern	3.29	5.34	3.40	4.39
Physical Activity	2.59	5.26	2.19	2.47
Glucose Control	0.45	0.85	0.31	1.01
Treatment	5.52	6.21	5.80	6.09
Foot Care	1.36	5.62	0.84	1.61

Based on Table 2, we could see the average margin of eating activity from pre-test to post-test is 2.05, bigger than the control group, 0.99. In terms of physical activity, the average margin reaches 2.67 on the intervention and 0.28 on the control group. This corresponds to the foot care aspect, a significant increase occurs in the intervention group with average margin 4.26 and 0.77 in the control. Meanwhile, in terms of treatment and glucose control, a relatively similar increase applies on both groups.



Graphic 1. Score Distribution of Diabetic Foot Risk during Pre-Test and Post-Test in the Intervention and Control Group (N=68).

Based on Graphic 1, we could see that the average value for diabetic foot risk in the intervention (5.97) and control group (5.54) are relatively similar. A nosedive occurs to the average score of diabetic foot risk in the intervention group (2.88), while in control, the margin is only 0.6.

Table 3: Analysis of Average Score Difference of Diabetic Foot Risk during Pre-Test and Post-Test on the Intervention and Control Group.

Score of Diabetic Foot Risk		Pre Test (P1)	Post Test (P2)	Difference (P3)	Test	
		Mean±SD	Mean±SD	Mean±SD	t	P
Intervention Group		5.97±1.53	3.09±1.86	2.88±1.71	9.67 [a]	0.001
Control Group		5.54±1.80	4.94±2.32	0.6±1.66	2.13[a]	0.040
Uji	t	1.049[b]	3.61[b]	5.56[b]		
	P	0.290	0.001	0.001		

df (intervention)=32, df (control)=34, a=*Paired t test*, b= *Independent t Test*

Based on Table 3, the result of statistics *Independent t test* shows significant difference occurs on both group with p value 0.001. This result responds to the hypothesis saying that the impact of group-based education program exists on the average score of diabetic foot risk.

Discussion

In this research found that the group-based education program on self-care has given impacts on the decline of score for diabetic foot risk for type-2 diabetes mellitus patients in Public Health Centre of Garuda Bandung (p value 0.001). Although each group has score decline of diabetic foot risk with p value < 0.05, the decline is bigger on the group that has undergone the program, with 2.88±1.71 margin. In contrast, the control group remains on 0.6±1.66 margin. However, these facts correspond to previous researches showed that education can reduce the risk of diabetic ulcer (p value < 0.001)[11].

Diabetes mellitus patients, entail the risk to suffer from complications of diabetic foot during his life. However, this can be prevented by providing proper education[20]. This is done because education can change their behavior in undergoing independent treatment of diabetes mellitus. Supplying information for patients might be a stimulus that can improve their knowledge and raise their awareness to behave as expected. The

practice of good self-care has had relation with the glucose control and its prevention from complication, one of which is diabetic foot[21].

The group-based education program is part of the interventional strategy of the communal nurses. It aims at providing knowledge and skill, identifying setbacks and facilitating problem-solving process. This is more effective and more powerful to ensure behavioral changes for each individual[22]. Communal approaches offer forum for diabetic patients to gather and learn. Furthermore, it can also provide a conducive learning environment and create a supportive atmosphere.

The increase of the average self-care activities in the intervention and control group is in line with the decline of the average score of diabetic foot risk for both groups. The program in fact can improve the patient's knowledge and skills for independent self-care. Although insignificant, a decrease occurs on the average score of diabetic foot risk in the control group. This is because they need to submit a report every week. The self-report was not only useful to see the patient's weekly progress on the self-care activities. It could also be a grip and reminder for respondents to do the cycle in case they were off-track[16]. None the less, in the control group, the self-report was not evaluated weekly, hence the self-care activity tended to remain stagnant and progress lesser than the one on the intervention group.

Conclusion

Providing the small-group-based education program, modules, sharing and discussion, goal setting as well as good self-care monitoring and frequent foot screening, may affect the level of diabetic foot risk. Furthermore, the result of research also shows an increase of average total score on self-care activity including eating pattern, physical activity, treatment, glucose control and foot care for both groups.

Conflict of Interest Statement: The authors of this research declare that there is no conflict of interest related to this study.

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Ethical Clearance: This research has obtained ethical permission from the Committee of Ethics of Research Unit Faculty of Medicine in the Teaching Hospital Universitas Padjadjaran, Eijkman College Bandung with number "462/UN6.C10/PN/2017".

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Risk Factors for Neonatal Asphyxia Occurrence at General Hospital Dr. M. Soewandhie, Surabaya

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Abstract

Background: Neonatal mortality rates in Indonesia are still high at 15 per 1000 live births. Surabaya is one of the regions with the highest number of neonatal deaths in East Java. Neonatal asphyxia is the highest cause of neonatal death after preterm birth. Some factors that cause neonatal asphyxia include maternal factors, labor and fetal factors. This study aims to identify the risk factors that influence the incidence of neonatal asphyxia.

Method: This medical-based study using a case-control approach used neonatal medical record data that was born in the period of January 1, 2018, to December 31, 2018, in the General Hospital of dr. M. Soewandhie, Surabaya. Samples were selected based on inclusion and exclusion criteria. Sampling was done by total sampling in the case group (93 neonates) and simple random sampling in the control group (93 neonates) and matching was done based on sex and birth month. Data analysis was performed by univariate, chi-square and fisher's exact test and multivariate with multiple logistic regression.

Results: Neonates with diagnosed neonatal asphyxia were born to mothers who had low education (63.4%) and did not work (68.8%). Risk factors that significantly increased the incidence of neonatal asphyxia were: non-spontaneous labor with OR=5.56 (95%CI: 2.50-12.34), preeclampsia with OR=2.52 (95%CI: 1.15-5.54), meconium-stained amniotic fluid with OR=2.51 (95%CI: 1.17-5.38) and primiparous parity with OR=2.15 (95%CI: 1.06-4.39).

Conclusion: Non-spontaneous labor, preeclampsia, *meconium*-stained *amniotic fluid* and primiparous parity affect the incidence of neonatal asphyxia.

Keywords: *Neonatal asphyxia, non-spontaneous labor, preeclampsia, meconium-stained amniotic fluid, primiparous.*

Introduction

The number of child deaths under five years is as many as 5.4 million children with an under-five mortality rate of 39 per 1,000 live births, as much as 47% of these deaths occur in neonatal, which is 18 per 1,000 live births[1]. The neonatal mortality rate in Indonesia is 15 per 1000 live births. This figure is still quite far from the Sustainable Development Goals (SDGs) target, which is to reduce neonatal mortality to a minimum of 12 per 1,000 live births[2]. Neonatal mortality rates in East Java experienced an insignificant decrease from 2015 to 2017[3] with neonatal asphyxia as the highest cause of neonatal death after preterm birth[4].

Neonatal asphyxia is a result of intrapartum hypoxia/ischemia of the fetus and resuscitation measures which

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can immediately restore the condition of the newborn[5]. This condition results in malfunctioning of vital organs, brain damage to death[6]. Causes of neonatal asphyxia include hypertension in pregnancy, post-term pregnancy, maternal narcotics during labor, uterine contractions (hypertonic or tetania uterine), disorders of the umbilical cord and hypovolemic shock[7]. Risk factors for neonatal asphyxia include maternal age, maternal education, parity, anemia during pregnancy, prolonged labor, premature rupture of membranes, low birth weight[8] and very low birth weight in neonates[9]. Preeclampsia in pregnancy can increase the risk of neonatal asphyxia[10]. Obesity in pregnant women also increases the incidence of severe asphyxia in neonates[11].

This study aims to identify risk factors for the incidence of neonatal asphyxia so that it is expected to be prevented and reduced.

Material and Method

This was medical-based research with a case-control approach. The population in this study were neonates born at the General Hospital of dr. M. Soewandhie, Surabaya in the period January 1, to December 31, 2018, obtained from medical records. The inclusion criteria for case samples were neonates born with neonatal asphyxia diagnoses and had complete medical record data and could be read by the author. The inclusion criteria for the control sample were neonates who were born without neonatal asphyxia and had complete medical record data and could be read by the author. The exclusion criteria in this study were neonates born with congenital abnormalities such as congenital heart defects and diaphragmatic hernias. The sampling technique was total sampling in the case group and simple random sampling in the control group and matching was done based on sex and birth month. Samples obtained were 186 neonates divided into 93 cases and 93 controls. The variables in the study consisted of the dependent variables namely neonatal asphyxia and independent variables namely parity, maternal age, prematurity, birth weight, obesity, anemia during pregnancy, preeclampsia, type of labor, premature rupture of membranes (PROM), prolonged labor and *meconium*-stained *amniotic* fluid (MSAF). Data were analyzed by univariate, Chi-Square and Fisher's Exact Test and multivariate (Backward Stepwise: Likelihood Ratio) using a statistical program (SPSS version 16).

General Hospital of dr. M. Soewandhie, Surabaya was one of the largest secondary hospitals in Surabaya. This hospital had 356 patient beds with as many patients (inpatient = 26,590, outpatient = 275,628) per year. There were 104 medical personnel and 527 paramedics.

Results

The percentage of neonatal asphyxia births was 4.4% (142/3,267). The total sample of cases was 142, as many as 93 samples stated included inclusion criteria. Case and control samples were matched based on sex and birth month of newborns. Table 1 showed that the sex in each case and control group were 52 samples (55.9%) for male and 41 samples (44.1%) for female.

Table 1: Comparability by sex in the case and control groups

Sex of newborns	Neonates	
	Cases n = 93 (%)	Controls n = 93 (%)
Male	52 (55,9%)	52 (55,9%)
Female	41 (44,1%)	41 (44,1%)

Table 2 showed that as many as 59 (63.4%) case samples and 55 (59.1%) control samples were born to mothers with low education. A total of 64 (68.8%) case samples and 57 (61.3%) control samples were born to mothers who did not work.

Table 2: Characteristics of mothers based on education and occupation in cases and controls

Characteristics	Neonates	
	Cases n = 93 (%)	Controls n = 93 (%)
Education		
Low (primary school/middle school)	59 (63,4%)	55 (59,1%)
High (high school/diploma/ bachelor)	34 (36,6%)	38 (40,9%)
Occupation		
Not working (housewife)	64 (68,8%)	57 (61,3%)
Working	29 (31,2%)	36 (38,7%)

Table 3 showed the results on each of the independent variables that are significantly related to neonatal asphyxia were parity, obesity, preeclampsia, type of labor, prolonged labor and MSAF. The highest crude odds ratio was found in non-spontaneous labor, which was 3.71 (95% CI: 1.81-7.64). As for the variables of maternal age, prematurity, birth weight, anemia and PROM were not related (p-value > α) with the incidence of neonatal asphyxia.

Table 3 the relationship of risk factors for the incidence of neonatal asphyxia

Variables	Neonates		Crude OR	95% CI	P-value*
	Cases n = 93 (%)	Controls n = 93 (%)			
Parity					
Primiparous	40 (43,0%)	26 (28,0%)	1,95	1,06-3,58	0,032
Multiparous	53 (57,0%)	67 (72,0%)			
Maternal Age					
<20 and>35	20 (21,5%)	25 (26,9%)	0,75	0,38-1,46	0,392
20-35	73 (78,5%)	68 (73,1%)			
Prematurity (weeks)					
Premature (<37)	16 (17,2%)	10 (10,8%)	1,73	0,74-4,03	0,205
Not premature (≥37)	77 (82,8%)	83 (89,2%)			
Birth weight (gram)					
<2500	14 (15,1%)	9 (9,7%)	1,65	0,68-4,04	0.265
≥2500	79 (84,9%)	84 (90,3%)			
Obesity					
Yes	14 (15,1%)	5 (5,4%)	3,12	1,08-9,05	0,029
No	79 (84,9%)	88 (94,6%)			
Anemia					
Yes	6 (6,5%)	1 (1,1%)	6,35	0,75-53,78	0,118
No	88 (93,5%)	92 (98,9%)			
Preeclampsia					
Yes	28 (30,1%)	15 (16,1%)	2,24	1,10-4,55	0,024
No	65 (69,9%)	78 (83,9%)			
Type of labor					
Non-spontaneous (CS/VE/Manual Aid)	35 (37,6%)	13 (14,0%)	3,71	1,81-7,64	< 0,001
Spontaneous	58 (62,4%)	80 (86,0%)			
PROM					
Yes	11 (11,8%)	7 (7,5%)	1,65	0,61-4,46	0,321
No	82 (88,2%)	86 (92,5%)			
Prolonged labor					
Yes	9 (9,7%)	0 (0%)	2,12	1,81-2,46	0,003
No	84 (90,3%)	93 (100%)			
MSAF					
Yes	30 (32,3%)	16 (17,2%)	2,29	1,15-4,58	0,017
No	63 (67,7%)	77 (82,8%)			

*Chi Square/Fisher's Exact Test

Table 4 showed the results of multivariate analysis with the Backward Stepwise method in order to obtain the final model of multiple logistic regression. Variables with p values <0.25 in the Chi-Square/Fisher's Exact Test were included in the multivariate analysis, which included eight variables. Parity, preeclampsia, type of labor and MSAF were risk factors for neonatal asphyxia.

The analysis showed that the type of labor with non-spontaneous (CS/VE/manual aid) had a risk of 5.6 times to deliver babies with neonatal asphyxia (OR = 5.56; 95% CI: 2.50-12.34) compared to spontaneous labor. The risk of neonatal asphyxia in women with preeclampsia was 2.5 times higher than in women without preeclampsia (OR = 2.52; 95% CI: 1.15-5.54).

Similar to preeclampsia, MSAF also had a 2.5-fold risk of increasing the incidence of neonatal asphyxia (OR = 2.51; 95% CI: 1.17-5.38). Compared to multiparous mothers, mothers with primiparous parity had a 2.1 risk of giving birth to infants with neonatal asphyxia (OR = 2.15; 95% CI: 1.06-4.39).

Table 4: Results of multivariate regression

Variables	B	P-value	Odds Ratio	95.0% C.I. for OR	
				Lower	Upper
Parity (1)	0,767	0,035	2,152	1,055	4,392
Preeclampsia (1)	0,924	0,022	2,519	1,146	5,540
Type of labor (1)	1,715	< 0,001	5,555	2,500	12,343
Prolonged labor (1)	20,970	0,999	1,280E9	< 0,001	.
MSAF (1)	0,919	0,018	2,507	1,170	5,376
Constant	-1,223	< 0,001	0,294		

Discussion

This study aimed to identify risk factors for neonatal asphyxia, which was by including several determinants that might be risk factors for neonatal asphyxia. Therefore, neonatal asphyxia could be prevented and inherited.

This study showed that neonatal asphyxia mostly occurred in male neonates. This study was in accordance with a study in the United States, which states that 56.2% of neonates with neonatal asphyxia were male. There was no clear theory yet, but this might be related to male vulnerability (XY chromosome) to cerebral anoxia compared to women because there was an additional X chromosome[12].

Maternal characteristics showed that the majority of neonatal asphyxia incidents were born to mothers with low education and no work. This result was in line with a study conducted in Jakarta[13], neonates with neonatal asphyxia were born to mothers with low education (90.6%) and from mothers who did not work by 77.8%. In Northern Ethiopia, the majority of neonatal asphyxia were born to mothers with low education (84.1%) and from mothers who did not work (housewives) by 53.4%[6].

Parity had a significant relationship with the incidence of neonatal asphyxia. Mothers with primiparous parity had a 2.2 times higher risk of giving birth to babies with neonatal asphyxia (OR = 2.15; 95% CI: 1.06-4.39) compared to multiparous mothers. The results of this study differed from studies conducted in Ethiopia, which showed that parity did not affect the incidence of asphyxia[14]. However, another study showed that primiparous mothers had 3.1 times higher risk of giving birth to babies with neonatal asphyxia. This might be related to primiparous mothers who often did not know their pregnancy needs and even ignored antenatal care visits[6]. In the first pregnancy, cervical muscles tended to be stiff so that labor took a long time, which could increase the risk of neonatal asphyxia[15].

Mothers with preeclampsia during pregnancy had 2.5 times the risk of giving birth to neonatal asphyxia babies (OR = 2.52; 95% CI: 1.15-5.54) compared to women who did not experience preeclampsia during pregnancy. This was in line with a study conducted in Ethiopia[6], [14], which showed that preeclampsia increases the risk of the incidence of neonatal asphyxia by 4.1 times and 2.6 times, respectively. The result might be related to changes in the cardiovascular system due to an increase in blood pressure and vascular spasm[10], resulting in placental insufficiency and fetal hypoxia[16].

The type of delivery had a significant relationship with the incidence of neonatal asphyxia. Labor with non-spontaneous (CS/VE/manual aid) had a 5.6 times higher risk of delivering a baby with neonatal asphyxia (OR = 5.56; 95% CI: 2.50-12.34) compared to spontaneous labor. These results were not consistent with a study conducted in Bali[8] but were consistent with studies in Ethiopia which stated that labor with cesarean section had a 7-fold risk of increasing the risk of neonatal asphyxia[14]. This was related to impaired perfusion and vascular resistance due to anesthesia during the

cesarean section and this action also resulted in no chest compressions in infants such as in vaginal delivery[17]. In addition, the used of medical devices such as forceps and or a vacuum extractor during labor could result in trauma and intracranial hemorrhage, which hindered the baby's circulation[16].

Meconium-stained *amniotic* fluid at delivery have a 2.5 times higher risk for neonatal asphyxia in infants (OR = 2.51; 95% CI: 1.17-5.38) compared with clear membranes. These results were consistent with studies in Ethiopia[14], which showed that MSAF had a risk of 8.6 times to occurred neonatal asphyxia. The presence of MSAF at delivery indicated that fetal distress had occurred[18]. This results in meconium aspiration syndrome, which resulted in the obstruction of the baby's respiratory tract[15].

The limitation of this study was that it used secondary data, namely medical record data, so that much of the information needed was not available. In addition, this study was only conducted in one hospital in the city of Surabaya, so the study could not be generalized to a wider population.

Conclusion

Non-spontaneous labor, preeclampsia, primiparous and MSAF are risk factors for neonatal asphyxia. Midwives as a companion for pregnant women and maternity mothers are expected to improve the quality of education and early detection of risk factors. In addition, midwives are expected to be able to carry out close monitoring during labor and identify any complications during labor. Having the right diagnosis and treatment can improve the quality of fetal output.

It is expected that further authors will conduct a more specific study on the incidence of neonatal asphyxia with the factors that influence it. In addition, it is hoped that the community can increase awareness in recognizing high risks in pregnancy and childbirth so that it can reduce morbidity and mortality rates for mothers and infants.

Conflict of Interest: This study was conducted without conflict of interest from person or organization or commercial interests such as financial relationship, personal relationship, academic competition or intellectual passion.

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Ethical Clearance: This study has obtained an ethical clearance certificate from the Health Research Ethics Committee, Faculty of Medicine, Airlangga University, Surabaya No. 96/EC/KEPK/FKUA/2019, obtained on April 8, 2019 and from the Medical Research Ethics Committee of General Hospital of Dr. M Soewandhie, Surabaya No. 006/KE/KEPK/2019, obtained on April 24, 2019.

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Dermatological Manifestations in Patients of Chikungunya Disease

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Abstract

Chikungunya fever (CF) is an arboviral acute febrile illness transmitted by the bite of infected Aedesmosquitoes. After a quiescence of more than three decades, CF has recently re-emerged as a major public health problem of global scale. A wide range of dermatological manifestations including morbilliform rash, hyperpigmentation, xerosis, excoriated papules, aphthous-like ulcers, vesiculobullous and lichenoid eruptions and exacerbation of pre-existing or quiescent dermatoses had been observed frequently in association with CF. Such atypical features may help in the clinical diagnosis of CF. Method: A total of 150 patients (59 males and 91 females) with cutaneous manifestations of CF were enrolled in the study Results: Out of all, 21 were children with minimum age of one month in the study. Females outnumbered males in the study. The most common cutaneous finding was generalized mobilliform rash. Localized erythema of the nose, genital ulceration and toxic epidermal necrolysis-like lesion sparing mucosae were the other interesting findings. Various types of hyperpigmentation were observed with unique nose pigmentation in a large number of patients. Vesicles and bullae were seen in few infants. There was flare up of pre existing skin lesions of psoriasis and lichen planus. Conclusion: To conclude, a plethora of mucocutaneous manifestations were noted in cases of chikungunya disease with striking nose pigmentation and genital ulcers.

Keywords: *Chikungunya, mucocutaneous manifestations.*

Introduction

'Chikungunya' (CKG) owes its origin to 'Kungunyala', a word derived from the Makonde language of Tanzania, which means "that which bends up", relating to the stooped posture adopted by these patients due to incapacitating polyarthralgia or arthritis. It is caused by an arbo virus of same name transmitted by the bite of Asian tiger mosquitoes Aedes aegypti and Aedesalbopictus. The Alpha virus genus consists of 30 species of arthropod borne viruses. [1]The first case of CKG was reported in 1952 from Tanzania. Since then, chikungunya outbreaks have been reported in various parts of Africa and Asia. Major epidemics of CKG occur cyclically and a disease free period of several years or decades may exist between the outbreaks. Here with this study, we describe the Dermatological manifestations in CKG patients treated at the outpatient departments of our allied institute.

Materials and Method

Patients attending the OPD of Medicine, Dermatology and Pediatrics of Rama Medical College and those who attended the camps organized at the suburban areas during the epidemic of CKG from August end to the mid of November 2016were included in the study. It was a prospective, descriptive study. Diagnosis of CKG was made based on the criteria put forth by the National Institute of Communicable Diseases, Directorate General Health Services, India. [2] The criteria were an acute illness characterized by the sudden onset of fever and several symptoms such as joint pain, headache, backache, photophobia and eruption during an epidemic of Chikungunya fever in the absence of confirmatory serological tests. A total of 150 cases who fulfilled the above criteria were included in the study.

Results

Out of 150 patients, females 91(60.66%) outnumbered males 59(39.33%). The youngest patient was only I month old and the oldest was 85 year old man. Maximum patients were in the 30-40 year age group, the mean age being 35.26 years. There were 21(14%) children out of which 11(7.33%) were infants. The most common skin lesion was erythematous rash in 86(57.33%) patients of which the macular rash predominated in 45(30%). Most of the skin lesions developed during the acute phase of the disease, two to three days after the onset of fever (75.22%). Skin lesions along with fever were observed in 11.23% and preceded fever in 3.5%. Various types of pigmentation were observed, the most common site being the nose. Two patients had tender, deep-seated nodules scattered over the distal part of the extremities (erythema nodosum type). Two patients had targetoid lesions over the extremities and trunk simulating an erythema multiform-like eruption. Six patients had generalized urticarial eruptions. Flare up of pre-existing rashes of psoriasis and lichen planus was noted in five and six patients respectively. Other lesions were vesicles and bullae over the extremities in 17 (11.33%). Only one infant (0.66%) had vesicles and bullae followed by peeling clinically mimicking toxic epidermal necrolysis.

Oral mucosal involvement was found in 18 (12%) patients in the form of multiple aphthous ulcers and angular cheilitis. One patient (0.66%) had penoscrotal ulcers. Mucosal lesions lasted for 7-10 days and subsided completely without any sequelae. Conjunctival suffusion was present in 9(6%).No nail findings were seen. Skin lesions subsided without any sequelae in the majority except pigmentation in 55 patients (36.66%).

Discussion

Chikungunya fever (CF) is an acute viral illness caused by an arbovirus of the same name transmitted by the bites of Aedes mosquitoes. Documented first time from an outbreak in Tanzania in 1952,[1,2] explosive outbreaks of epidemics of the disease have occurred after periods of long quiescence in different parts of the world. After an extensive outbreak during the beginning of the current millennium in the French territory of Reunion Islands in the Indian Ocean, CF has been reported from almost 40 countries from different regions of the world.[3]

India has been affected by chikungunyafever (CF) every two to three decades since the 1960s.[4]The pandemic that occurred in several parts of the globe in 2005 resulted in huge outbreaks in India leading to major public health concern in the country. [5], [6], [7]In 2010 also, India witnessed an outbreak[8] and after that CF had been in a decline; only sporadic cases been reported. However, in August 2016, another massive outbreak broke in India resulting in thousands of households being bedridden. The disease has affected millions of people and left many with crippling disabilities.

The re-emergence of CF has been attributed to a multitude of factors including mutation of the virus, absence of herd immunity, lack of efficient vector control activities and globalization and emergence of another vector, A. albopictus in addition to A. aegyptii as an efficient transmitter of Chikungunya virus.[9]

CF may affect people of all age groups with an equal gender distribution. In our study CKG was seen in a 1 month old infant uptoa 85 year old man. Vertical or materno-fetal transmission of CKG has not been observed in our study which was otherwise seen in an outbreak at La Reunion island. Females outnumbered males in our study while males predominated in other studies.[10],[11],[12],[13] Both sexes were equally affected in another study.[14] After an incubation period ranging from 3 to 12 days, there is usually an abrupt onset of high fever alongwith severe polyarthralgia, myalgia and mucocutaneous rash. Other findings usually seen are conjunctival suffusion, persistent conjunctivitis, cervical or generalized lymphadenopathy. The swollen and tender joints frequently involve the small joints of the hand, wrist and ankles but may also involve the larger joints such as knee and shoulder in some patients.[15]

Other clinical manifestations of CF may occur in the forms of photophobia, retro-orbital pain, vomiting, diarrhea and neurological affection such as meningeal syndrome and acute encephalopathy.[3] A wide array of skin and mucous membrane lesions have recently been documented during the various epidemics.[13],[14],[16],[17] We have reviewed various dermatological manifestations of CF in this article.(Table 1).

Table 1. Dermatological manifestations of Chikungunya

Mucocutaneous Manifestations	No. of patients (%)
Erythematous macules	86(57.33)
Maculopapular	45(30)
Vesicles and Bullae	17(11.33)

Mucocutaneous Manifestations	No. of patients (%)
Desquamation	2(1.33)
Ten like	1(0.66)
Papular	5(3.33)
Urticarial	6(4)
Purpuric	6(4)
Aphthous ulcer	9(6)
Angular chelitis	9(6)
Penoscrotal ulcer	1(0.66)
EM like	2(1.33)
Conjunctival suffusion	9(6)
Pigmentation of skin	82(54.66)
Erythema nodosum	2(1.33)
Edema of hands and feet	45(30)
Flare up of psoriasis	5(3.33)
Flare up of Lichen planus	6(4)
Localized erythema of nose	15(10)
Petechiae	5(3.33)

Dermatological Manifestations: The Dermatological manifestations of Chikungunya may occur in about 40-50% of all cases.[18],[19] The most common dermatological manifestation observed in Chikungunya patients is morbilliform eruption.[14,17] The appearance of rash is usually observed 3 to 5 days after the onset of fever and subsides within 3 to 4 days usually without any sequelae. The rash is asymptomatic in about 80% of the patients. Few patients may complain of mild pruritus.[14] The eruption most frequently appears on the first 2 days of onset of fever but may appear simultaneously with the fever or after defervescence.[14] The first site of appearance of the skin rash is most frequently the upper limbs followed by the face and trunk.[14] It may involve ear lobes and neck too.[15] Recurrent crops of lesions can occur as a result of intermittent viremia.[11],[20] In our study, erythematous macules were the most common presentation which developed abruptly after the first two days of fever and subsided within four-five days. Most of the patients had generalized maculopapular rash. Localized erythema of the nose was seen in 10% of cases as reported in other study also.[13] In 98.6% of the cases, skin lesions subsided without any sequelae except in 1.33% patients who developed desquamation of skin of palms and soles. Pruritus was present in 72% of our patients. These exanthems were associated with edema of hands and feet in 30% of our patients similar to the observation by others.[20],[21]

Different types of pigmentation have been reported in CKG patients including centrofacial and freckle-like, diffuse pigmentation of face, pinna and extremities, flagellate pigmentation and pigmentation of existing acne lesions.[13] The second most common presentation in our study after erythematous rash was hyperpigmentation of skin, seen in 54.66% cases unlike one study where it was the most common presentation.[13]Nose was the most common site affected, as noticed by others also.[17],[22] In our study, various patterns of pigmentation were seen including diffuse, melasma-like over the face, periorbital, flagellate patterns on the trunk, extremities and abdomen and palmar pigmentation. Mechanism of pigmentation could be post inflammatory.[11] An increased intraepidermal melanin dispersion/retention triggered by the virus has been postulated as a cause for pigmentation in previous study.[13]

Acute intertrigo-like lesions and genital ulceration are other distinctive manifestations of CF.[16] The patients usually develop these ulcers about 2-5 weeks after the onset of fever. The ulcers are usually 1-3 in number, 0.5-2 cm in size, oval or asymmetrical in shape, punched-out, deep-seated with undermined edges showing healthy granulation tissue in the floor and erythema and thickening of the surrounding skin. These lesions are self-limiting.[16] In our study, 1-2 tender, discrete and oval ulcers of 1-1.5 cm size, with irregular margins on the peno-scrotal junction was observed only in one patient. Aphthae-like erosions, ulcers and cheilitis were observed in 12% of the cases.

Flaccid vesiculobullous lesions in infants have also been reported.[11] Vesiculobullous lesions appeared around the fourth day of fever over the lower limb and spread to involve the perineum, abdomen, chest and upper limb.[11] Generalized erythema, maculopapular rash and skin peeling were among the other dermatological findings in the infants. A high incidence of peripheral cyanosis (without any hemodynamic alteration) had been observed among the infants in previous study.[11] In our study, vesicles and bullae were seen in 17 patients of which 5 were infants. Only one infant presented with vesicles and bullae followed by desquamation resembling TEN. The lesions subsided in three-four days. Peripheral cyanosis was not seen in any of the patient in our study.

Hemorrhagic manifestations have been reported in 11% of CKG cases. In one study, multiple ecchymotic patches and subungual hemorrhages were noted in six children and three adults.[13] In our study, petechiae were

noted in 5 patients as seen in previous study also. [23] Two patients had erythema multiforme-like lesions.

Exacerbation of psoriasis in remission[13],[17] unmasking of previously undiagnosed leprosy with type I reaction and accentuation of melasma,[13] and lichen planus[17] have been documented. In our study, flare up of psoriasis and lichen planus was seen in 3.33% and 4 % of the cases respectively.

Nail changes occur very rarely. Only a few cases of subungual hemorrhage have been reported in the literature. In our study, nail changes were not seen. The nail changes may be secondary to inflammation of the nail matrix, reduced adrenocortical activity secondary to infection.[16] Conjunctival suffusion was seen in 6% of the patients in our study.

Although the acute febrile illness caused by the Chikungunya virus remits spontaneously without any sequelae in most patients, the joint manifestations may persist for a prolonged period of time. Persistent joint affection has been described to occur in about 12% of patients in the forms of residual stiffness without pain and persistent painful restriction of joint movements.[24] Neurological and emotional sequelae have also been described.[3] Hyperpigmentation of skin may persist for months after the remission of CF especially nasal pigmentation. Xerosis has also been seen to have prolonged course.

As no vaccine is available for Chikungunya virus till date, prevention is the best measure to prevent transmission. Using mosquito repellants, nets, wearing full sleeves clothes minimize exposure to the mosquitoes. Maintaining environmental hygiene and sanitation by avoiding unnecessary water collection in or outside house prevent breeding places of mosquitoes. During an outbreak, spraying with 2% pyrethrum in high-risk areas is recommended.[25]

Conclusions

A wide variety of dermatological manifestations have been observed in recent epidemic of CKG. Genetic mutations in the glycoprotein envelope (E1) gene of Chikungunya virus and wider sequence diversity are postulated to be responsible for varying and newer clinical manifestations of the disease in each epidemic.[11] The abundance of Aedesalbopictus and mutations in may be the contributory factors for repeated outbreaks.[26] Nasal erythema, pigmentation over nose and genital ulceration were distinctive features in our study. The characteristic melasma like pigmentation of nose in CKG and its persistence for about three-six months after an attack of CKG helps to make a clinical and retrospective diagnosis of CKG. Hence, this may be considered as a marker of CKG.

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'My Live is Meaningful and Adherence to Antiretroviral Therapy' Men Who Have Sex with Men (MSM) who Live with HIV/AIDS; Mixed Method

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Abstract

Purpose: To identify the distribution of meaning in life frequency and adherence to antiretroviral therapy (ART) as well as to perceive and explore the association between meaning in life and adherence to antiretroviral therapy (ART) of HIV-seropositive within MSM in Padang City, West Sumatra, Indonesia.

Method: This research used a mixed method with an approach of exploratory sequence design, which was in quantitative stage through a cross-sectional design approach that intended to know the relationship between variables. 102 sample size. In the qualitative stage, the researchers used the conceptual content cognitive map (3CM) method as a data retrieval technique and then continued with the interview.

Results: Characteristics of MSM in West Sumatra more than half were gay with early adulthood who were mostly on ART treatment less than one year. Almost all MSM were middle and upper educated and they worked in sixteen sectors of employment in which the private sector was the largest. Most MSM had a meaningful life. More than half of MSM were discipline to go through ART treatment. There was a significant correlation between the meaning in life and the adherence of ART p (0,000) with the identification of several aspects that related to the meaning in life and ART adherence. They were spiritualism, lifestyle, psychological, life purpose, life achievement, knowledge and motivation.

Conclusion: The importance of meaning in life within HIV-seropositive MSM that might influence the ART adherence. Therefore, the researchers recommend to conduct a compliance monitoring activity and provide logotherapy for MSM whose life is not meaningful.

Keywords: *MSM, Meaning in life, ART adherence, HIV/AIDS, 3CM.*

Introduction

The use of ARV requires a high adherence rate of 90-95% in order to achieve therapy success and can prevent the emergence of drug resistance[1,2]. WHO has a target that 90% of People Living with HIV/AIDS (PLWHA) already underwent ART by 2016, but the target realization is only 53%. PLWHA who undergo antiretroviral therapy is increasing. In 2016, there are 19.5 million or about 53% of the total number of PLWHA and in mid-June 2017 the number has progressed to 20.9 million or about 56.9% of the total number of PLWHA [3]. Meanwhile, PLWHA in Indonesia who have undergone ART based on Ministry of Health report (2016), in 2015 there were 63,066 people where 2,056 of them experienced ART on the second line and by 2017, PLWHA who had accessed antiretroviral therapy were 77,780 people where 2,374 people were on ART on the

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second line. From the data above, we can conclude that there are still many PLWHA who have not accessed ART, while the number of PLWHA in the second line shows improvement from year to year[4].

According to research by Audet, Wagner, & Wallston (2015), meaningfulness of life by PLWHA associated with the psychological welfare of patients[5]. There has been no research on the relation of meaning in life toward ART, but based on research conducted by Corless et al.,(2006)South Africa. OBJECTIVE: Health care provider concerns about persons with active TB defaulting on medications led to a study of adherence among persons receiving anti-tuberculosis therapy and, specifically, the relationships between meaning in life, life goals, sense of coherence, social support, symptom presence and intensity and adherence in individuals diagnosed with TB. DESIGN: A cross-sectional, descriptive design was used to gather self-reported data from TB-infected individuals who were enrolled in out-patient clinics. Data were collected from 159 Zulu and/ or English-speaking persons who agreed to participate in the study. RESULTS: A significant relationship was found between higher life goals and adherence to TB treatment (P = 0.027, about the relation of meaning in life to TB treatment adherence, it can conclude that there is a relationship between the meaning in life and the level of TB treatment adherence[6]. The meaning of life is a daily experience in life that is real [7] in both pleasant and unpleasant situations [8] and if someone can live every event to meets then his life will be happy [9]. The feeling of happiness can be achieved if someone who can achieve his life goals [10].

Researchers in preliminary study at NGOs Taratak Jiwa Hati with interview six participant find that all PLWHA are still difficult to remember to consume medicine and sometimes late to consume it and there are still MSM who feel their lives are meaningless. This study is important to undertake because it can give a description of ART adherence and the meaning in life of HIV-seropositive MSM. This study aims to identify the characteristics of HIV-seropositive Men who have sex with men (MSM), the distribution of meaning in life frequency and adherence to antiretroviral therapy (ART) as well as to perceive and explore the association between meaning in life and adherence to antiretroviral therapy (ART) of HIV-seropositive within MSM in Padang City, West Sumatra, Indonesia.

Material and Method

This research was mixed method through explanatory sequel design approach, where the qualitative data that was obtained in the research will help the explanation of the quantitative data result[13]. In quantitative phase, researchers used a cross-sectional design[13]. Total sampling use in this research with 102 Sample size MSM with HIV at NGOs Taratak Jiwa Hati West Sumatra Indonesia. Before conducting the research, the researchers tested the validity and reliability of the Meaning in Life Questionnaire (MLQ)in Indonesian version [14] and Morisky-8 Scale[15] also in Indonesian version and all question items of both questionnaires were valid and reliable[16,17]. In the qualitative phase, the researchers used The Conceptual Content Cognitive Map (3CM) method as a data retrieval technique. This method was a method developed by Kearny & Kaplan,[18]by using open-ended questions that were used to deeply understand the important concepts of informants' perceptions concerning the relationships between the meaning in life and ART adherence.

Results and Discussion

Research Sample: The characteristics of respondents including sexual orientation, age, education level, duration of ART and occupation. More than half of the MSM were gay with early adulthood, a majority of them were on ART for less than one-year treatment, almost all MSM were middle and upper educated and they worked in sixteen sectors of employment in which the private sector was the largest [19]. Based on research that the respondents who have sexual orientation as gay was 56 people and as bisexual men were 46 people. The age range of respondents was in the adulthood age between 25-45 years old, where this age range was for both early and late adulthood[4]. The education level of respondents, most of them, was in the middle and upper education with a percentage of 81.4%. Various researches indicated that the level of education was one of the factors that will interact in health status. Where, if a person had a higher educational status, it could reduce mortality and increase the income, even reduce twice as much mortality either directly or indirectly[20,21]. In terms of time span on undergoing antiretroviral treatment, more than half or 54% of respondents were categorized as a newbie because it was still under one year time.

Meaning in life of HIV-seropositive MSM: The majority of respondents (64.71%) had a meaningful life and about 35.29% felt a meaningless life. of the 102

respondents, 72.5% felt that there was no distinct purpose in life and almost all respondents (91.2%) were looking for something that made their life meaningful.Meaning in life had a different function for each individual, but according to Mackenzie & Baumeister (2014), the function of meaning in life could be divided into three function themes [22]. The meaning in life according to Starck(2014), was said to be the phase where a person reached his life goal [10]. According to Audet et al., (2015), the low meaning in life indicated non-adherence ART and provided a stimulus of management for handling the suffered disease[5].We were able to analyze that most respondents had been able to find the meaning of their lives although the meaning in life that was found was from an unpleasant experience. The need for counseling to improve the meaningfulness of life of seropositive MSM (35.9%). By doing so, MSM population especially seropositive one will get more external support or motivation and can improve their meaningfulness in life.

ART treatment adherence of HIV-seropositive MSM: From the research results obtained that 57.8% respondents were adherence to antiretroviral therapy and the rest did not comply as much as 43 respondents or 42.2%. This level of adherence was seen from the accuracy of the dosage and the frequency of time-consuming ARV. According to Bangsberg, Kroetz, & Deeks, (2007), ART adherence should be observed to discern the compliance level of the treatment, as some studies indicate that with treatment adherence of (95%) or more indicates the effectiveness of antiretroviral therapy [23], but on adherence (75%) shows a rise of viruses with retention against drugs [24]. Some patients fail to maintain ART adherence[25].Treatment and handling management of HIV are part of the management of chronic diseases, which have principles of medication adherence, prevention of drug retention and morbidity prevention management [25]. This condition becomes a challenge for health workers. Nurses can maximize counseling services particularly for HIV counselor and psychiatric nurses that can provide special therapies to turn negative behaviors into the positive. Apart from health workers, peer advocates also need to improve their role to remind the companions to take the drugs in a timely and appropriate dose given.

The relationship of meaning in life with ART adherence treatment within HIV-seropositive MSM:

Table 1: The relationship of meaning in life with ART adherence treatment within HIV-seropositive MSM

Meaning in life	ART adherence				Total		p	OR (CI95%)
	Non-adherence		Adherence					
	f	%	f	%	f	%		
Meaningless	31	86.1	5	13.9	36	100	0,000	27,90(8.98-86.82)
Meaningful	12	18.8	54	81.8	66	100		

Table 1 showed that there was a relationship between meaning in life and ART adherence. When a person whose life was meaningless will have 27.90 times risk to be non-adherence in undergoing antiretroviral therapy than a person whose life was meaningful. The exploration results obtained 23 statements which consisted of 7 categories. The category are the purpose of life, the achievement of life, knowledge, motivation, spiritualism, lifestyle and psychological.

Farber et al (2003), the meaning of the success of good treatment is directly proportional to the high expectation and inversely proportional to the level of depression [26]. There has been no research on the relation of the meaning in life to the level of ART adherence, but based on a research that conducted by Corless et al (2006), about the relation of meaning in life to TB treatment adherence, it can conclude that there is a relationship between the meaning in life and the level of TB treatment adherence.[6]

The exploration of the relationship between the meaning in life and ART adherence can occur due to the fulfillment of the basic components of the formation of meaning. According to Mackenzie & Baumeister (2014), there are four basic components that form the meaning in

life. First is the necessity for a purpose of life which can be categorized into results attainment and fulfillment of more abstract desire[22]. The exploration result from this life purpose component was that the participant had a life purpose to get married "... Although I am an LGBT, I have a plan to have a wife (P2)".

The life accomplishing of each participant was unique and different in interpreting the achievement of their life. *"...Can overcome all by thinking positively... experiencing the life...just like before HIV...(P1)"*.

The other achievement of the meaning in life was always being motivated to experience the life "*...Always keep the spirit, always optimistic and not pessimistic... (P3)"* In addition, the participants also live his life by becoming a better person *"...experiencing the life...by becoming a better person...(P4)"*.

The next necessity is trust and faith. Participant's spirituality indicated the existence of belief or faith by placing his trust in God *"...Pray regularly...ask God by tahajud prayer (Moslem's prayer near midnight), what is the crux of this problem so that it can be solved well (P3)"*. Participants believed that by counseling their life purpose can be achieved, following the participant's statement;

"*...According to the hospital, as a person with HIV, I can have a wife and have offspring without spreading the disease by doing the program (P2)"*

The last necessity is that one must have positive self-esteem. The meaning in life according to Starck (2014), by having a sensitive feeling with the experience of how to love his life[10].

"*...meet other people living with HIV..feeling no burden of thinking and ... should be motivated in undergoing this antiretroviral therapy.. there is a desire to behave better again ... optimist to maintain health ... be firm in facing this life and keep struggling do not get desperate (P3)*".

The freedom to choose what the participants did was to live a healthier life*"...enough exercise, a good diet and have a deeper understanding of what HIV is (P2)"*. Human suffering is the third concept of the meaningful theory.

"..with despairing by not taking ARV (P3) and why doing a healthy life while I've HIV and no one willing to befriend me, to approach me...(P2)".

The uniqueness of a person's meaningful life that is stimulated by various things ultimately can make someone adherence to undergoing antiretroviral therapy. However, to gain meaningfulness of life, one must be able to accept who they are and where their position now. The meaningfulness of life can be obtained not only in a pleasurable event but also be found from unpleasant events. HIV-seropositive is an unpleasant experience for everyone especially the respondents. Thus, health workers need to assist respondents in order to rediscover the purpose of their life so that they have the meaning in life as before HIV-seropositive.

Conclusion

PLWHA adherence to consume ART was influenced by the meaning in life, where, when PLWHA had a clear purpose that he wanted to accomplish in life, then that PLWHA will adherence to consuming ART. Meanwhile, PLWHA adherence was also influenced by peers, information attainment and self-motivation. This research provides important suggestions for health workers to be actively involved in enhancing the motivation of PLWHA, especially MSM to behave openly so that the quality of life monitoring can be done.

Ethical Clearance: This study has passed and granted ethical clearance from the Faculty of Medicine University of Andalas No.346/KEP/FK/2018.

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Prospective Evaluation of Health-Related Quality of Life in Patients with Hepatocellular Carcinoma after Radiofrequency or TACE

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Abstract

The health-related quality of life (HRQOL) has been considered as a relevant measure of prognosis in patients undergoing palliative measures for cancer.

Aim: To assess the HRQOL after radiofrequency or TACE for patients with unresectable HCC. Method: this prospective study included 99 out of 163 patients with HCC scheduled for radiofrequency or TACE. Each patient underwent full clinical history, examination and laboratory investigations in addition to HRQOL questionnaire before and 3 months after the procedure. The SF-36 questionnaire was used to measure 8 domains of health. Results: there was an improvement of all parameters of HRQOL after 3 months. (Physical functioning ($p < 0.00$), Physical health limitation ($p < 0.005$), Emotional problem limitation ($p < 0.001$), Energy/fatigue ($p < 0.005$), Emotional wellbeing($p < 0.005$), Social functioning($p < 0.005$), Pain ($p < 0.005$), General health ($p < 0.005$) and total score ($p < 0.005$). univariate and multivariate analysis indicated that younger age was associated with improved HRQOL after successful treatment.

Conclusions: Successfully TACE or radiofrequency was associated with improved parameters of HRQOL 3 months after the procedure

Keywords: *Hepatocellular carcinoma, Radiofrequency, TACE.*

Introduction

Liver cancer is the fifth most common cancer and the second most frequent cause of cancer-related death globally, with 854,000 new cases and 810,000 deaths per year, accounting for 7% of all cancers[(1)]. Hepatocellular carcinoma (HCC) represents about 90% of primary liver cancers and constitutes a major global health problem.

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The incidence of HCC increases progressively with advancing age in all populations, reaching a peak at 70 years [(2)]. The increasing incidence of chronic HCV, chronic HBV and non-alcoholic fatty liver disease (NAFLD) are important factors in increasing the incidence of HCC. There is accumulating evidence that in 2030, liver cancer will be the third leading cause of cancer related death in the USA [(3)]

Surgical resection of HCC is standard form of curative therapy; however, it is possible only in a small subgroup of patients. Liver transplantation is another treatment option, reserved for end stage patients but limited option due to lack of donors and socioeconomic causes especially in developing countries [(4)]. Therapies based on radiological intervention such as radiofrequency or transarterial chemoembolization are widely used for

unresectable HCC and considered as palliative treatment with potential positive impact on prolonging survival and improving quality of life. [5-9].

The HRQOL has been considered as a relevant measure of prognosis in patients undergoing palliative measures for cancer. Recent studies have suggested using

HRQOL as an independent prognostic factor for treatment response and progression in patients with advanced HCC.[10,11]

This study aimed at assessment of HRQOL after radiofrequency or TACE for patients with unresectable HCC.

Materials and Method

Study Design: This is a prospective non randomized study at two tertiary center (Minia university hospital and Minia oncology center). Any decision for treatment of HCC was taken by hepatoma team including hepatologst, surgeon, radiologist, pathologist and oncologist. The treatment decision was based on clinical factors, imaging, comorbidities and BCLC classifications. In general smaller tumor without PVT was treated by radiofrequency and larger multinodular lesions without PVT treated by TACE. Informed consent obtained in every case.

Patients: This study recruited 183 patients with HCC on top of hepatitis C virus or hepatitis B virus related cirrhosis at the time period June 2017 February 2019. All patients were asked for informed consent. Only 99 patients included in the study after exclusion of many patients who refused to participate, had complications or lost follow up (Figure 1). Every participant was subjected to full history taking with special emphasis on age, sex, smoking, exposure risk to viral hepatitis, history of diabetes or hypertension. Thorough clinical examination was done for every participant with special emphasis on the presence or absence of fever, jaundice, organomegaly, lower limb edema and abdominal tenderness or presence of ascites. Abdominal ultrasonography was performed by using a Hetachi machine with a 3.5 MHz linear transducer commenting on the liver, spleen, portal vein diameter, kidneys, hepatic focal lesions and comment on ascites (internal echoes or adhesions).The laboratory investigations included complete blood picture, total serum proteins level, serum albumin level, total and direct bilirubin, serum alanine transaminase, serum aspartate transaminase, alkaline phosphatase, prothrombin time and concentration, serum creatinine and blood urea.

HRQOL : was assessed by validated SF-36 questionnaire. Every participant filled out the questionnaire before and 3 months after treatment. Scores were compared before and after treatment. The SF-36 questionnaire is used internationally to measure 8 domains of health: general health, bodily pain, social functioning, role-physical, physical functioning, vitality, role-emotional and mental health. The raw scores of each questionnaire were converted to scores ranging from 0 to 100, with higher scores indicating higher levels of functioning or well-being [12].

Imaging: Abdominal MDCT before the procedure and after the procedure with one month – another technique as MRI diffusion used in some cases. The imaging with contrast was done before and 3 months after the radiofrequency or TACE.Tumor response was evaluated using the size criteria Response Evaluation Criteria in Solid Tumors (RECIST) and World Health Organization criteria.

Radiofrequency or TACE : patient was kept in the hospital one day before the procedure and three days after for follow up general condition and laboratory investigation .Then follow up all lab CBC, LFTs, AFP,CT one and 3 months after procedure .

Principles of radiofrequency: in this procedure, the puncture probe has an insulated shaft and anon-insulated tip, which is inserted into the lesion under ultrasound guidance. The radio frequency energy emitted from the needle tip induces ionic agitation and frictional heat. Thus, it is the surrounding tissue, rather than the electrode itself, that produces heat energy to destroy tumor cells. Because of it sex cell entnecrotizing effect, RFA has become a highly effective, local ablative therapy for HCC[13]. Forsmall HCC, RFA was reported to have efficacy comparable tot hat of surgical resection[14]. Moreover, RFAis an effective treatment for post-resection tumor recurrence, and can be used to“bridge” patients to liver transplantation[15].

Radio frequency has some limitations. For example, when the tumor nodule is close to major blood vessels, the radio frequency energy will be carried away by the blood flow (the“heat-sink”effect), resulting in a suboptimal treatment response. Another drawback is that if the electrode tip becomes too hot during ablation,

tissue charring may lead to increased tissue impedance and a smaller thermal-ablated area.

Transarterial chemoembolization: Hepatic artery obstruction is performed during an angiographic procedure and is known as trans-arterial, or trans-catheter arterial embolization (TAE). When TAE is combined with the prior injection into the hepatic artery of chemotherapeutic agents, usually mixed with lipiodol, the procedure is known as trans-arterial chemoembolization [16].The procedure requires the advancement of the catheter into the hepatic artery and then to lobar and segmental branches aiming to be as selective as possible so as to induce only minimal injury to the surrounding non-tumorous liver. [17]. It is usual to suspend chemotherapy in lipiodol, an oily contrast agent used for lymphographic studies. lipiodol is selectively retained within the tumor and this expands the exposure of the neoplastic cells to chemotherapy. [18].

TAE and TACE are considered for patients with nonsurgical HCC that are also ineligible for percutaneous ablation, provided there is no extra-hepatic tumor spread. The main contraindication is the lack of portal blood flow (because of portal vein thrombosis, porto-systemic anastomoses or hepatofugal flow). TACE in these patients increases the risk of ischemic necrosis of viable liver and increase the risk of treatment-related death due to liver failure[18].

Results

The study included 99 patients (figure 1) who completed the study protocol and follow up. Fifty eight patients (58.6%) underwent TACE and 41 patients (41.4%) underwent radio frequency. The basic data are shown in table 1 including the age, gender, clinical and laboratory characteristics.

The changes in laboratory profile in the included patients are shown in table (2) we found that significant increase in HB after the procedure, white blood cells also increases after the procedure, platelet had significant increase in its number after the procedure, liver enzymes and bilirubin improved after the procedure and also, serum ALB shows significant increase after the procedure, prothrombin concentration also increased after the procedure..

After analysis of questionnaires, the scores of all domains of HRQOL were recorded for all patients. The changes in HRQOL are shown in table 3. There was significant changes in all 8 domains of quality of life. The physical functioning significantly improved after the procedure (<0.05*), Physical health limitation (<0.005), Emotional problem limitation (<0.001), Energy/fatigue (<0.005), Emotional wellbeing (<0.005), Social functioning (<0.005), Pain (0.005) and General health (<0.005).

Table 1: Basic data of studied population (total number : 99 cases)

Variable	
Age in years (mean±SD)	56.3±8.8
Gender : number and % of males	68(68.7%)
Smoking :Smokers	58(58.6%)
Diabetes mellitus: number of diabetics	83(83.8%)
Hypertension: number of hypertensives	7(7.1%)
Hematemesis number of patients	24(24.2%)
Anorexia : number of patients	47(47.5%)
Itching : number of patients	21(21.2%)
Weight loss : Number of patients	46(46.5%)
Lower limb edema : Number of patients	22(22.2%)
Dry mouth: number of patients	80(80.8%)
Ascites No Mild Moderate	74(75.5%) 20(20.4%) 4(4.1%)
HCV : number of patients with HCV +ve	98(99%)
HBV number of patients with HVB +ve	1(1%)
Child class A Child class B	73(73.7%) 26(26.3%)
DDAs intake : number of patients	14(14.1%)
Procedure: TACE RF	41(41.4%) 58(58.6%)

HCV: hepatitis C virus, HBV: hepatitis B virus, DAA: direct acting antiviral

Table (2): Laboratory data of included population pre and post the procedure

		Pre	Post	P value
		N=99	N=99	
HB	Mean ± SD	11.5±1.6	11.1±1.6	<0.001*
WBC	Mean ± SD	4832.5±1903.1	4794.8±1743.2	0.301
Platelets	Range Median	(67-420)129	(80-390)165	<0.001*
SGPT (IU)	Range Median	(15-164)54	(10-86)37	<0.001*
SGOT (IU)	Range Median	(32-207)75	(12-85)35	<0.001*
Albumin in gm	Mean ± SD	3.5±0.7	3.4±0.6	<0.001*
Bilirubin in mg	Mean ± SD	1.3±0.5	1.1±0.4	<0.001*
AFP	Range Median	(3-1000)90	(1-109)17	<0.001*
RBS	Mean ± SD	127.2±41.3	138.3±35.7	0.002*
Creatinine	Mean ± SD	0.9±0.2	0.8±0.2	0.062
PC	Mean ± SD	66.4±5.9	68.7±5.9	<0.001*

AFP: alphafetoprotein, RBS: random blood sugar, PC: prothrombin concentration

Table (3): Shows the effect of procedure on quality of life in The included patients

		Pre	Post	P value
		N=99	N=99	
Physical functioning	Range Mean ± SD Median	(10-100) 57.6±22.7 60	(20-100) 66.1±19.8 70	<0.001*
Physical health limitation	Range Mean ± SD Median	(0-100) 38.6±38 50	(0-100) 61.9±32.8 75	<0.001*
Emotional problem limitation	Range Mean ± SD Median	(0-100) 19.5±29.7 0	(0-100) 85.2±21.9 100	<0.001*
Energy/fatigue	Range Mean ± SD Median	(0-75) 29.4±17.7 30	(25-95) 61.7±16 65	<0.001*
Emotional wellbeing	Range Mean ± SD Median	(4-84) 32.2±13.5 32	(44-92) 68.4±10.7 68	<0.001*
Social functioning	Range Mean ± SD Median	(0-100) 40.9±24.4 50	(37.5-100) 75.8±15 75	<0.001*
Pain	Range Mean ± SD Median	(0-100) 46.4±28.6 45	(45-100) 81.6±13.2 77.5	<0.001*
General health	Range Mean ± SD Median	(0-85) 29.9±21.8 30	(10-100) 54.8±16.4 60	<0.001*
Total score	Range Mean ± SD Median	(13-84.3) 41.2±18.7 42.1	(24.8-96.3) 65±15.7 67.3	<0.001*

Discussion

In the present study, the QOL of HCC patients who were treated with TACE alone or with RFA was evaluated to gauge the benefit of these treatment strategies.

We found a significant decrease in AFP after the procedure with agreement of previous studies [19].Our finding of significantly reduced serum AFP indicates that TACE may have significantly reduced tumourburden. A hypervasculartumour may be successfully devascularised with a dramaticfall in AFP and change in imaging on arterial andvenous phases, but the size of the tumour may remain unchanged.

The QoL is considered to be as important as overall survival and tumor-free survival for these patients [20]; i.e., there is now a focus on not only achieving long-term survival but also patients lives' in relation to their disease and treatment . Moreover, a linear relationship was found between overall HRQoL and survival; specifically, patients reporting the highest level of overall HRQoL were found to have the longest survival time, after follow up of quality of life to our patients before the procedure and 3 month after to follow the 8 domains of life quality, we found a significant changes and increase in all domains of life quality and it is in aggrement with Poon, et al,2001 who noted that the clearance of tumors not only improves the physical well-being of patients but also enhances their social and emotional health statuses and their improved relationships with physicians reflect their satisfaction with the surgical treatment [21]

Another studies found that HRQOL scores of patients with HCC were more affected by the patients' level of liver function than by the presence of HCC.[22]

The SF-36 scales that showed significant changes in the present study include mental health, bodily pain and vitality. The improvement of mental health seen in our study was theorized to be related to decreased disease burden, perceived benefit of treatment and improved sleep patterns. According to Ware and coworkers [23], the bipolar mental health scale has been the most thoroughly studied of the eight SF-36 scales, in which a 20-point decrease in the mental health range of 60–80 represents tripling of the probability of suicidal ideation and doubling of the probability of depression.

The Institutional Ethics Committee approved this study of the School of Medicine, Minia University, Egypt and all patients gave informed consent before participation in this study. The study conducted in accordance with the ethical guidelines of the 1975 Declaration of Helsinki and International Conference on Harmonization Guidelines for Good Clinical Practice.

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The Effectiveness of Health Education with Audiovisual Media on the Psychosocial Skills of Adolescents in Trouble with the Law

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Abstract

Objectives: To determine the effects of health education with audiovisual media on psychosocial skills and to identify the dominant factors correlating with the psychosocial skills of adolescents in trouble with the law.

Research Methodology: This study used a quasi-experimental design and was conducted in two places, namely The Social Protection and Rehabilitation Center of Adolescents (BPRSR), whose adolescents served as the intervention group and the Child Correctional Institution (LPKA), as the control group. Fifty-nine (59) adolescents of 14-19 years old who were in trouble with the law were recruited as research respondents (intervention group: 26; control group: 33). The intervention group was provided with health education using audiovisual media and booklets and the control group was given health education using booklets. The intervention was carried out in 3 sessions (social skills, thinking skills and emotional skills). Each session was carried out for 90 minutes (video screening, question and answer session, role playing, sharing experiences and evaluation). The psychosocial skills were observed by 3 sources (the adolescents themselves, close friends and officers).

Results: There are differences in the scores of psychosocial skills between the intervention and the control groups assessed by the three sources (self-assessment: $p = 0.013$; close friends: $p = 0.013$ and officers: $p = 0.038$). The most dominant factor correlating with the psychosocial skills is health education using audiovisual media and booklets.

Conclusions: Health education with audiovisual media and booklets can improve the psychosocial skills of adolescents aged 14-19 who are in trouble with the law.

Keywords: *Health education, psychosocial skills, adolescents in trouble with the law.*

Introduction

The data from the Directorate General of Corrections of the Indonesian Ministry of Law and Human Rights show that in November 2018, as many as 3,100 children had legal problems, 972 were prisoners and 2,128 were inmates. As quoted from Sindonews and Tribunnews in 2015, there were 369 child criminal cases and 135 minors were involved in legal issues. A research in Nepal shows that 17.03% of adolescents have experienced psychosocial dysfunction, 9.50% are male and 7.80% are female.[1]

Imprisonment can decrease cognitive control, lower cognitive functions associated with prosocial behavior,

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lessen emotional self-regulation which can trigger recurring criminal actions, increase negative thought patterns and angry emotions and bring about mild to severe anxiety[2,3]. Lack of psychosocial skills is one of the risk factors for social problems among the adolescents and this has a close relationship with the attainment of the psychosocial well-being of adolescents[4,5]. Good psychosocial skills will help build good social competence regarding the behavioral, emotional and motivational subscales[6]

Studies on the intervention packages of life skills training have proven that life skills training can improve the self-efficacy of psychosocial competencies with the fastest time of 10 weeks and a maximum of 3 years[7]. Life skills' training has a positive impact on the mental health of the adolescents and these skills are recommended to be included in school curricula; skills training can improve mental health of the adolescents who are addicted to drugs[6]

Life skills-based promotion programs become useful interventions for the prevention of risky behaviors among the adolescents[9]. Self-modeling videos about social skills among the adolescents with autism can generally maintain the skills that have been taught for months after the interventions and audiovisual can increase knowledge better than handouts[10,11,12]. The focus of this study were 10 psychosocial skills taken from the book entitled Communication, Information and Education for Adolescents published by the Ministry of Health of the Republic of Indonesia[13]. The skills were social skills including self-awareness, empathy, interpersonal relationships and effective communication; thinking skills including critical thinking, creative thinking, problem solving and decision making; and emotional skills including coping with stress and emotion control.

Material and Method

This research was conducted in 2 centers for the development and rehabilitation of the adolescents carrying social problems and those who are in conflict with legal cases in Indonesia. The inclusion criteria were (a) having status as a child who has legal problems, (b) aged 12-19 and (c) not having severe depressive complaints based on the notes and recommendations of a psychologist. Then the consecutive sampling technique was carried out. The number of samples in the intervention group was 26 adolescents and 33 adolescents in the control group (2 adolescents were dropped out). The drop out happened because 1 adolescent got parole and the other one was visited during the post-test.

This research lasted for 26 days. The research team consisted of 2 teachers and 2 research assistants taking master's degree in nursing and 6 observers working in each institution. Session 1 was about social skills, session 2 was about the exposition of thinking skills and session 3 was about learning emotional skills. Each session was composed of video screenings (the duration of stage 1 was 18 minutes, stage 2 was 15 minutes and stage 3 was 10 minutes), questions and answers, role playing, sharing an experience of psychosocial and evaluation and closing. For the intervention group, the health education was delivered with audiovisual media and booklets containing material of the 10 psychosocial skills. As for the control group, it was provided only with booklets and brief explanations about the contents of the booklet.

1. **Observation sheets of psychosocial skills:** The observation sheets were made based on the 10 Psychosocial Skills (consisted of 14 favorable items). The validity score was 0.888-1 and the reliability score with ICC was 0.848 in 10 adolescents. The observation sheets were assessed by 3 sources, namely the respondents, close friends and prison officers (with the same instrument). The option of not doing was given a score of 1, doing with help was given a score of 2 and doing independently was given a score of 3.

2. **Questionnaires of the knowledge of psychosocial skills:** The questionnaires of knowledge contained 25 statements that had 'true' and 'false' options. The validity and reliability tests were conducted by the researchers on 90 adolescents aged 12-19 ($r = 0.216$-0.448; r table: 0.2072; cronbach alpha consistency value: 0.705). The content validity test was conducted by 3 experts with CVI (content validity index) value of 0.789-1.

3. **Questionnaires of self-efficacy in conducting psychosocial skills:** The questionnaires contained 25 items of 3 domains (magnitude, generality and strength). The favorable items were given a score of 3 if the answer was 'corresponding', a score of 2 if the answer was 'neutral' and a score of 1 if the answer was 'not corresponding'. The validity and reliability tests of the self-efficacy were performed by Dimyati (2012) with validity values of 0.306 to 0.605 and a reliability value of 0.900.

Results

The independent sample t-test shows that there is a significant difference in the scores of the skills given by close friends between the intervention and control groups (2.04 ± 4.377 and -0.88 ± 4.321, mean difference = 2.917, CI = 1.177 – 6.068, p = 0.013). The Mann Whitney test shows that there is a significant difference in the scores of the skills according to the self-assessment in the two groups (p = 0.013, median = 1.00 and 0.00). The skills, according to the officers, are significantly different in the intervention and the control group (p values = 0.038, median = 0.50 and 0.00). According to the assessment from 3 sources (self-assessment, close friends and officers), health education is the dominant factor influencing psychosocial skills.

Discussion

Audiovisual can be combined with other method in order to achieve maximum learning goals. In this research, role playing activities help the adolescents to direct their behavior and train them to apply what has been learned from their various life problems. This is consonant with Dale Cone's learning theory stating that individuals are able to remember 50-70% of the information received after seeing, hearing and practicing[14,15]. Although the space between the intervention and the post-test was only 1 week (without follow-up), a significant effect is observed because the education is not just about delivering the materials. Nursing approaches, such as empathy and motivation were also practiced along with the health education. In the control group, there is no significant difference found in the scores of the skills before and after the booklets were distributed. The research team only explained (10 minutes) about the contents of the booklets briefly. This study also shows that booklets do not have a significant influence on the psychosocial skills of the adolescents. The research team is not sure whether the respondents read the booklets. The unstable mental condition of the adolescents in prison can also be one of the triggers for the low interest in reading among them. Coping strategies and the stressors are closely related to the emergence of mental problems and can become the predictors of crime in the future[16]. Therefore, a personal approach is urgently needed to support learning among adolescents in prisons such as motivational interviews as what has been done in the intervention group[17].

The domains of human behavior, namely cognitive, affective and psychomotor according to Bloom's theory have horizontal integration and vertical progression correlations when the learning objectives are determined by the cognitive, affective and psychomotor domains[18,19]. Increasing knowledge, perception and self-efficacy is potential to give positive influences on the adolescents in practicing the activities that have been taught[20]. Good knowledge forms good affective skills and it shapes the skills of adolescents. In this study, the affective aspect assessed is self-efficacy, which is a belief in his/her ability to succeed in doing something. Improving psychosocial competence is important because adolescents will know alternative strategies to express strong emotions, communicate strong opinions and build social image[21]. A high level of self-efficacy has also proven to be significant to lower the probability of recidivism[22]. The process and results of this study that can be recommended to be further carried out are as follows. Video can be provided if the facilities in the prison support it. The weakness of this study is that there was no follow-up and there was only one post-test. As a result, the duration of skills maintenance cannot be identified. Further research can investiagate how long the adolescents can maintain psychosocial skills. The researchers also recommend a qualitative research to illustrate the challenges and expectations of the adolescents in practicing psychosocial skills in prison.

Conclusions

Based on the assessments from the 3 sources, health education can increase the psychosocial skills of the adolescents of 14-19 years old who are in trouble with the law. The dominant factors correlating with the psychosocial skills of the adolescents is health education.

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Ethical Clearance: This research was conducted after obtaining ethical approval from the Ethics Committee of the Faculty of Medicine, Public Health and Nursing (FKKMK) of Gadjah Mada University (number; KE/FK/0330/EC/2019).

Conflict of Interest: No conflict of interest has been declared by the authors.

Table 1. Respondent Characteristics

Respondent Characteristics		Group				p
		Intervention (N = 26)		Control (N = 33)		
		n	%	n	%	
The level of education	Not school	0	0.0	2	6.1	0.495
	Elementary School	8	30.8	13	39.4	
	Junior High School	14	53.8	14	42.4	
	Junior High School	4	15.4	4	12.1	
Prior Information on psychosocial skills	Never	9	34.6	17	51.5	0.096
	Less than three times	12	46.2	15	45.5	
	More than three times	5	19.2	1	3.0	
Psychosocial-related experience	Delinquent in the school and community	6	23.1	11	33.3	0.098
	Family problems (violence, broken home, etc)	9	34.6	4	12.1	
	Delinquent in the school and community and family problems	5	19.2	13	39.4	
	Never	6	23.1	5	15.2	
Knowledge		19.12		19.45		0.864
Self-efficacy		59.42		60.27		0.143

*p < 0.05

Table 2. The Different Effects of Health Education on Psychosocial Skills in the Intervention and Control Groups

Skill assessed by 3 sources	Intervention (n = 26)			Control (n = 33)		
	Mean/median	SD	p	Mean/median	SD	p
Self-assessment						
Pretest	34.77	4.466	0.024	33.24	4.737	0.103
Posttest	36.69	3.332		32.09	4.440	
Close friends						
Pretest	32.42	5.742	0.026	30.79	3.595	0.251
Posttest	36.46	3.658		29.91	4.390	
Officers						
Pretest	31.00	5.028	0.029	29.70	4.565	0.695
Posttest	33.15	3.529		29.52	3.327	

*p < 0.05

Table 3. The Effects of Health Education with audiovisual on Psychosocial Skills

Skill assessed by 3 sources	Intervensi (n = 26) Selisih	Kontrol (n = 33) Selisih	CI (95%)	p
	Median (min-max)/Mean ± SD	Median (min-max)/Mean ± SD		
Self-assessment	1.00(-2 – 15)	0.00(-13 – 6)	-	0.013
Close friends	2.04±4.377	-0.88±4,321	2.917(0,635 – 5.199)	0.013
Officers	0.50(-5 – 12)	0.00(-5 – 6)	-	0.038

Table 4. Linear Regression

Corelation of variable	Model 1	Model 2	Model 3	Model 4
	B (p)	B (p)	B (p)	B (p)
Knowledge - Skill assessed by namely respondents	-2.304 (p = 0.027)	-3.075 (p = 0.003)		
Health Education – Skill assessed by namely respondents	0.351 (p = 0.849)			
Self-efficacy – Skill assessed by close friends	0.142 (p = 0.253)			
Health Education– Skill assessed by close friends	-2.401 (p: = 0.054)	-2.917 (p = 0.013)		
Health Education– Skill assessed by officers	-1.730 (p = 0.104)	-1.822 (p = 0.078)	-2.210 (p = 0.022)	-2.336 (p: 0.016)
Knowledge – Skill assessed by officers	0.066 (p = 0.696)			
Self-efficacy – Skill assessed by officers	0.091 (p = 0.401)	0.104 (p = 0.311)		
Psychosocial-related experience – Skill assessed by officers	-0.507 (p = 0.247)	-0.531 (p = 0.218)	-0.488 (p = 0.254)	

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Women's Involvement in Decision Making and Unmet Need for Contraception in Indonesia

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Abstract

Background: The issue of gender inequality in reproductive health has a role in determining contraceptive use in women. Gender issues related to inequality in decision making are the main context in family planning interventions. The purpose of this study is to assess women's participation in decision making and its relation to unmet need.

Method: A cross-sectional study was conducted using IDHS data in 2012. The study involved 1516 women of childbearing age (15-49 years) with married categories in areas with high unmet need (West Papua) and the lowest unmet need area (Bangka Belitung)

Results: Married women in the Bangka Belitung region have more power in decision making than married women in West Papua. Involvement in economic matters and the decision to use contraception as the most dominant factor and involvement in the household have a significant relationship with the occurrence of unmet need, as well as education, wealth and experience in using contraception related to unmet need. while age, fertility preference, husband's desire to have children and involvement in health and mobility were not directly related to unmet need.

Conclusions: Better participation in decision making is higher for women in the Bangka Belitung region than in Papua. Empowerment of women in terms of the economy and the use of contraception needs to be improved so that they have power in decision making.

Keywords: *Unmet Need, Modern Contraception, Decision Making, Involvement.*

Introduction

Contraceptive use is one of the government's policies to reduce the total fertility rate. Decline in TFR was not followed by a decrease in unmet need. Based on the 2012 IDHS data, the unmet need figure is still stagnant at 11%. Unmet need disparities still occur in every province in Indonesia. The highest unmet need reached 23.7% in the West Papua region while the lowest unmet need was in Bangka Belitung with a figure of 5,6% [6]. This is thought to have social and cultural influences that influence decisions in family planning.

Unmet need is associated with client needs that have not been fulfilled regarding the expectation of being able to delay pregnancy or the desire to be able to limit pregnancy. The desire to fulfill these needs is based on the desire/unwillingness to have children, determine the ideal number of children and use contraception[21]. Related to the existence of gender issues, it shows the occurrence of inequality in terms of equality of reproductive rights. This can be seen in the differences in the desire/ unwillingness to have children, the determination of the ideal number of children and contraceptive use between men and women as couples who should have a joint decision on this matter [14,15].

Based on the desire to have children, almost 50% of married women say they do not want to have more children (including those who have been sterilized). But around 15% of women show the fact of pregnancy

when they don't/don't want children [6]. The desire to have children and determine the ideal number of children greatly affects the subject of contraceptive use. To achieve this desire, men and women must have a decision to use contraception or not to use [11].

Indonesia is one of the developing countries that is still influenced by social and culture which places women in a position below men [14]. This affects women's participation in making decisions in all aspects. Indonesia is a patriarchal society that believes that women are inferior to men [23].

This is supported by The Conference on Population and Development (ICPD) in Cairo 1994, a testament to the commitment of the international community on issues of gender, population and development with a new perspective.Decisions in contraceptive use and fertility are thought to be the influence of gender inequality especially in patriarchal societies [1]. Studies in Ethiopia show male dominance of women leads to an increase in the number of children[20]. Studies in sub-Saharan Africa also illustrate that there are indications of decision-making problems that affect contraceptive use by women without their partners knowing [3].

The disparity in the number of unmet need may be caused by the existence of a strong patriarchal system in several regions. Therefore, the aim of this study is to assess women's participation in decision making and its relation to unmet need in regions with high and low unmet need in Indonesia.

Method

Study area and setting: The cross-sectional study was conducted using IDHS data in 2012. Data measurements were carried out in two regions, namely Bangka Belitung as the area with the lowest unmet need numbers and West Papua as the highest unmet need number.

Sampling: This study involved 1516 women of childbearing age (15-49 years) with married categories. Using data from the Indonesian Demographic and Health Survey (IDHS) in 2012, the research design used was cross sectional.

Measurement: Participation in decisions is an independent variable measured using the autonomy index obtained based on the literature[4,9,12,22]. Questions related to participation followed the questionnaire in the Indonesian IDHS survey which included women's participation in decision making in terms of economy, household, mobility and health. Questions related to decision making are categorized as having high autonomy in decisions if women are involved in all aspects of decision making. Moderate autonomy if there is ≤ 2 decision aspect involvement and does not have autonomy in the decision if there is ≤ 1 decision aspect involvement. Contraceptive use is a dependent variable with unmet need categories and not unmet need. Unmet need is indicated if women have the desire to postpone pregnancy or do not want to have more children, but do not use any contraception to prevent pregnancy. Other variables that are indirectly related to women's decision participation will also be measured such as age, employment, education, resident, fertility preference and wealth.

Statistic Analysis: Data was processed using Statistical Package for the Social Sciences (SPSS) software version 15.0. Univariable, bivariable and multivariable analysis was carried out. Chi square will be useto see the closeness of the relationship between variables and logistic regression test to identify the most significant of variable.

Result

Sosio demographic characteristics: Most of the respondents in the two regions were in the age group 25-29. The majority of married women have education at the primary and secondary levels in both regions. But in West Papua more women with higher education than in Bangka Belitung. While the economic level in West Papua is lower than Bangka Belitung (see table 1).

Reproductive Health Characteristic: Regarding contraceptive use, it turned out that the dominant women used traditional method to delay pregnancy in both groups. About 27.2% of women in Bangka no longer want children, while 22.8% still plan to become pregnant. In contrast, in West Papua, there are fewer women who do not want children (17%) compared to women who still want to add children (20.1%). For more details can be seen in table 1.

Table 1. Socio demographic variabels of married women (N= 1516)

	Bangka belitung(%)	West Papua (%)	Total (%)
Age Group			
15-19	23(1,5)	33(2,2)	56(3,7)
20-24	119(7,8)	101(6,7)	220(14,5)
25-29	162(10,7)	139(9,2)	301(19,9)
30-34	156(10,3)	149(9,8)	305(20,1)
35-39	154(10,2)	114(7,5)	268(17,7)
40-44	97(6,4)	95(6,3)	192(12,7)
45-49	102(6,7)	72(4,7)	174(11,5)
Educational Level			
No	30(2)	36(2,4)	66 (4,4)
Primary	394(26)	(196)12,9	590(38,9)
Secondary	323(21,3)	364(24)	687(45,3)
Higher	66(4,4)	107(7,1)	173(11,4)
Wealth index			
Poorest	75(4,9)	221(14,6)	296(19,5)
Poorer	165(10,9)	115(7,6)	280(18,5)
Middle	168(11,1)	159(10,5)	327(21,6)
Richer	218(14,4)	145(9,6)	363(23,9)
Richest	187(12,3)	63(4,2)	250(16,5)
Ever used to delay			
No	90(5,9)	224(14,8)	314(20,7)
Yes outside calendar	55(3,6)	84(5,5)	139(9,2)
Yes, used calendar	668(44,1)	395(26,1)	1063(70,1)
Fertility preference			
Have another	337(22,8)	298(20,1)	635(42,9)
Undecided	56(3,8)	70(4,7)	126(8,5)
No more	402(27,2)	252(17)	654(44,2)
Sterilized	15(1)	28(1,9)	43(2,9)
Infecund	2(0,1)	19(1,3)	21(1,4)
Husband desire for children			
Both want same	548(38,4)	256(17,9)	804(56,3)
Husband wants more	119(8,3)	139(9,7)	258(18,1)
Husband wants fewer	37(2,6)	18(1,3)	55(3,9)
Don’t know	90(6,3)	220(15,4)	310(21,7)

Decision making power in both area: Overall, the power of decision making in the West Papua region is lower than Bangka Belitung. There were no significant differences in decision making in the aspects of health services, household and mobility in both groups. But in the economic aspect, the involvement of women in West Papua was lower (39.6%) compared to Babel (48.1%). Likewise with the decision in contraception, as many as 27.8% of women in West Papua and 19.7% of women in Babylon were not involved in the decision.

Figure 1. Power of Decision Making on Merried women in Bangka Belitung and West Papua, Indonesia 2012

Factor Related unmet need of contraception:

Unmet need and socio demographic:

Table 2. Unmet need and characteristic of socio demographic of married women (N= 1516)

Socio Demographic	No Unmet need	Unmet need	p value
Age in Group			
15-19	26(1,7)	10(0,7)	0,000
20-24	69 (4,6)	24(1,6)	
25-29	69 (4,6)	27(1,8)	
30-34	32 (2,1)	30(2,0)	
35-39	32(2,1)	25(1,7)	
40-44	12(0,8)	29(1,9)	
45-49	2(0,1)	22(1,5)	
Education Level			
No Education	11(0,7)	6(0,4)	0,082
Primary	61(4,0)	60(4,0)	
Secondary	134(8,9)	79(5,2)	
Higher	36(2,4)	22(1,5)	
Wealth Index			
Poorest	55(3,6)	48(3,2)	0,000
Poorer	48(3,2)	31(1,1)	
Middle	50(3,3)	36(2,4)	
Richer	59(3,9)	24(1,6)	
Richest	30(2,0)	28(1,9)	
Ever used to delay			
No	126(8,3)	60(4,0)	0,000
Yes outside calendar	17(1,1)	25(0,9)	
Yes, used calendar	99(6,5)	82(5,4)	
Fertility preference			
Have another	180(12,2)	58(3,9)	0,000
Undecided	33(2,2)	25(1,7)	
No more	28(1,9)	84(5,7)	
Sterilized	0	0	
Infecund	0	0	
Husband desire for children			
Both want same	124(8,7)	73(5,1)	0,000
Husband wants more	47(3,3)	30(1,1)	
Husband wants fewer	4 (0,3)	6(0,5)	
Don't know	66(4,6)	56(4,0)	

Unmet need and decision making: Involvement in health service, household and mobility aspects in both groups showed that women without cases of unmet need had better involvement than unmet need groups. Similar to the low number of women's involvement in these three aspects, there were more women who did not experience unmet need. There are 13.9% of women in the group without unmet need involved in economic matters while in the unmet need group only around 9%. And as much as 7.5% of women without unmet need have better involvement in contraception compared to 5.2% of the unmet need group.

Table 3. Unmet need and involvement decision making of married women (N= 1516)

Decision Making	No Unmet need	Unmet need	p value
Health care			
Low Involvement	34 (2,2)	20 (1,2)	0,073
Better Involvement	208(13,7)	14,7(9,7)	
Household			
Low Involvement	48(3,2)	26(10,1)	0,159
Better Involvement	194(12,8)	142(11,2)	
Movement			
Low Involvement	47(3,1)	32(2,2)	0,713
Better Involvement	195(12,9)	135(9)	
Economy			
Low Involvement	32(2,1)	31(2,1)	0,050
Better Involvement	210(13,9)	136(9)	
Contraception			
Low Involvement	147(9,7)	132(9,4)	0,000
Better Involvement	113(7,5)	79(5,2)	

Discussion

The results in this study to prove the assumption of participation or involvement of women in decision making in all aspects are closely related to the incidence of unmet need.

Table 4. Logistic regression analysis: dependent variable-unmet need

	Significance	Odds ratio (95% confidence interval)
Education Level		
No Education	0,000	1
Primary	0,156	0,56(0,25-1,24)
Secondary	0,070	0,47(0,21-1,06)
Higher	0,040	0,39(0,15-0,97)
Wealth Index		
Poorest	0,000	1
Poorer	0,049	1,63(1,00-2,68)
Middle	0,008	1,92(1,18-3,13)
Richer	0,001	2,32(1,40-3,82)
Richest	0,060	1,67(0,97-2,86)
Ever used any contraception		
No	0,000	1
Yes, outside Calendar	0,000	0,17(0,11-0,28)
Yes, with Calendar	0,000	2,30(1,58-3,35)
Involvement in Household		
Low involvement	0,000	1
Better involvement	0,058	0,63(0,39-1,01)
Involvement in Economy		
Low involvement	0,000	1
Better involvement	0,007	1,90(1,19-3,03)
Involvement in Contraception		
Low involvement	0,000	1
Better involvement	0,000	1,80(1,30-2,48)

The results of this study indicate that the dominant factor affecting the unmet need is the involvement of women in decisions in the economy and contraception. This is consistent with the research conducted by another researchthat Decision-making was found to be positively associated with contraceptive use and not having unmet need for contraception[5,18].

Decisions in terms of economics influence decisions in contraceptive use, allegedly because finance affects authority. This is consistent with the study of Palamulenithat employment status factors influence contraceptive use in women[19]. This research is also found that there were no significant differences between the two regions in terms of decision making in health services and mobility. This is presumably because the government has been maximal in its efforts to equalize health both in terms of facilities and officers. While for decisions in terms of mobility, now it may have become a thing that is not rigid and taboo to do, so that cases of mobility related to visits to relatives and friends are not the dominant thing to discuss.

This study also found that low involvement in household-related decision making, economy and contraception was more dominant in the West Papua region. This is allegedly related to economic growth. This study found that the middle to upper class people based on wealth index were more dominant in the Bangka Belitung region.The situation of economic growth affects the economic level of the family. Possibly in the West Papua region, the status of work is more for men than women[15]. So that women in the region depend on their husband/partner's livelihood. This is also affects household decisions and contraceptive use.

Contraceptive use can be influenced by external factors related to the position of women in social life [9,10]. The assessment of women's position has been assessed by gender differences that place women and men in accordance with their functions and their respective roles [2]. Problems arise when there are gender inequalities that limit each other's rights [13]. Gender-based power inequalities can limit open communication between partners about reproductive health decisions and women's access to reproductive health services, which contributing to poor health outcomes The importance of partner communication is often emphasized in family planning and research programs, this is the first step in making rational fertility decision processes [17]. In developing countries some women have low bargaining positions. In fact, women who are either under collective decision making with their partners or completely dependent on the decisions of male partners on the issue affect their reproductive lives[8].

Conclusion

The findings indicate that creating conditions for women who can improve their financial status by increasing women's empowerment in terms of economy can increase autonomy in maintaining the right to reproductive health itself. This research is limited by data available to measure women's empowerment. Other limitations of this study are uses cross sectional which cannot determine the temporal relationship between two variables.

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Determinants of Stunting among Toddlers Aged 24-59 Months in Puuwatu District, Kendari City, Indonesia

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Abstract

In Indonesia, the problem of low nutritional status proportion is still a problem, despite it decline of 37.2% in 2013 and 30.8% in 2018. Southeast Sulawesi is the Province with prevalence of stunting of 27.5 % in 2018 while Kendari City with the prevalence of 28.6% of children under five included in the stunting category. In 2014 to 2015 there was a 2.2% increase in stunting children in the working area of Puuwatu Public Health Center. The purpose of this study was to determine the factors associated with the incidence of stunting among children aged 24-59 months. The type of study was quantitative with a cross sectional study approach. The sampling technique was accidental sampling, with the number of respondents was 88 toddlers. The results of statistical tests using chi square test with confidence level of 95%. The result of study obtained p value of protein intake = 0.001, p value of mother's education = 0.040, p value of father's occupation= 0.003 and p value of economic status = 0.054. That means a significant relationship with the incidence of stunting. Whereas p value of energy intake = 0,932, p value of exclusive breastfeeding = 0,116, p value of number of children = 0,840, p value of father education = 0,083 and p value mother's occupation = 0,154, thus there was no significant relationship with the incidence of stunting. Conclusion: Mothers play a significant role in toddlers's nutritional intake.

Keywords: *Stunting, Nutrition, Children, Exclusive Breastfeeding, Education, Occupation, Economic.*

Introduction

Stunting toddler includes chronic nutritional problems caused by many factors such as socioeconomic conditions, maternal nutrition during pregnancy, morbidity in infants and lack of nutrition in infants. Stunting toddlers in the future will experience difficulties in achieving optimal physical and cognitive development[1]. The percentage of short toddlers in Indonesia is still high and it is a health problem that must be addressed. Global Nutrition Report in 2014 showed that Indonesia was included in 17 countries among 117 countries which have three nutritional problems, namely stunting, wasting and overweight among toddlers[2].

In Indonesia, children malnutrition and stunting are a serious public health problem. of the 24.5 million children under 5 years, around 9.2 million (37%) experience stunting (Riskesdas, 2018)[3]. The highest number of cases is in rural areas from the national average, including West Kalimantan (39.7%), Central Kalimantan (39.6%), South Sumatera (38.9%) and the rest can be found in Sulawesi. In Indonesia, the high stunting levels are associated with a combination of complex factors including nutrition, hygiene, parenting, diet, low maternal education, inadequate maternal nutrition, low family income, low birth weight, birth distance, poor exclusive breastfeeding, hygiene inadequate and household food security[1].

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The results of the Nutrition Status Monitoring (PSG) 2015 showed 23.1% of Indonesian toddlers, including the short category, with the highest percentage in the provinces of East Nusa Tenggara and West Sumatera. Southeast Sulawesi Province was 31.4%included in the stunting category in 2018 and it decreased to 27.5% compared to the previous year[4]. While in Kendari City, 28.6% of children under five is included into the category of stunting[5].

According to toddler nutrition monitoring in 2016, the very short category nutritional status of toddlers was 8.6%, short category was 20.0% and normal was 71.4%[6]. Data from the Kendari City Health Office on the prevalence of stunting in 2010 to 2014 increased from 421 per 10,000 of toddlers and increased by 2,162 per 10,000 of toddlers[5].

The Puuwatu Public Health Center data in 2014 showed 7 there were 6% of stunting toddlers, then in 2015 there were 9.7% stunting toddlers. in 2017 there were toddlers in Under the Red Line (URL) of 0.5%, low birth weight of 2.0% and poor nutrition of 0.1% [7].

In order to achieve the global stunting target for 2025, countries should begin with a situation analysis to determine how many children aged under 5 years are stunted and assess the determinants of stunting in specific geographical and social contexts, so that actions are tailored to address contextual needs. A deliberate equity driver policy targeting the most vulnerable populations is an effective strategy for reducing national stunting averages [8].

Materials and Method

The type of studywas quantitative method with cross sectional study approach. It aims to find out what factors are related to the incidence of stunting in infants aged 24-59 months in the Working Area of Puuwatu Health Center of Kendari City in 2018.

Data was obtained by measuring heighof children using microtoise, interviewing and filling in questionnaires with mothers. The results of heigh measurements then processed to obtain the nutritional status of children using the WHOstandard -2005, namely Z-score index Heigh/Age. Data on the level of energy and protein intake was obtained by filling semi-quantitative *Food Frequency Questionnaire* (FFQ), then processed with Nutri Survey 2007.

Result

Table 1. Determinants of Stunting incidence among Toddlers Aged 24-59 Months in the Puuwatu Public Health Center Working Area

Variable	Stunting incident		p value
	Stunting (n)	Non Stunting (n)	
Energy intake			
- Less	9 (42,9%)	12 (57,1%)	0,932
- Sufficient	26 (35,6%)	33 (64,4%)	
Total	35 (43,8%)	45 (56,2%)	
Protein intake			
- Less	22 (64,7%)	12 (35,3%)	0,001
- Sufficient	13 (28,3%)	33 (71,7%)	
Total	35 (43,8%)	45 (56,7%)	
Exclusive breastfeeding			
- Yes	24 (51,1%)	23 (48,9%)	0,116
- No	11 (33,3%)	22 (66,7%)	
Total	35 (43,8%)	45 (56,2%)	
Number of children			
- Many	21 (42,9%)	28 (57,1%)	0,840
- Few	14 (45,2%)	17 (54,8%)	
Total	35 (43,8%)	45 (56,2%)	

Variable	Stunting incident		p value
	Stunting (n)	Non Stunting (n)	
Father's education			
- Low	17 (54,8%)	14 (45%)	
- Medium	15 (44,1%)	19 (55,9%)	0,083
- High	3 (20,0%)	12 (80,0%)	
Total	35 (43,8%)	45 (56,2%)	
Mother's education			
- Low	24 (53,5%)	21 (46,7%)	
- Medium	10 (40,0%)	15 (60,0%)	0,040
- High	1 (10,0%)	9 (90,0%)	
Total	30 (43,8%)	50 (56,2%)	
Father's occupation			
- Services	8 (42,1%)	11 (63,2%)	
- Entrepreneurs	25 (58,1%)	18 (52,1%)	0,003
- Civil Servants	2 (11,1%)	16 (88,9%)	
Total	35 (43,8%)	45 (56,2%)	
Mother's occupation			
- Work	18 (52,9%)	16 (47,1%)	0,154
- Does not work	17 (37,0%)	27 (63,0%)	
Total	35 (43,8%)	45 (56,2%)	
Economic status			
- Low	20 (55,6%)	16 (44,4%)	0,054
- High	15 (34,1%)	29 (65,9%)	
Total	35 (43,8%)	45 (56,2%)	

Primary data 2018

Discussion

Energy Intake: Energy intake is one of the variables in this study to assess the consumption of toddler food. In this study, the toddler's energy intake was divided into two namely less energy intake (<100% Daily Values) and sufficient (≥100% Daily Values)[9].

In the Puuwatu area with the majority of low-educated mothers one of the causes of stunting was mothers did not pay attention to the nutritional intake of children and these factors were supported by a low family economy. It is needed the increase of knowledge about the importance of balanced nutritional needs both in formal and informal ways and pay more attention to children's nutritional intake so that the nutritional needs of both micronutrients and macro nutrients can be adequat[10].

Protein Intake: In toddlers, protein is needed for tissue maintenance, changes in body composition and for new tissue synthesis[11]. Protein intake is one of the causes of stunting among toddlers. Protein intake can be obtained from mother's milk, but if children do not breastfeed again, protein intake is obtained from the food they eat.

Some of the fathers in Puuwatu work as traders and drivers so as to make the family economy unstable. The consequence that the mothers only fulfilling basic needs without considering nutrition intake for children due to economic constraints. This is also supported by behavior of mother who only provide unhealthy snacks, so that the children become lazy to eat healthy food. This is in line with previous study that factors such as energy intake, protein intake and parenting are related to the incidence of stunting among toddlers[12]. Research conducted by Anindita (2012) showed that there was a positive relationship between the level of protein adequacy and stunting (short children) in infants aged 6-35 months[10].

Exclusive Breastfeeding: Breast milk can meet three quarters of the protein needs of infants aged 6 - 12 months, besides breast milk also contains all essential amino acids needed by babies[11].

In Puuwatu almost all mothers did not give exclusive breastfeeding to their children, only a small proportion give exclusive breastfeeding due to breastfeeding to mothers who come out a little, some did not leave at all and family factors suggest that mothers provide additional food and busy working mothers.The results of studythat conducted by Fikadu, et al (2014) showed that duration of exclusive breastfeeding and complementary feeding method are independently associated with stunting. Thus, public health interventions has role to improve children's nutrition and must consider these determinants[13].

Number of Children: Fikadu, *et al* (2014) stated that children living in households with eight to ten [Adjusted Odds Ratio (AOR) = 4.44, 95% CI: 1.65, 11.95] and fiveto seven [AOR = 2.97, 95% CI: 1.41, 6.29] family members were more likely to be stunted than those living in householdswith two to four family members. Similarly, children living in households with three under-five children [AOR = 3.77, 95%CI: 1.33, 10.74] were more likely to develop stunting than those living in households with one under-five child[13]. Beside that other study showed that toddlers with multiple parities have a risk of 4.08 times stunting compared with toddlers who have little parity[14]

In this study included toddlers with a large number of children but not stunting. It was caused by other factors that influence the incidence of stunting, one of which was economic status. A good family economic status will affect the quality and quantity of food that will be consumed by the family.

Fathers' Education: Father's education does not directly influence to the child's nutritional intake, butt mother's knowledge is play role. This is related to how routine the visit to the posyandu to participate in counseling about child growth and nutrition needed by the child, which will increase the level of knowledge of the mother about nutrition. Mothers who have a good level of knowledge will present a food menu that suits their needs according to their age.

The study that conducted by Sarma, et. al (2017) in Multiple Logistic Regressions Assessing the low of fathers' education level has the risk of having a child with stunting of 1.03 timesonin Bangladesh[15]

The father who acts as the head of the house focuses more on how to get money rather than taking care of household needs, the lack of a father's role in contributing to helping mothers in providing nutritional intake to children is still lacking. In the Puuwatu region, some fathers are well educated but due to a lack of awareness from the father to help and remind mothers to provide good nutrition for the family. The environment that does not support the father to better understand the importance of good nutrition for the family is one of the triggers because the father does not get socialization or knowledge for family nutrition.

Mothers' Education: Mother's education is strong predictor of stunting among toddlers. The education level of mothers with mental development of toddlers has a meaningful relationship. Most of the mothers in the Puuwatu area have a low level of education which causes mothers not understand about nutritional intake and good parenting for children. The result of this study is in line with the study of Ibrahim & Faramita (2015) who stated that there was a significant relationship between mother's education level and stunting incidence among toddlers aged 24-59 months in the Barombong Public Health Center work area[16].

The lack of knowledge about stunting and misconceptions related to the impact of stunting create significant challenges to behavior change and efforts to prevent stunting in Indonesia. Knowledge and perception about vulnerability and severity of stunting are almost none among Indonesian mothers. Mothers who are aware of stunting, the majority see it as a genetic or hereditary condition and are not related to suboptimal cognitive future achievement, health and productivity [17]. Thus, increasing maternal education, knowledge of stunting and knowledge of nutrition may improve dietary diversity[18]

Father's occupation, Mother's Occupation and Economic status: In this study the work of fathers is categorized based on income, so that there are three categories, namely Services, Entrepreneurs, Civil Servants. Father's occupation is closely related to economic status. The occupation of father in the service sector tends to have an irregular income, so that the economic status is related to the ability to fulffill the family needs especially in nutritional needs.

In the study of guidance (2011) stated the same thing with the results of this study. There was a tendency for stunting toddlers to be higher in mothers who do not work compared to working mothers [19].Mothers who work outside the home can cause children to be

neglected, because toddlers are very dependent on their care or other family members. But on the other hand mothers who work can help with family income, because occupation is an important factor in determining food quality and quantity.

Kusuma and Nuryanto (2013) in their study results of multivariate analysis showed that the risk factors for stunting among children aged 2-3 years are low family economic status (p = 0.032; OR = 4.13) in East Semarang District. It concluded that low family economic status is a significant risk factor for the incidence of stunting among children aged 2-3 years[20].

Conclusion

There was a significant relationship between the level of protein intake, mother's education, father's occupation and family income level with the incidence of stunting among toddlers aged 24-59 months in the working area of Puuwatu Public Health Center of Kendari City. There was no significant relationship between energy intake, exclusive breastfeeding, the number of children, father's education and mothers occupation with the incidence of stunting among toddlers aged 24-59 months in the working area of Puuwatu Public Health Center of Kendari City.

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Surface texture of modified Polyetheretherketone Compared to Lithium Disilicate Crowns in Anterior Aesthetic Zone (Randomized Controlled Clinical Trial)

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Abstract

Background: Crown surface texture affect final esthetic outcome upon restoring single anterior tooth which poses the greatest esthetic challenge for the clinician.

Objectives: The aim was to compare surface texture of modified polyetheretherketone (PEEK) polymer and lithium disilicateceramic crowns in anterior esthetic zone with follow up one year.

Materials and Method: Twenty-four Patients were divided randomly into two groups (group=12), each patient received either modified PEEK or lithium disilicate crown. Both materials were fabricated according to the manufacturer's instructions. Surface texture was evaluated at cementation time and after 3, 6, 9 and 12 months follow up periods by five blinded assessors to ass surface texture change using modified United State of Public Health and Service (USPHS) scores.

Results: Chi-square test was used to compare between different tested Groups. There was no statistically significant difference among time between the two groups (P-value = 1.00) regarding the surface texture of the lithium disilicateceramic and modified PEEK polymer restorations.

Conclusion: IPS e.max and modified PEEK crowns revealed excellent surface texture after one year follow up and the modified PEEK polymers can be successfully used in aesthetic anterior restorations.

Keyword: *Surface texture, modified USPHS, modified PEEK, Lithium disilicate.*

Introduction

The appearance of teeth is a complex phenomenon, affected by many factors such as lighting conditions, translucency, opacity, light scattering, surface texture, gloss and the human eye and brain influencing the overall perception of tooth color. To achieve esthetics, four basic determinants are required in sequence; viz., position, contour, texture and color. This knowledge is essential for achieving good esthetics[1].

Surface texture and luster are the most important factors affecting how light interplays with the tooth surface. A roughened surface texture will not yield as well defined an image and will scatter the light and the individual wavelengths will all bend differently yielding a substantially different spectrum returning to the eye[2].

Dental ceramics allow regular and diffuse transmission, as well as diffuse and specular reflectance

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of light and therefore have the potential to reproduce the depth of translucency, depth of color and texture of natural teeth. In addition, dental ceramics have a relative good resistance to degradation[3].

Since there are no studies comparing surface texture between ceramics and new ceramic reinforced polymer, we have selected this study to compare surface texture of modified PEEK polymer versus lithium disilicate ceramic crowns in anterior esthetic zone with follow up one year.

The aim of this study: The aim of this study was to compare the surface texture of modified PEEK polymer with lithium disilicate ceramic with one year follow up.

Materials and Method

Study Design: Randomized controlled clinical trial.

Study Location: This was a teaching hospital based study done in Department of fixed prosthodontics clinic, at Faculty of Dentistry, Cairo University, Cairo, Egypt.

Study Duration: October 2018 to November 2019.

Sample size calculation: The sample size was estimated based on paper by Batson et al., 2014 [1] the clinical performance within each subject group was normally distributed with standard deviation 38.2. If the true difference in the experimental and control means is 45.3 mm, we were needed to study 12 patients in each group to be able to reject the null hypothesis that the population means of the experimental and control groups are equal with probability (power) 0.8. The Type I error probability associated with this test of this null hypothesis is 0.05. The sample size was calculated by PS program.

Subjects & selection method: Patients were divided into two groups (each group had 12 patients) according to material used as follows:

Group I (N=12 patients): Pressed E-max coping veneered with E-max veneering system (IvoclarVivadent, Liechtenstein).

Group II (N=12 patients): Modified PEEK Pressed (Bio HPP: Bioactive High Performance Polymer) coping veneered with Visio.lign (Bredent, Germany).

Procedure Methodology: Written informed consent was obtained from all patientsunder the supervision of Research Ethics Committee, Faculty of Oral and Dental Medicine, Cairo University.

Intra oral examination, photographs, diagnostic casts and scaling and polishingwere performed for each patient before shade selection. The color of the tooth was recorded visually using VITA 3D-Master shade guide system accordance to the contra-lateral/adjacent tooth under different light conditions: natural day light and color corrected light with the help of five prosthodontists (3 females and 2 males) that performed Ishihara's test to determine color deficiency. Their results showed no color blindness. Shade was also confirmed with Vita Easy shade V spectrophotometer. Shade mapping was performed to ensure correct placement of different shade effects and characterizations. Also preoperative photographs were sent to the ceramist to ensure mimicking matched surface texture and luster.

All ceramic anterior tooth preparations were introduced to ideal preparation parameters with deep chamfer finish line. It was created 1.0 mm diameter supra-gingivally along the free gingival margin using a tapered diamond stone with a round end. The shade of the prepared abutment tooth was recorded visually using the IPS Natural Die Material shade guide (Ivoclar Vivadent, Liechtenstein)under natural day light and color corrected light (Flexipalette, Smile line, Switzerland) in order to fabricate a die mimicking the oral situation for optimum desired final esthetic results. Final impression was taken using vinylpolysiloxane addition silicon (Express PVS impression, 3M ESPE, Germany) in plastic stock trays.

Lithium Disilicate and Bio HPP crowns were fabricated into tooth shape supporting framework by pressing technology then veneered with theveneering system for each of appropriate shade according to manufacturer's instruction.

Esthetic try-in of unglazed lithium disilicate crowns was performed using a water-soluble gel (clear glycerin) under natural day-light and color corrected light then confirmed with the Vita Easy-shade V spectrophotometer. Stain and glaze firing were performed after verification and adjustments (if needed) in the ceramic furnace.

Both lithium disilicate and Bio HPP fitting surfaces were treated according to manufacturer's instruction. Then, isolation was granted through the use of rubber dam.Bonding procedures were done using self adhesive translucent luting resin cement according to manufacturer's instruction. All clinical steps were performed for Group II: Bio HPP crowns in the same

manner as previously mentioned for Group I: E-max crowns.

Assessment of surface texture: Five evaluators assessed the outcomes of each group.

Surface texture was evaluated in scores by sharp explorer and visual mean according to the modified USPHS:

Alpha: Surface is smooth as the surrounding,

Beta: Surface is rough than the surrounding,

Charlie: Surface is very rough avoiding avoid movement of the explorer,

Delta: New restoration is needed.

Scores of the patients were recorded immediately after crown cementation, 3, 6, 9 & 12 months after review for aesthetics.

Findings: Data were presented as frequencies and percentage values. Chi-square test was used to compare between different tested Groups.

The significance level was set at $P \leq 0.05$. Statistical analysis was performed with IBM® SPSS® (SPSS Inc., IBM Corporation, NY, USA) Statistics Version 23 for Windows.

Demographic Data: The present study was conducted on 24 patients, 15 Females and 9 males. The mean and standard deviation values for age were 30 with a minimum of 25 and a maximum of 40.

According to the USPHS scores, results of comparison between the two groups for The Frequency (N) and Percentage (%) for surface texture`s assessment are presented in table (1) and figure (1).

At T0 (at base line): Both all restorations of E- max Group and Bio HPP Group showed (100%) Alfa score with no statistically significant difference at base time between the two groups (P-value =1.00).

At T3 (after 3 month): Eleven restorations of Bio HPP Group showed (91.7 %) Alfa score while one restoration showed (8.3 %) Beta score. All restorations of E- max Group showed (100%) Alfa score.

There was no statistically significant difference among time between the two groups (P-value =1.00).

At T6 (after 6 month): Eleven restorations of Bio HPP Group showed (91.7 %) Alfa score while one restoration showed (8.3 %) Charlie score. All restorations of E- max Group showed (100%) Alfa score.

There was no statistically significant difference among time between the two groups (P-value =1.00).

At T9 (after 9 month): Eleven restorations of Bio HPP Group showed (91.7 %) Alfa score while one restoration showed (8.3 %) Charlie score. All restorations of E- max Group showed (100%) Alfa score.

There was no statistically significant difference among time between the two groups (P-value =1.00). Restorations in E- max Group showed the highest prevalence of Alfa score followed by Bio HPP Group. Restorations in Bio HPP Group were the only restorations that had Charlie score. All group showed a no prevalence of Beta score.

At T12 (after 12 month): Eleven restorations of Bio HPP Group showed (91.7 %) Alfa score while one restoration showed (8.3 %) Charlie score. All restorations of E- max Group showed (100%) Alfa score.

There was no statistically significant difference among time between the two groups (P-value =1.00).

Table (1): Results of statistical analysis of surface texture (Frequency (N) and Percentage (%)).

		Bio-HBB		E.max		p-value
		N	%	N	%%	
Baseline	A	12	100.0%	12	100.0%	1.00 NS
	B	0	0.0%	0	0.0%	
	C	0	0.0%	0	0.0%	
	D	0	0.0%	0	0.0%	

3M	A	11	91.7%	12	100.0%	1.00 NS
	B	1	8.3%	0	0.0%	
	C	0	0.0%	0	0.0%	
	D	0	0.0%	0	0.0%	
6M	A	11	91.7%	12	100.0%	1.00 NS
	B	0	0.0%	0	0.0%	
	C	1	8.3%	0	0.0%	
	D	0	0.0%	0	0.0%	
9M	A	11	91.7%	12	100.0%	1.00 NS
	B	0	0.0%	0	0.0%	
	C	1	8.3%	0	0.0%	
	D	0	0.0%	0	0.0%	
12M	A	11	91.7%	12	100.0%	1.00 NS
	B	0	0.0%	0	0.0%	
	C	1	8.3%	0	0.0%	
	D	0	0.0%	0	0.0%	

NS=non-significant

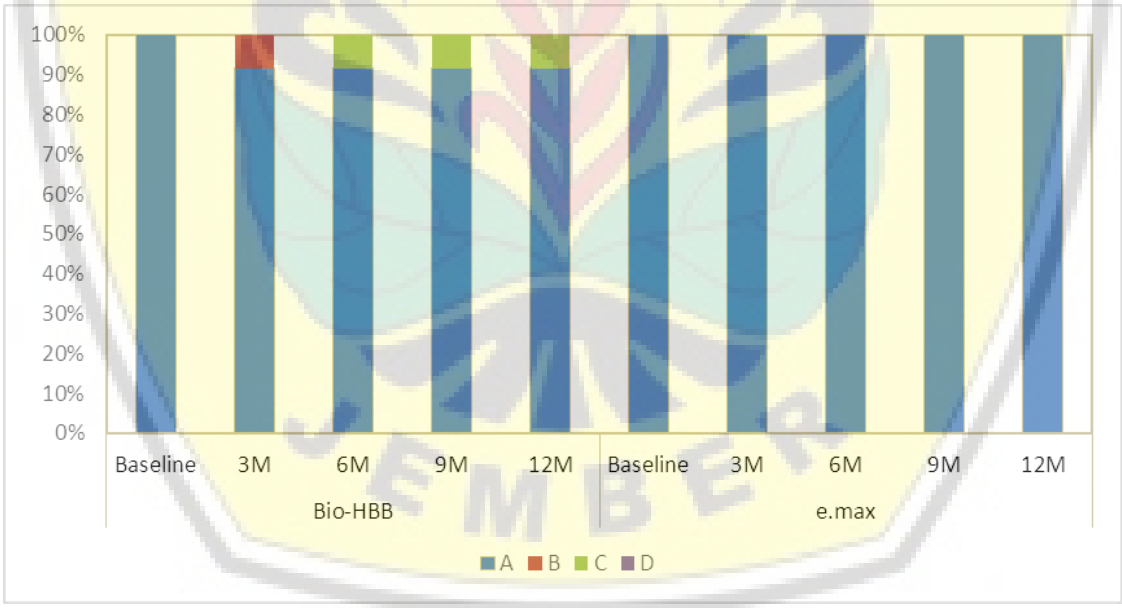

Figure (1): Histogram showing the results of statistical analysis of surface texture (Percentage %).

Discussion

The increasing esthetic expectations in daily life directly affect the color, texture, techniques, materials and treatment procedures in dentistry, in order to achieve an esthetic successful restoration with perfect appearance.

In this study full coverage restorations were fabricated from two different materials: IPS e.max Press coping veneered by IPS e-max Ceram (lithium disilicate crystals embedded in a glassy matrix) ceramic material[4] and Bio HPP (Bioactive High Performance Polymer based on polyether-ether-ketone (PEEK) polymer with

20 % ceramic filler veneered by Visio.lgin composite (50% opalescent ceramic fillers embedded in high strength oligomer matrix))[5].

IPS e.maxPress is biocompatible lithium disilicate glass-ceramic ingots a patented material manufactured by IvoclarVivadent[4]. They offer the fit, form and function which is expected from pressed ceramics[6].

A modified PEEK-based polymer with 20% ceramic fillers (Bio HPP; Bredent GmbH) has been recently introduced in dentistry (the grain size of 0.3 to 0.5 μm) for better polishing of the restorations[7,8]. Because of their micro size, homogeneity is achieved in the macrostructure of the polymer[9]. The high degree of polishability of the material results in a lack of plaque retention and color stability over time[10].

Bio HPP (Bioactive High Performance Polymer) provides excellent biocompatibility, high temperature resistance, chemical stability, wear resistance and low plaque affinity[11]. Bio HPP is particularly suitable for patients with allergies because the solubility of the polymer in water is very low <0.3 mg/mm3[12]. Extremely low weight is shown by the finished Bio HPP restorations, which is considered as an advantage by the patients. Bio HPP can be an alternative to chromium-cobalt dental alloys (Cr-Co) because it is lighter and does not cause corrosion[13].

The evaluation of the outcome was performed by experienced evaluators who were blinded and did not know the crowns belonged to which group also the statisticians as well as the patients were blinded. Explaining the results of the E-max Group might be due to followed restricted glazing protocol (esthetic try in and adjustments was performed before glazing) for glass ceramic according to manufacture instructions which allow smooth glazed surface of restoration and this was performed prior to the luting procedure and involves reheating the ceramics according to Pinar karsolglu et al., 2014[2].

Concerning IPS e.max results,Mazen et al., 2017[14]found the excellent surface texture with the use of layered lithium disilicate restorations

This is come in accordance to Motroand Kursoglu, 2012[15] who found that ceramic staining was related to surface texture changes after different surface treatments. There was an 83% positively significant relationship between surface roughness (Ra) and ΔE values. Values were the lowest for glazed and reglazed group. Rough surfaces stained more after coffee immersion than did smooth surfaces. He concluded that surface treatments affected surface roughness and color stability and smooth surfaces showed better color stability after discoloration.

Also Yunlong Zhang, et al 2004[17] who found in his vitro study, total porosity of specimens prepared using 4 different veneering porcelain systems, was sensitive to powder/liquid ratio; whereas translucency was found to be insensitive to powder/liquid ratio.

AlsoRusu et al., 2018[17] found that Lithium disilicate veneers showed similar stability (regarding surface texture) regardless the processing method after 6 month.

This was contradicting to Karla et al., 2015[18] who found the difference in translucency parameter (TP) values among colors was evident in the IPS e.max Ceram Dentin material, both before and after exposure to acid and in the IPS e.max Press material. CAD/CAD specimens showed uniform TP values. They concluded that different types of glass-ceramics showed significant difference in TP values both with respect to the fabrication technique and color. Exposure to a corrosive medium did not result in a statistically significant change of TP values.

Explaining the results of the Bio HPP Group, this is might be due to the followed restricted polishing laboratory protocol for the veneering composite according to manufacturer instruction. Alsothe staining resistance may be explained by the amount and dimension of the filler particles (Visio.lign has 50% ceramic nanofillers) and nature of the resin matrix.

Our results was in accordance to Anja Liebermann et al., 2016[19] who found PEEK showed the lowest solubility and water absorption with subsequent degradation that affect color stability compared to other polymers.

Contradicting to our results was Matteo Ceci et al., 2017[20] found that the staining beverages caused significant discolorations for all the tested composite materials. The first exposure to Cola enhanced the subsequent staining with coffee or red wine. Nanohybrid composites reported the lowest color variations.

Studies evaluating the optical properties of Bio HPP material are limited.

Conclusions

Within limitations of this clinical study, the following conclusions could be drawn as follows:

Bio HPP and IPS e.max full coverage restorations revealed excellent surface textureafter one year follow up and the modified PEEK polymer can be successfully used in aesthetic anterior restorations.

Ethical Clearance: taken from Ethical Cairo University committee

Conflict of Interest: Nil

Souse of Funding: Self-funding

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Fracture Strength of Two Types of Posterior Occlusal Veneers Made of Hybrid Ceramics with Different Thicknesses

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Abstract

Objective: The purpose of this study was to investigate fracture strength of two types of hybrid ceramic posterior occlusal veneers with different thicknesses.

Materials and Method: Eighty natural maxillary molars of comparable size. Standardization of the teeth preparations was accomplished using a diamond saw; teeth were sectioned horizontally, removing all coronal tooth structure 4 mm occlusal to the CEJs leaving exposed dentin centrally and peripheral enamel. Samples were randomly divided into two groups (n=40) based on restorative materials that will be used: computer-milled hybrid ceramic (ENAMIC) and Resin Nano Ceramic (LAVA ULTIMATE). Each group was divided into two subgroups according to the type of preparation (conventional and experimental). The experimental preparation had an additional preparation feature. Within each subgroup, specimens were subdivided into two classes based on restoration thickness (0.3, 0.6 mm). Each class was divided into 2 subclasses for testing the fracture resistance and the microleakage. Specimens were stored in distilled water 37ºC for 7 days. Restorations were adhesively bonded to their respective teeth for measuring fracture.

Result: The fracture strengths (mean ± standard deviation) were 2416 ± 676 and 1777 ± 697, N for Lava Ultimate and Vita Enamic, respectively. Lava Ultimate had significantly higher fracture strength than the Vita Enamic ($p < 0.05$); . No correlation between fracture strengths and failure modes was found within each material. Most specimens (48 out of 60) fractured in the restoration without involving tooth structures.

Conclusions: The fracture strength of ultrathin occlusal veneers made from the novel ceramic hybrid matched the strength of CAD/CAM composite. The highest strength was found with the resin nanoceramic material.

Keywords: *Occlusal Veneers, Lava Ultimate, Vita Enamic.*

Introduction

In the past two years Lava-Ultimate and VITA Enamic were introduced. Physical properties of each material as well as its advantages and disadvantages should be taken into consideration when determining which material is best for a particular tooth[(1)].

Furthermore, the concepts of CAD/CAM systems and conservative tooth preparation seem to be converging[(2)].

New composite and ceramic hybrid materials have been introduced, which can be milled at relatively thin thicknesses to accommodate conservative tooth preparations [(3)]. The CAD/CAM composite is manufactured from a restorative composite material (Z100, 3M ESPE) under optimized process conditions to obtain a high degree of cross-linking[(4)]. Thin occlusal veneers fabricated from composite resin blocks have been shown to have higher fatigue resistance than reinforced ceramics[(5)]. A study showed that the thickness of occlusal veneers made with CAD/CAM composite or resin nanoceramic can be decreased to 0.3 mm without affecting the fracture strength[(6)]. A new CAD/

CAM ceramic hybrid material has been developed by infiltration of a polymer into a porous ceramic network (Vita Enamic). The majority volume of the VITA Enamic block is made of feldspar. The remaining volume of the block is made up of resin[7].

Bond strength is obtained from the load at failure divided by the cross-sectional area of the bonded interface and is referred to as the "nominal" or "average" bond strength values.[8]

Material and Method

Tooth Preparation: Eighty extracted human maxillary molars were collected from out patient hospital of National Research Center and Hospital of Minia University. Teeth were selected so that the mean measurement of the bucco-palatal width between the teeth varied by no more than 2.5%. [9]. Standardized tooth preparations replicating a worn occlusal table were accomplished using a diamond saw (Fig.1). Using a digital caliber to measure 4mm [9] occlusal to CEJ the remaining entire coronal structure was removed perpendicular to the long axis of the tooth. Indexing notches were created on the mesial and distal finish lines with diamond rotary bur*.

Fig 1: Extracted tooth specimen mounted in acrylic base.

Factorial Design: The prepared teeth were then randomly assigned to two groups based on the two restorative materials to be tested:

I. Vita Enamic (Vident, Brea, CA). (VE)

II. 3M Lava Ultimate (3M ESPE). (LU)

Each group was divided into 2 subgroups (n=20) according to the type of preparation either conventional and represent as subgroup 1 or experimental which represent as subgroup 2. The experimental preparation will have an additional preparation feature. Within each subgroup, specimens were subdivided into two classes (n=10) based on restoration thickness (class I 0.3mm thickness) while class II 0.6 mm thickness and stand for it letter (A) & (B) respectively. All teeth were subjected to fracture resistance test.

40 of the selected teeth were randomly chosen and mounted in a custom made gypsum cast made with a centralized hole. The surveying platform of a dental surveyor is used to adjust the parallism of the custom made gypsum cast. A high speed contra angel was attached to the surveying arm with certain angle 70° to create the same finish line (bevel) for all the chosen experimental teeth and a protractor was used to determine this angel.

Scanning of the prepared samples: A standardized occlusal form was created by trimming the cervical structure from an anatomic ready made denture tooth to within 0.3 or 0.6 mm of the central fossa measured by caliber (Fig.2).

Which were positioned on the prepared tooth specimens during the ''occlusion'' scans (Fig.3) using Sirona Inlab MCX5 milling machine (5 axis).

Fig 2: Measuring the central fossa by caliber

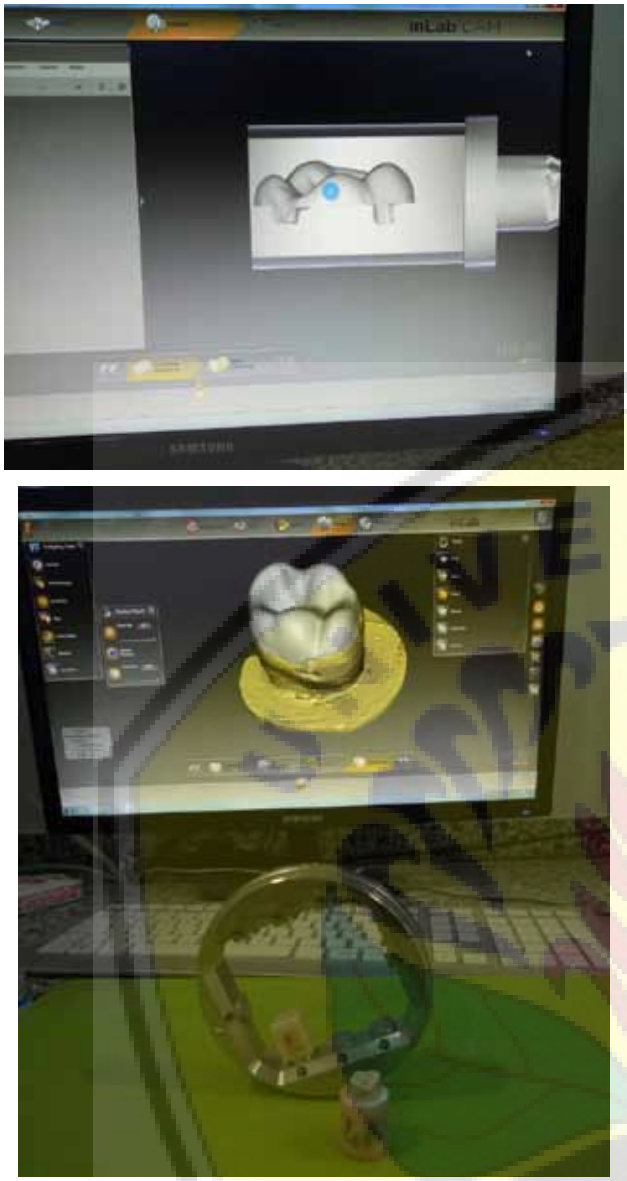

Fig 3: Scans of prepared specimen with and without occlusal form

Restoration Fabrication: Using the virtual design tools within the software. Standard groups of 0.3 mm thickness were constructed from Vita Enamic blocks (VE1A) and Lava Ultimate blocks (LU1A) with a minimal thickness of 0.3 mm, while groups of VE (VE1B) and LU (LU1B) were also designed of 0.6 mm minimal thickness. Groups of VE blocks (VE2A) and LU blocks (LU2B) were designed with modified bevel with minimal thickness of 0.3 mm and groups VE (VE2A) and LU (LU2B) were designed also with modified bevel of 0.6 mm minimal

Finishing and polishing: VE was finished and polished using VITA ENAMIC polishing set technical SofLex polishing discs using the pink polishers of the VITA ENAMIC polishing set at (7,000 – 10,000 rpm) while using water as a coolant. High-gloss polishing with the grey diamond-coated polishers of the VITA ENAMIC Polishing Set (5,000 - 8,000 rpm) with slight pressure was exerted. LU occlusal veneers were finished and polished using Sof-Lex™ discs and diamond polishing paste with silicone impregnated rubber cup.

Cementation: Before the occlusal veneers were cemented, the inner surfaces were air-abraded per manufacturer specifications using 50µm of aluminum oxide at 1.8 bar of pressure, cleaned with alcohol and dried with oil-free pressurized air. The enamel and dentin were etched with 37.5%phosphoric acid for 15sec. The prepared teeth were rinsed and blot-dried. The occlusal veneers were cemented with self-adhesive dual-cure resin cement. A uniform vertical seating pressure of 6 N was applied using a custom-fabricated seating device. All surfaces were light-polymerized for 20sec.The restored teeth were stored in distilled water at room temperature for 7 days prior to testing.

Fracture Strength Testing: All samples were individually mounted on a computer controlled materials testing machine (Model 3345; Instron Industrial Products, Norwood, MA, USA) with a load cell of 5 KN and data were recorded using computer software (Instron® Bluehill Lite Software). Fracture test was done by compressive mode of load applied occlusally using a metallic rod with round tip (5.6 mm diameter) attached to the upper movable compartment of testing machine traveling at cross-head speed of 1mm/min. with tin foil sheet in-between to achieve homogenous stress distribution. The load at failure manifested by an audible crack and confirmed by a sharp drop at load-deflection curve.

Statistical analysis: One-way analysis of variance (ANOVA) followed by Scheffe's post hoc test was used to statistically analyze the difference in failure load among the two materials groups.

After fracture, the specimens were examined under a stereomicroscope with a charge-coupled device (CCD) camera. Statistical analysis will be performed using SPSS® version 20 (Statistical Package for Social Sciences version 20, SPSS Inc, Chicago, IL, USA).

Results

Failure Mode: The mode of failure was categorized as the following:

Mode I, fracture in the restoration only; Mode II, fracture of the restoration and enamel; or Mode III, fracture of the restoration, enamel and dentin. The correlation between the fracture load and mode of failure within each material was tested using Spearman's rank-order correlation.

The fracture strengths were significantly different between the two groups (one-way ANOVA, $p < 0.002$). The LU (resin nanoceramic composite material) occlusal veneer showed significantly higher fracture strengths than the restorations made with VE (Scheffe's post hoc test, significance level 0.05).

Statistical significant difference in fracture strengths was found in occlusal veneers made VE and LU. (Fig.4) shows the three modes of failure. The numbers of specimens for each failure mode and material type are shown in Table (1).

In the 80 specimens, 58 fractured in the veneer material (Mode I) and 8 of these 58 had a complete delamination of the fractured restoration. 12 specimens fractured in the restoration and enamel (Mode II). 10 specimens fractured in the restoration, enamel and dentin (Mode III). Spearman's rank-order correlation coefficient for the bivariate set of data did not show significant correlation between fracture strength and failure modes within each material.

Table 1

Vita Enamic		
	Specimen label	**Maximum Load (N)**
1	Vita Enamic 0.3 E'out preparation	770.69
2	Vita Enamic 0.3 With	890.36
3	Vita Enamic 0.6 E'out preparation	773.57
4	Vita Enamic 0.6 With	899.55

Lava Ultimate		
	Specimen label	**Maximum Load (N)**
1	Lava Ultimate 0.3 E'out preparation	958.2
2	Lava Ultimate 0.3 With	1252.68
3	Lava Ultimate 0.6 E'out preparation	1035.67
4	Lava Ultimate 0.6 With	458.32

Fig. 4: Mode I, failure of Restoration; Mode II, failure of Restoration and Enamel; and Mode III, failure of Restoration, Enamel and Dentin.

Initially, descriptive statistics for each group results. One-way ANOVA followed by pair-wise Tukey's post-hoc tests were performed to detect significance between all groups. Student t-test was done between subgroups. Statistical analysis was performed using Graph-Pad InStat statistics software for Windows. P values ≤ 0.05 are statistically significant in all tests.

Ceramic groups as function of preparation designs and thickness after mechanical cyclic loading are summarized in table (2).

Table (2): Fracture resistance (Mean±SD) for both ceramic groups.

Variables		Preparation design			
		Conventional		Experimental	
		0.3 mm	0.6 mm	0.3 mm	0.6 mm
Ceramic group	Vita Enamic	770.69±36.79	773.57±36.93	890.36±42.51	899.55±42.94
	Lava Ultimate	958.2±45.75	1035.67±49.45	1252.68±59.81	458.32±21.88
t-test	P value	0.0006*	<0.0001*	<0.0001*	<0.0001*

*; significant (p<0.05) ns; non-significant (p>0.05)

Discussion

Preservation of tooth structure is a driving force in restorative dentistry. It is clearly beneficial to keep the pulp alive and prevent endodontic treatment and the need for posts and cores. [9]

As quantified by Edelhoff [2] preparations with deep shoulders and chamfers, as required for complete coverage crowns have been associated with an increase in microleakage and pulpal complications comparing to bonded restorations.

Partial coverage preparations with reduced macro retentive geometry have been reported to remove half the amount of tooth structure compared to a complete coverage. As a result, their range of indications has been increased, including treatment of advanced erosion and stabilization of teeth with cracked tooth syndrome.[10]

The benefits of decreasing retentive features of tooth preparations could be increased by the translational application of principles used in treatment with anterior porcelain laminate veneers, hence the proposal for posterior "occlusal veneers".[11]

Molars of comparable crown size and root dimensions were used, allowing similar dimensions of crowns constructed with CAD/CAM technology and a similar clinical modulus of elasticity.[12]

For samples standardization, a bio generic reference mode in the Cerec software 4.3.1 was used, so that each artificial crown is designed and milled as an exact replica of the unprepared anatomy.

Several factors influence the fracture resistance of all-ceramic restorations, such as microstructure and fatigue of the ceramic material, fabrication technique, the final preparation design and the luting method. [10-12] Tooth preparation was performed according to preparation guidelines stated in the literature. [8]

To imitate rehabilitation in case of severe occlusal abrasion the preparation design was chosen within dentin with a finish line within enamel. [8] Finish line design was a straight beveled finish line to evaluate a possible influence of the marginal preparation design on the fracture resistance.

CAD/CAM technology was chosen due to its ability to control thickness and anatomy of restorations during the fabrication process. It also allowed the standardization of the internal fit of the restoration as well as the mechanical properties of the restorative materials.[6, 9]

In complex multilayered restorations, such as cemented ceramic restorations, several factors contribute to the mechanical behavior of the restoration/tooth system. The intrinsic strength of each component of the system (i.e., tooth, adhesive system, luting cement layer and restoration), the thickness of the restorative material, the ratios of elastic moduli between the restoration material, the luting cement and dentin and finally the quality of the adhesive interface between these layers in terms of bond strength and presence of micro or nano-leakage are all factors that play a role in the behavior of such restorations.[12]

Vita Enamic has resin infiltrated into a sintered ceramic structure. The sintered ceramic structure is porous with a composition similar to feldspar ceramic enriched with aluminum oxide. In our study, neither type of material design ensured superior fracture properties.[13]

LU CAD/CAM Restorative was used because of their modulus of elasticity (12.77 GPa) [13] similar to

that of dentin (approximately 18.5GPa)[14] and they have short laboratory steps. Fatigue resistance was chosen in this study as they are among the critical factors that determine the success and longevity of a restoration [8].

Despite of their many advantages ceramics are brittle materials. Subcritical crack propagation can lead to catastrophic failure [15]. However, it can only show the strength of a restoration immediately after bonding and most likely it shows values of fracture resistance that are not indicative of the long-term success of the restoration. [13] All ceramic restorations can be subjected to fatigue testing from 10,000 cycles to 1,200,000 cycles.[7]

The fact that as the bevel finish line approaches parallelism with the path of insertion of the restoration, the thickness of the space between the bevel finish line and the restoration approaches to minimum value, also bevel finish line helps to reduce the inherent defects in the cementation allowing for better escape of excess cement.

The occlusal veneers made with the novel ceramic hybrid were lower in fracture strength under vertical loading with a resin nanoceramic composite material. The LU is a highly cross-linked particle-reinforced composite, while the VE has resin infiltrated into a sintered ceramic structure [8, 16, 17]. In our study, neither type of material design ensured superior fracture properties.

Within the limitations of this study, the following conclusions were found:

1. Occlusal veneers were found to be a successful mean of restoring erosive posterior teeth.
2. All tested occlusal veneers designs proved to withstand normal and parafunctional masticatory forces.

Ethical Clearance: Study was done in vitro study on samples.

Source of Funding: Self funding

Conflict of Interest: Nil (no conflict of interest)

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Coping Strategy in Differentianting Levels of Post-Traumatic Growth on Housewives Living With Breast Cancer

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Abstract

Background: The psychological state of a person will be affected when they are diagnosed with cancer and this condition will actually worsen the physical condition of the patient. However, many breast cancer sufferers are able to face this stressful situation positively and they experience post-traumatic growth. They did a series of coping strategy when they had cancer and some of these strategies were able to influence their post-traumatic growth.

Objective: The current study aims to investigate and to understand how different coping strategy can affect the level of post-traumatic growth of housewives with cancer.

Materials and Method: This study used a descriptive-explorative qualitative approach with eight women with breast cancer completed surveys using the Posttraumatic Growth Inventory (Tedeschi & Calhoun). The coping strategy was obtained using an interview.

Results: The results of the present study indicate that sufferers performed different coping strategies and this affects their level of post-traumatic growth. Respondents with high post-traumatic growth exercise a problem-focused coping i.e. positive reappraisal and emotion-focused coping strategy, i.e. seeking social support when they first learned about the condition of their disease. Respondents who had low post-traumatic growth, on the other hand, did emotional-focused coping strategies, which is avoidance and distancing when they first learned about the condition of their illness. This study also found several factors that influence patients' strategy.

Conclusions: There are differences in the Coping pattern Strategy used by housewives with breast cancer in terms of differences in levels of post-traumatic growth it has. The pattern of coping strategy that is carried out for the first time by housewives with breast cancer could lead them to be in a variety of post-traumatic growth conditions.

Keywords: *Coping Strategy, Post-Traumatic Growth, Breast Cancer.*

Introduction

Cancer is the leading cause of death worldwide in both developed and developing countries(1). However, the burden of cancer is more prevalent in developing countries(2). Research conducted in Malaysian's urban areas on breast cancer patients showed that patients experienced anxiety as much as 31.7% and depression as much as 22.0%. Patients who did not experience adequate financial support usually tend to experience depression(3). Shont explained that a person would automatically experience shock when he found out he

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was suffering from a serious health problem, such as when someone diagnosed with breast cancer[4]. This condition is then called as a stressful event[5].

The current study aims to investigate and to understand how different coping strategy can affect the level of post-traumatic growth of housewives with cancer.

Materials and Method

This study used qualitative method with descriptive-explorative design. The design was considered in accordance with this study which aims not only to describe the form of coping strategy used by housewives with breast cancer with different levels of post-traumatic growth, but also to explore what factors cause these differences.

There aretwo types of analysis unit used, those arecoping strategy and post-traumatic growth. a) Post-Traumatic Growth is a condition where housewives with breast cancer become more appreciative of the life lived, more recognizes one's ability to be more familiar with people in their environment, more diligent in worshiping and other religious activities and living their life in new ways, after knowing their status of breast cancer is obtained using the Post-Traumatic Growth Scale from Tedeschi and Calhoun [6]. Coping strategy is an effort made by housewives with breast cancer after being diagnosed with breast cancer in order to reduce the pressure experienced [7].

The population in this study was housewives with breast cancer who underwent treatment at the Hasanuddin University Teaching Hospital Makassar. The sample was selected using a purposive sampling technique with certain considerations. The characteristics of the sample are as follows: 1) Residing in the city of Makassar, 2) Following treatment at Hasanuddin University Teaching Hospital Makassar, 3) Willing to be interviewed.

The data in this study were collected through scaling and interviewing the subject. First, the researcher measured the levels of post-traumatic growth by using the Post Traumatic Growth Inventory (PTGI) from Tedeschi and Calhoun [6]. This scale has previously been translated into Indonesian and by testing the content validity of three experts and the readability test. After obtaining post-traumatic growth level data, interviews then were conducted on the subject in the form of semi-structured. In this interview, the researcher prepared an interview guide based on the Coping Strategy theory of Lazarus and Folkman [8].

Results

This study involved 8 respondents of housewives with breast cancer, two people aged 31 years old, two people aged 35 years old, two people aged 36 years old, one person aged 38 years old and one person aged 39 years old.

Based on the background of their tribes, it can be seen that the respondents of this study consisted of 4 people from Bugis tribe and 4 people from Makassar tribe. In terms oftheir religious profiles, all respondents embraced Islam. As for the first year diagnosed with breast cancer as many as two respondents experienced it in 2007, while 6 others each experienced it in 2008, 2010, 2011, 2013, 2016 and 2018. For more details, an explanation regarding the personal profiles of all respondents can be seen in table 1.

Table 1: General Characteristics of Respondents

No	Name	Age	Occupation	Religion	Tribe	Year Diagnosed
1	VR	31	Housewife	Islam	Makassar	2007
2	ER	31	Housewife	Islam	Makassar	2007
3	YS	35	Housewife	Islam	Makassar	2008
4	PR	35	Housewife	Islam	Makassar	2010
5	LM	36	Housewife	Islam	Bugis	2011
6	UM	36	Housewife	Islam	Bugis	2013
7	AR	38	Housewife	Islam	Bugis	2016
8	YL	39	Housewife	Islam	Bugis	2018

This study required groups of respondents with varying levels of post-traumatic growth through purposive sampling technique using the assistance of the scale of post-traumatic growth from Tadeschi and Calhoun given to each respondent. From this, the categories of High (H) and Low (L) with N = 2 were obtained for each of these categories, then further interviews will be carried out in order to collect qualitative data in accordance with the formulation of the problems of this study. So that, for the next discussion, the sample in this qualitative study were 4 people. More details can be seen in table 2

Table 2: Charateristics of Respondents based on Post-Traumatic Growth Levels

Category	Code of Respondent	Score of Post Traumatic Growth
High	HA	105
	HB	98
Low	LA	63
	LB	67

Results Description of Respondents HA and HB

Coming from a family background of the police, she explained that since childhood she had been taught to be a strong and not whiny person [9]. This can be seen from the statement as follows:

"Perhaps, basically if there is a problem, I will not prolong it because I am used to it since my childhood, I am used to being trained from my previous family and my father, my mother had died when I was child…" (153-155, HA)

"It might be because I am from police family, my father is policeman, my elder brothers were policemen, the three are policemen, so that perhaps I am educated not to be whiny…" (192-194, HA)

When HA was diagnosed with breast cancer, trying to do self control,it madeher did not get panic when she got diagnosed. In fact, she tried to find a drug that must be consumed at that time. The effort she made was then called planful problem solving [10, 22], as stated in the following:

"I am not surprised, just let it flow (while laughing). He was surprised, maybe he waited how my response, I rampaged or cried but I did nothing," just response like that'. "so, how about it, Sir?" (1011-1014 HB)

".....oh yes, Sir, I still call you with Sir …, yes, Sir. So, what should I do next for the treatment?" (62-64 HB).

HA explained what she understood at the time to her biological family, she also tried to give understanding to her family so there would be no misunderstanding about her condition at that time. Even this can be called an attempt to seek social support coping which is one type of emotional focused coping where individuals seek social support for themselves who are in a stressful condition so as to relieve the burden they have [11], as stated in the following HA:

"At what time… I beg for permission, uh, with my family, with my parents-in-law especially, what information I have received I also tell them so they know too….."*(173-175, HA)*

"I ask with my friends here to give the explanation with my family, please to tell them that this disease is not contagious," (368-371, HA).

Results Description of Respondent LA and LB: When LB was first diagnosed, she felt very sad, disappointed in herself and did avoidance and anger at God for the fate she received from cancer [12, 18]. But she cannot do anything. This can be seen from the following quote:

"*At first I felt it, I must be angry with God, why did God give my fate this disease....." (331-332 LB)"*

She was afraid to undergo treatment that must be received for life, making her prefer to use efforts to distance by thinking first or in other words delaying treatment [13, 19, 21]. This can be seen in the following quote:

"At the time, I have had the disease, I was advised to take medicine, or chemotherapy, but I had not done chemotherapy yet. Yeah because I heard it has a lot of the side effects, so I was scared."(1024-1026 LA).

Discussion

Based on the results that have been obtained by comparing groups of high and low levels of post-traumatic growth, then it is known that groups of respondents who are at a high level of post-traumatic growth are more likely to develop problem focused coping efforts. In addition, high groups are also known to develop emotional-focused coping efforts in the form of seeking social support and positive reappraisal. These findings

are in line with the research conducted by Ramos and Leal [14]who stated that the problem focused coping and emotional-focused coping strategies both have positive correlations to the high levels of post-traumatic growth a person has. It is also found that coping strategies are positive, in this case positive reappraisal coping and seeking social suppport coping are also significant predictors in influencing post-traumatic growth levels.

In the high group, it can also be seen that the two respondents from the high group were kind to God with the fate given to them, because they had the presumption that they were being given time by God to better improve themselves in order to become a better person. The strategy carried out by these high respondent groups can be categorized as a form of religious coping in the form of a wise assessment of God. Research conducted by Chan and Rhodes [15] found the contribution of religious coping in order to increase the level of a person's post-Traumatic Growth. So it is not surprising to see HA and HB at high levels of post-traumatic growth.

Avoidance strategies that tend to be carried out by groups of respondents with low levels of post-traumatic growth are supported by research from Sahin, Z. A et al (16)who stated that the form of coping strategy that is highly correlated with low levels of Post-Traumatic Growth is a form of avoidance. Avoidance Coping as a form of someone's rejection of her condition is indeed inversely proportional to the concept of Post-Traumatic Growth.

This is seen in what happened to the Low Post Traumatic Growth group. It is known that the respondents were very closed to the status of the disease because they were worried that they would get rejection from family and society [17, 20]. When it is compared to the respondents from the high Post-Traumatic group, there was no apparent internalization of the cancer stigma in them. Even though both of them had felt discrimination over their status as cancer sufferers, they did not internalize this matter and instead preferred to deny the stigma circulating in the society with confidence to appear in front of many people to socialize it.

Limitations: Respondents for this study, although in terms of population in large numbers, but many breast cancer survivors are not willing to conduct in-depth interviews due to the status of their illness.Therefore, there are not many respondents involved. This study used a qualitative approach, so that it cannot be known about the correlation or influence of each form of coping strategy or the factors that influence it to the levels of post-traumatic growth and aspects of PTG on housewives with breast cancer.

Conclusions

There are differences in the Coping pattern Strategy used by housewives with breast cancer in terms of differences in levels of post-traumatic growth it has. The pattern of coping strategy that is carried out for the first time by housewives with breast cancer could lead themto be in a variety of post-traumatic growth conditions.

The group of housewives with breast cancer that apply the problem focused coping effort for the first time in facing her condition as an individual diagnosed with breast cancer was found to be better able to deliver it to a high post-traumatic growth condition. In addition, the form of positive reappraisal coping and seeking social support coping that has been developed by housewives with breast cancer can lead her to make peace with herself so that she has high post-traumatic growth after being diagnosed with breast cancer.

The group of housewives with breast cancer are more likely to apply emotional focused coping strategies, especially in the form of avoidance and distancing coping when they first find out their condition as cancer sufferers, it seems more difficult to deliver themselves to post-traumatic growth conditions, so they are still at post Low -traumatic growth.

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Ethical Clearance: The study was reviewed by and ethical clearance obtained from, the Faculty of Public Health, Hasanuddin University Research Ethics Committee (Reference Number 3596/UN4.14.8/ TP.02.02/2019). All respondents gave their informed consent before their inclusion in the study.

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Prevalence and Factors Associated with Waterpipe Smoking among Private University Students in Erbil City

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Abstract

Background and Aims: Waterpipe tobacco smoking is increasing in popularity and becoming more prevalent among university students in the last decade. The main objective of this study was to find out the prevalence of waterpipe smoking among students of two private universities. Next to find out the association between waterpipe smoking with various socio-demographic characteristics of the study sample, and to detect a possible association of waterpipe smoking with various risk factors.

Method: A cross-sectional study was carried out from the 1st of Jan. 2016 to the 31st of Dec. 2016, involving 2000 students from two private universities(Ishik and Cihan) in Erbil city- Kurdistan Region, selected by multistage cluster sampling technique. A modified self-administered questionnaire was used for the collection of information. The statistical package for social sciences (SPSS) version 21 was used for data entry and analysis.

Results: The overall prevalence of ever waterpipe smoking and current waterpipe smoking was 38.9% and 26.9% respectively. The prevalence of current waterpipe smoking was significantly higher among males (42.3%) than females (8.6%), and 56.0% of smokers started smoking waterpipe at age more than 18 years old. Residency, marital status, house ownership, and monthly family income had no significant effect on the prevalence of waterpipe smoking. Binary logistic regression analysis revealed that male gender, parents smoking, siblings smoking, friend smoking waterpipe was positively associated with waterpipe smoking.

Conclusion: The prevalence of waterpipe smoking was relatively high among university students, especially among male gender. The prevalence of waterpipe smoking is higher when a family member or a friend is a waterpipe smoker; the rate is also increasing with the presence of cigarette smoking habit.

Introduction

Tobacco smoking continues to be the number one preventable cause of morbidity and mortality, contributing to over five million deaths every year[1].The World Health Organization (WHO) estimates that by the year 2030, more than 8 million deaths will be attributable to tobacco smoking, with the added burden of tobacco-specific morbidities targeting the cardiovascular and pulmonary systems. In the last two decades, the global epidemiological gradient of tobacco smoking began to change with new and alarming trends in waterpipe tobacco smoking[2].

Waterpipe smoking is a growing phenomenon associated with substantial toxicant exposure, numerous health risks, and development of dependence in a considerable proportion of users[3].Worldwide data about waterpipe use were collected, and the trends were quite alarming[4],especially in the Eastern Mediterranean Region (which includes Middle Eastern and North African countries) which has the highest prevalence of waterpipe use in the world[5].

In the Middle East, waterpipe smoking has quickly replaced cigarettes as the most popular method of tobacco use among youth, and in several other parts of

the world, it is becoming second only to cigarettes. A multi-country study involving representative samples of 13-15years old school children in several countries in the Arabian Peninsula (Bahrain, Oman, Qatar, United Arab Emirates, Kuwait, Saudi Arabia, and Yemen) showed a prevalence of waterpipe smoking from 9% to 15%[4].

According to the researchers' observation, waterpipe tobacco smoking is now increasing in popularity especially among young adults in Iraq including the Kurdistan Region. This spread could be related to limited knowledge of the negative health effects of waterpipe smoking, and to a large number of coffee shops and restaurants serving waterpipe. Furthermore, there is little published data about this subject in the Kurdistan region. This provided the impetus for the researchers to carry out a study on the prevalence, association between socio-demographic characteristics and other epidemiological variables with waterpipe smoking and awareness about waterpipe smoking and its effect on the health among private university (Ishik and Cihan) students in Erbil city.

Method

Design and sampling technique: A descriptive cross-sectional study was carried out from the 12th of January 2016 to the 12th of April 2016, involving two private university students of Iraqi nationality.

Out of a total of six private universities in Erbil city[6],two universities (Ishic and Cihan universities) had been chosen randomly by using simple random sampling method, for theacademic year 2015-2016. The total number of students in Ishikand Cihan universities was 2635 and 6339 respectively.

The EPI info (version 7) computer program (a free program created by the Centers for Disease Control, USA) was used to calculate the sample size. The following information was entered into the program:

Expected population size: 10000, the estimated prevalence of waterpipe: 20%[7], absoluteprecisions: 2.5%, Confidence level: 95%, Design effect: 2, accordingly, the estimated sample size was 1790 students; however, 2000 students have been included in the study, considering nonresponse rate. Cluster sampling technique was used to select the students. The number of students of each sample (cluster) was proportional to the size of the total number of students of each faculty. One to two classes from each department were randomly selected and invited to participatein the study in order to collect are presentative sample of students.

Instrumentation: Data were collected by using a modified, self-administered questionnaire that was designed by the researchers[8, 9]. The questionnaire was translated into Kurdish and Arabic languages by the researchers, knowing that the mother tongue of two of the researchers is Arabic, and it was Kurdish for the other two. It is worth to mention that the teaching language of the medical schools in Iraq is English and all the researchers had studied in the Iraqi universities. The questionnaire was composed of three parts. The first part included socio-demographic characteristics of the participants, such as gender, marital status, living place, residency, socio-economic status, etc….

The second part included other epidemiological variables that are associated with waterpipe smoking and pattern of smoking; and the third part included questions related to knowledge and awareness about waterpipe smoking and its effect on the health (composed of 15 questions which were answered by yes, no or do not know). The content validity of the questionnaire was assessed by a group of experts in the community medicine department at the college of medicine / Hawler Medical University.

At each class, the participants were invited to complete the questionnaire at the end of the session after explaining the purpose of the study for them. Permission was obtained from the participants to take 20-25 minutes to complete the questionnaire. Participants were also informed not to discuss the questions with each other. If they had any queries, they were encouraged to ask the researcher.

Anyone who had ever tried waterpipe, regardless of the current smoking status, was defined as 'ever waterpipe smoker'[10]. Current waterpipe smoker was defined as anyone who smokes waterpipe currently or during the last 30 days, 'Occasional smokers' were defined as those using waterpipe less than or equal to once a month, and 'frequent smokers'were defined as those using waterpipe more than once a month[10, 11].

The crowding index was measured by dividing the number of persons in the family by number of rooms, except the kitchen and bathroom.

A 15 units scoring system (scale) was used to assess the level of knowledge. Then the 15 units' scale was

divided into three equal categories as follows: 0-5 as poor knowledge, 6-10 as moderate knowledge and 11-15 as good knowledge.

Prior to the start of the (main) study, 22 students of the preliminary stage of Ishik University were included in a pilot study in order to finalize the questionnaire and to assess its clarity, in addition to identifying any problem in the process of data collection, and calculating the time needed. Those students were not included in the main study.

Data Analysis: The Statistical Package for Social Sciences (SPSS) version 21 was used for data entry and data analysis. Both descriptive and analytic approaches were used for analysis. Frequencies (and proportions) were calculated in order to summarize the categorical variables, and the means± SDs were calculated in order to summarize continuous variables. Chi-square test was used to determine the association between categorical variables. Factors found to be significantly associated (by Chi-square test) with waterpipe smoking had been entered into a binary logistic regression model in order to show the independent effect of each factor on the waterpipe smoking. A p-value of ≤ 0.05 was regarded as statistically significant.

Results

Socio-demographic characteristics of participants: Two thousand students participated in the study, and none of them refused to participate, but because of the extensive missing of data, 20 questionnaires had been discarded. Accordingly, the analysis was done on 1980 questionnaires.

The mean age ± SD of the study sample was 23.19 ± 4.5 years. Nearly half (45.7%) of the sample aged 20-24 years, 27.4% aged less than 20 years, and only 3.3% aged ≥35 years (Table 1). The table shows that 54.2% of the sample were males, and the male: female ratio was 1.18:1. It shows also that 84.4% of participants were singles, 87.2% were Kurds,and 87.1% were living at home with their parents while 12.9% were living in the dormitory. Regarding the monthly family income, 58% mentioned that it was enough. Details of socio-demographic characteristics are shown in Table 1.

Prevalence of waterpipe smoking by socio-demographic characteristics of participants: Table 2 shows that the overall prevalence of current waterpipe smoking among the study sample was 26.9% (532 out of 1980), while the prevalence rate of ever waterpipe smoking was 38.9% (772 out of 1980). The prevalence of current waterpipe smoking was significantly four times higher among males 42.3% than females 8.6% ($p < 0.001$). Regarding the age groups,the prevalence of waterpipe smoking was highest among students aged 25-29 years old and lowest among those aged more than 35 years ($P<0.001$).

The table shows that the prevalence of waterpipe smoking was slightly higher among those living in the dormitory (28.9%) than those living in the parental home (26.6%), with no significant association($P=0.431$). This study also revealed no significant association between waterpipe smoking and several factors like residency ($P=0.990$), marital status ($P=0.886$),ethnicity ($P=0.533$), crowding index ($P=0.511$) and monthly family income ($P=0.312$) (Table 2).

Pattern and behavior of waterpipe smoking: Table 3 shows that more than half of the smokers (56.0%) started smoking waterpipe at age > 18 years. The majority of the smokers (90.6%) had been smoking waterpipe for years while 1.5% of them had been smoking for weeks. The frequent waterpipe smokers represent 81.2%of the sample, and about 56.9%of them smoked weekly and only 18.8% of the smokers smoked occasionally. More than three-quarters of them were smoking with their friends and 4.7%used to smoke alone. 69.4% of them smoke at cafés and 7.1% of them smoke at home. More than half of the participants (58.9%) thought that they were smoking waterpipe just for pleasure and 6.2% of them thought that the cause of smoking is that it is fashionable while the cause of smoking waterpipe in 4.1% of smokers was an imitation.

Association between certain risk factors and current waterpipe smoking: Table 4 shows that there is a statistically significant association between individuals smokingwaterpipe with a smoking history of father, mother, sibling, and friends. A statistically significant association was also found between waterpipe smoking and cigarette smoking (currently or ex-smoker) ($p < 0.001$).

Association between knowledge score with waterpipe smoking

Table 5 presents the knowledge levels of participants toward the harmful effects of waterpipe on human health. It shows that 42.7% of the non-smokers had moderate knowledge, and 34.4% had good knowledge, compared

with 39.9% and 31.0% respectively among the current smokers (p = 0.013).

Association between knowledge score with gender: Table 6 shows no significant association between gender and the level of knowledge (p = 0.484).

Factors related to waterpipe smoking by using binary logistic regression analyses: Binary logistic regression analysis of variables associated with waterpipe smoking revealed that male gender, age (< 35 years), a smoking father, a smoking mother,smoking siblings, friends smoking waterpipe, current smoking of cigarettes, ex-smoking, and poor knowledge, are regarded as predictive factors of waterpipe smoking (Table 7).

Table 1. Socio-demographic characteristics of participants.

Variable	No.	(%)
Gender		
Male	1074	(54.2)
Female	906	(45.8)
Age (years)		
<20	543	(27.4)
20-24	904	(45.7)
25-29	351	(17.7)
30-34	117	(5.9)
≥ 35	65	(3.3)
Place of living		
Home with parents	1724	(87.1)
Dormitory	256	(12.9)
Residency		
Urban	1597	(80.7)
Rural	383	(19.3)
Marital status		
Single	1671	(84.4)
Ever married	309	(15.6)
Ethnicity		
Kurd	1727	(87.2)
Arab	120	(6.0)
Turkman	52	(2.6)
Assyrian	74	(3.8)
Others	7	(0.4)
Homeownership		
Owned	1775	(89.6)
Rented	205	(10.4)
Crowding index		
< 2	1735	(87.7)
2-2.9	146	(7.3)
≥ 3	99	(5.0)
Monthly family income		
Not enough	206	(10.4)
Marginally enough	443	(22.4)
Enough	1147	(57.9)
More than enough	184	(9.3)
Total	1980	(100.0)

Table 2. Prevalence of waterpipe smoking by the socio-demographic characteristic of the participants.

	N	Prevalence of waterpipe smoking		p
		No.	%	
Gender				
Male	1074	454	(42.3)	
Female	906	78	(8.6)	<0.001
Age (years)				
<20	543	121	(22.3)	
20-24	904	260	(28.8)	
25-29	351	115	(32.8)	
30-34	117	25	(21.4)	
≥ 35	65	11	(16.9)	<0.001
Place of living				
Home with parents	1724	458	(26.6)	
Dormitory	256	74	(28.9)	0.431

	N	Prevalence of waterpipe smoking		p
		No.	%	
Residency				
Urban	1597	429	(26.9)	
Rural	383	103	(26.9)	0.990
Marital status				
Single	1671	450	(26.9)	
Ever married	309	82	(26.5)	0.886
Ethnicity				
Kurd	1727	463	(26.8)	
Arab	120	27	(22.5)	
Turkman	52	16	(30.8)	
Assyrian	74	23	(31.1)	
Others	7	3	(42.2)	0.533
Homeownership				
Owned	1775	477	(26.9)	
Rented	205	55	(26.8)	0.989
Crowding index				
< 2	1735	462	(26.6)	
2-2.9	146	45	(30.8)	
≥ 3	99	25	(25.3)	0.511
Monthly family income				
Not enough	206	50	(24.3)	
Marginally enough	443	122	(27.5)	
Enough	1147	301	(26.2)	
More than enough	184	59	(32.1)	0.312
Total	1980	532	(26.9%)	

Table 3: Pattern and behavior of waterpipe smoking

Variable	No.	(%)
Age of starting waterpipe smoking (years)		
<16	106	(19.9)
16-18	128	(24.1)
>18	298	(56.0)
Duration of waterpipe smoking		
Days	2	(0.4)
Weeks	8	(1.5)
Months	40	(7.5)
Years	482	(90.6)
The pattern of current waterpipe smoking		
- Frequent WP smoking	432	(81.2)
Daily	140	(32.4)
Weekly	246	(56.9)
Monthly	46	(10.7)
- Occasional WP smoking	100	(18.8)

Variable	No.	(%)
With whom smokes waterpipe		
Alone	25	(4.7)
Friends	413	(77.7)
Family members	38	(7.1)
All the above	56	(10.5)
Places of waterpipe smoking		
At home	38	(7.1)
At the cafe	369	(69.4)
Others*	54	(10.2)
All the above	71	(13.3)
Reasons for waterpipe smoking		
Pleasure	313	(58.9)
Fashionable	33	(6.2)
Imitation	22	(4.1)
Alleviation of stress	62	(11.7)
Other causes	102	(19.1)
Total	**532**	**(100.0)**

*In picnics and farms.

Table 4. Association between certain risk factors and current waterpipe smoking.

		Current waterpipe smoking		
	N = 1980	**No.**	**(%)**	**p**
Father smoking WP				
Yes	90	44	(48.9)	
No	1890	488	(25.8)	< 0.001
Mother smoking WP				
Yes	36	21	(58.3)	
No	1944	511	(26.3)	< 0.001
Sibling smoking WP				
Yes	337	143	(42.4)	
No	1643	389	(23.7)	< 0.001
Friends smoking WP				
Yes	1146	495	(43.2)	
No	834	37	(4.4)	< 0.001
Smoking cigarettes				
Current smoker	365	238	(65.2)	
Ex-smoker	233	93	(39.9)	
Non-smoker	1382	201	(14.5)	< 0.001

Table 5: Association between knowledge score and waterpipe smoking.

Knowledge score	Current waterpipe Smokers		Non-waterpipe Smokers		Total		P
	No.	**(%)**	**No.**	**(%)**	**No.**	**(%)**	
Poor	155	(29.1)	329	(22.7)	484	(24.4)	
Moderate	212	(39.9)	619	(42.7)	831	(42.0)	0.013
Good	165	(31.0)	500	(34.4)	665	(33.6)	
Total	**532**	**(100)**	**1448**	**(100)**	**1980**	**(100.0)**	

Table 6:Association between knowledge score with gender

Knowledge score	Male		Female		Total		P
	No.	(%)	No.	(%)	No.	(%)	
Poor	274	(25.5)	210	(23.2)	484	(24.4)	0.484
Moderate	444	(41.4)	387	(42.7)	831	(42.0)	
Good	356	(33.1)	309	(34.1)	665	(33.6)	
Total	**1074**	**(100.0)**	**906**	**(100.0)**	**1980**	**(100.0)**	

Table 7: Factors related to waterpipe smoking by using binary logistic regression analysis.

Variable	B	p	OR	95% C.I.for OR	
				Lower	Upper
Male gender	2.288	<0.001	9.852	6.767	14.343
Age(years)					
< 20	1.434	0.006	4.196	1.503	11.718
20-24	1.567	0.002	4.794	1.746	13.158
25-29	1.847	<0.001	6.343	2.262	17.791
30-34	1.161	0.049	3.193	1.006	10.138
≥ 35 (reference)					
Father smoking WP	1.329	<0.001	3.776	1.908	7.473
Mother smoking WP	1.255	0.017	3.507	1.248	9.852
Siblings smoking WP	1.566	<0.001	4.787	3.268	7.011
Friends smoking WP	2.029	<0.001	7.604	4.819	11.998
Cigarette smoking habit					
Current cigarette smoker	1.440	<0.001	4.221	3.100	5.748
Ex cigarette smoker	1.046	<0.001	2.846	2.030	3.989
Non-smoker (reference)					
Knowledge score					
-Poor knowledge	0.464	0.014	1.590	1.098	2.301
- Moderate knowledge	0.034	0.846	1.035	0.734	1.458
High score (reference)					

Discussion

This is the first study that had been carried out among university students in Erbil city, to find out the prevalence of waterpipe smoking and to study the factors that are associated with smoking.

Prevalence of waterpipe smoking: The current study revealed that the overall prevalence of ever waterpipe smoking and the prevalence of current waterpipe smoking among both private universities were 38.9% and 26.9% respectively. The finding of the current prevalence of waterpipe smoking is nearly similar to waterpipe smoking prevalence among university students in Lebanon (28%) [7], and to reported prevalence in monitoring the future (MTF) study in the US (25.7%)[12]. While less than that reported in studies done in Turkey[13] and Iran[10] (32.7% and 40.3% respectively).

On the other hand, the prevalence rate of waterpipe smoking in our study is higher than that reported in a study done among Malaysian university students(20%)[8], and higher than what was reported in the North Carolinastudy of the USA (17%)[14].

This high prevalence of waterpipe smoking in our study might be due to the sudden increase in numbers of cafés serving waterpipe in Erbil city and to the presence of a large number of tourists, refugees, and foreigners in our region coming from countries that waterpipe

smoking is already an established cultural habit.

Association between socio-demographic characteristics and waterpipesmoking

Gender and waterpipe smoking: The prevalence of waterpipe smoking was significantly higher among males (42.3%) than females (8.6%). This finding is in agreement with studies done in Turkey[13] (41.6% in male students versus 20.2% in female students) and in Iran[15](28.7% in males versus 11.5% in females). On the other hand, a study done in Jordan showed a higher prevalence rate of waterpipe smoking among females(88.6%) than among males (36.6%)[9]. This finding is due to the fact that in most of the Eastern Mediterranean countries, waterpipe has been used traditionally for centuries, and among women, it is accepted as a less shameful event compared to cigarette smoking[13, 16].

While in Kurdistan region this difference in gender might be due to culture,and religion where boys have more freedom than girls to spend their time outside homes and to go to cafés, hence became more liable to be affected by this social behavior.

Age and waterpipe smoking: The study showed that the highest prevalence of waterpipe smoking was in the age group 25-29 years. Similarly, the prevalence of waterpipe smoking was highest among this age group of students at Mount Kenya University, Kigali city Rwanda[17]. In the USA, waterpipe smoking peaks among 19-21 years old compared to other age groups[18,19]. This might be due to the effect of the social culture of neighboring countries,but the highest prevalence in our study was in (25-29) age group, this might be to in this ages youth were not employed by governorate after completing studying in universities and most of them spending their time by going to cafes accompanied their friends.

Socio-economic state/monthly family income and waterpipe smoking: The prevalence of waterpipe smoking has no significant association with family income, although it was higher among the high-income families. This is in agreement with a study done in Turkey in which the economic status of the family has no significant effect on the prevalence rate of waterpipe smoking[13]. In contrast to studies done in Pakistan[20], Great Britain[5] and USA[21], the highest percentage of waterpipe smoking occurred among the high socioeconomic status persons. In Erbil city, there is a big discrepancy in the cost of a waterpipe session, which is cheap if smoked at home, and costly if smoked in a prestigious café. This might explain the mentioned non-significant association.

Residency and waterpipe smoking: The study revealed that residency (living in the home vs. dormitory/ residing in the ruralvs. urban area)was not associated with the prevalence of waterpipe smoking. This is in agreement with a study done in Turkey that residencies of students have no significant effect on the prevalence rate[13].

Behaviors of waterpipe smoking

Age of starting and duration of waterpipe smoking: The study revealed that most of the smokers had been smoking for years. Also the study showed that more than half of the smokers started smoking waterpipe at age more than 18 years old while in Iran,a study revealed thatthe smokers have started waterpipe smoking in their mid-teens[10], this might be due to that our youth after the age of 18 years become more independent in making decisions about their social behaviors that might be affected by mixing with friends in the universities and cafes inside Iraq, or affected by the culture of the nearby countries where smoking waterpipe is a normal habit.

The pattern of waterpipe smoking: The study showed that 32.4% of participants were daily waterpipe smokers and 56.9% were weekly smokers. In contrast to a study done in Bahrain, in which 61% of the participants smoked waterpipe daily, with a further 29% using it weekly[22]. Also, the study revealed that about half of the weekly smokers used to smoke waterpipe once / week which is slightly more than that reported in Jordan where 46.7% smoked waterpipe once/week[9], but much more than that of a Turkey study which shows that only 18.5% smoked once/week[13]. Also,the study revealed that 81.2% were frequent smokers and 18.8% were occasional smokers. In Iran, 44.7% were frequent smokers and 55.3% were occasional smokers[10].

With whom smokes waterpipe: The study revealed that more than two thirds(77.7%) of smokers smoked waterpipe with their friends, this is in agreement with a study done in Turkey in which most of the students were smoking waterpipe with their friends, and collective use was common[13]. Also in other studies,many waterpipe smokers practice the habit in the company of friends and family and treat it as a central element of social and family gatherings[23]. The reason behind that might be attributed to the fact that the new smokers are affected by their friends who had been already smoking a waterpipe.

Effect of family members and friends on initiating waterpipe smoking: The study showed that there was a significant relationship between the effect of family members and friends on smoking waterpipe. The presence of a family member who smokes waterpipe increases the probability of smoking by 3.9 times, and the presence of a friend who smokes waterpipe increases the probability by 7.6 times. In Turkey, this value was found to be approximately five times for family members and three times for friends[20],and also in a study performed in the USA, it was found that the presence of a family member smoking waterpipe increases the smoking probability in other individuals by 6.3 times[24]. This might be due to the fact that; when a family member smokes waterpipe, he/she.

Reasons for waterpipe smoking: Will encourage the other members to smoke, and hence it will become a socially accepted behavior.

Place of waterpipe smoking: The study showed that more than two thirds (69.4%) of waterpipe smokers preferred smoking in cafés;this is in agreement to studies done in Erbil city, Iraq[25, 26] and Turkey[11] in which the preferred places to smoke were cafés. This is because cafes are the place of gathering friends and sharing of waterpipe among themselves.

The study showed that more than half of the smokers' smoke waterpipe for pleasure, this is in agreement to a study in Turkey where 72.4% of smoking waterpipe was for enjoyment[13].In Iran, the majority (75.5%)of the current waterpipe smokers indicated that the fun and social aspect of waterpipe use was the main motivating factors for them to continue smoking[10]. While in Bahrain, 58% of participants justified the increase in waterpipe smoking to the boredom[22].

Association between waterpipe and cigarette smoking: The most identified associated behavior for waterpipe smoking is cigarette smoking. Many studies from around the world have documented the salience of cigarette smoking among waterpipe smokers, and cigarette smoking has been shown to be a major predictor of waterpipe smoking among youth[4, 27]The same finding was obtained in the current study which showed that 65.2% and 39.9% of current waterpipe smokers significantly associated with current cigarette and Ex-cigarette smokers respectively. This is in agreement withthe finding of another study in which the prevalence of waterpipe smoking was nine times greater in students with the habit of cigarette smoking[13]. A following up study in Jordan revealed that current cigarette smokers at baseline were twice as likely to become waterpipe smokers after 2 years compared to non-smokers, however, the reverse also was true[28].A study of the USA (Monitoring the Future survey) showed that waterpipe use among high school seniors was associated with current and former cigarettes smoking[4]. By these results, we can say that cigarette smoking is a gateway for waterpipe smoking and the reverse is true.

Awareness and knowledge of students about waterpipe smoking and its effect on health: This study revealed that 32.0% of waterpipe smokers had poor knowledge about the harmful effect of waterpipe on health which is less than what was reported in studies done in Erbil city (56%)[25], Iran[10], Jordan[9],and Malaysia[8] where the majority of the participants believed that waterpipe smoking is harmful to health. On the other hand, a study from Egypt revealed that 74% of female students believed that waterpipe smoking is less harmful than cigarette smoking[29]. Although in general, university students' awareness washigher but relatively low regarding the negative consequences of waterpipe smoking that might be the cause of high prevalence among students.

Gender comparison in Ishik and Cihan universities for waterpipe smoking: The study revealed that the prevalence of waterpipe smoking among males was higher than females in both Ishik and Cihan universities (43.7% vs 8.9% and 41.7% vs 8.5% respectively). On the other hand, waterpipe smoking was significantly associated with male gender in both universities; except for the faculty of education.

Conclusion

The prevalence of waterpipe smoking is relatively high among university students, especially among male gender. The prevalence rate of waterpipe smoking is increasing when a family member or a friend is a waterpipe smoker; the rate is also increasing with the presence of cigarette smoking habit. Awareness and knowledge about consequences of waterpipe smoking on health among waterpipe smokers are relatively poor.

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Conflict of Interest: None to declare.

Ethical Clearance: The study protocol was approved by the research ethics committee of the Kurdistan Board of Medical Specialties, written permission was obtained from the Deans of both private universities. The verbal informed consent was obtained from each participant and the anonymity of the participants' names was ensured. All selected participants were cooperative and agreed to participate in the study.

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Four Screening Methods to Determine *Pediococcus Acidilactici* Efficacy Against Two Biofilm-Producing Pathogenic Bacteria

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Abstract

A biofilm is a thin layer of microbial slime & related to many infections so is considered the main virulence factors and *Pediococcus acidilactici*has a well-known positive effect on pathogenic bacteria. Therefore this study aimed at applying the antibacterial and antibiofilm effects of *Pediococcus acidilactici* (Cell-Free Supernatant and culture) against the growth of two common pathogens *Staphylococcus aureus* (skin infections source) and *Serratia marcescens* (Urinary tract infection source) by four method Co- culture, plug & disk method andMicrotiter plate assay, the CFS & culture of *Pediococcus acidilactici* showed a good antibacterial activity against both pathogens. disk method was the least effective among them. Both pathogens were screened for biofilm production by using Congo-Red agarmethod and the results were both pathogens had the abilityto produce biofilm, but this ability decreased obviously when treated with CFS concentrated (CFSc) and CFS not concentrated (CFSnc) but CFSc displayed higher inhibition ratio recorded by system reader in optical density (OD) ELISA system. This work indicate that the use of this*Pediococcus acidilactici*could contribute to impair both pathogens in growth and biofilm formation.

Keywords: *Pediococcus acidilactici, concentrated cell-free supernatant, Co-culture method, Plug method, disk method & ELISA system.*

Introduction

Lactic acid bacteria (LAB)are reported to produce antimicrobial substances ; including many of generaarea group of Gram- positive, anaerobic bacteria[1]. The general description of bacteria included in the group is cocci or rods, no spore forming and the acids are a major end products for fermentation of carbohydrates[2]. *Pediococcus* is a genus of LAB is usually homofermentative anaerobic or microerophilic, it is typically chemoorganotrophic [3] and recognized as probiotics (probiotics are live microorganisms that improving the intestinal microbial balance) [(4,5)]. Is one of this genus that is well known to have a good effect on the improvement of human health [6].Biofilm is made of bacteria, according to[(7,8)] defined as a sticky, polysaccharides produced from bacterial cells that attachment on surfaces such as on aqueous environments by communities[(7,8)]. *Serratia marcescensis* an opportunistic human pathogen causing many infections by secreting several of virulence factors capable of damaging human cells and tissues like enzymes productions [9], or biofilm maturation [7]. *Staphylococcus aureus* also is an opportunistic pathogen responsible for significant health problems in humans [10]. *S. aureus* survival in the environment is at least in part due to its production of biofilm . Biofilm formation is regulated by expression of polysaccharide intra cellular adhesion (PIA), which mediates cell to cell adhesion[11]. Because of the importance of LAB application against many types of pathogenic bacteria [(12,13,14, 15,16)], and biofilm production by these bacteria, this study was objected to determine the effectiveness of *pediococcus acidilactici* against the growth of two pathogenic bacteria and inhibit their biofilm production, So this *pediococcus acidilactici* if prove its benefit, would be able to use it as antibiotic alternative agent (natural agent).

Materials and Method

1. **Pediococcus acidilactici isolate:** *Pediococcus acidilactici* that isolated from cow milk was obtained from Biology department/Science College/ Mustansiriyia University/Baghdad/Iraq. This isolate was identified again with VITEK®2 GP ID card.

2. **Cell Free Supernatant of Pediococcus acidilactici (CFS) preparation:** CFS of *P. acidilactici* used in this study was prepared according to [17] as follows: *P. acidilactici* was incubated in MRS (Man-Rogosa-Sharp) broth and incubated for 72 hrs under anaerobic condition at temperature 37°C., the broth then centrifuged for 10 min at 10.000 rpm. The supernatants were sterilized by filtration through (0.22 µm) Millipore filter paper. CFS was used for determination the inhibitory activity of *P. acidilactici* against growth of pathogenic bacteria.

3. **Concentrate the Cell Free Supernatant:** To get high activity of inhibition, CFS was concentrated by drying it in oven for (4-8) hrs. until reach to required concentration to obtain once concentration and used for following test [1].

4. **Staphylococcus aureus and Serratia isolates:** Isolates of *S. aureus* isolated from skin infections and *Serratia* isolated from urinary tract infections, submitted to biochemical reactions and identified according to[18].

5. **Biofilm production ability test of pathogenic bacteria:** Biofilm production ability was tested by Congo red agar method [19], that composed of brain heart infusion agar 37 (w/v), Congo red dye supplemented with 0.8 (w/v), and sucrose 5 (w/v). Congo red medium was autoclaved for 15 minutes at 121◦C. Then plates were inoculated with test organism and incubated at 37◦C for 24 to 48 hours. The biofilm producer bacteria isolates formed black or brown colonies.

6. **Determination of the antibacterial activity of Pediococcus acidilactici against pathogenic bacteria growth was investigated by the following method:**

   (A) Co-culture method: In Co-culture method, *P. acidilactici* culture MRS was grown in nutrient broth to prepare CFS, then added CFS to nutrient broth with different ratio **(1:1, 1.5:0.5, 1.75:0.25)** *P. acidilactici* culture (Nutrient broth : CFS of culture), Co-cultures and control (MRS broth without CFS) after that each of them were incubated with 50 µm (1×10^8) cell/ml from test bacteria (*Staphylococcus* and *Serratia*)separately, then incubated at 37˚C for 24 h., diluted **(10^1- 10^{10}),** last dilution cultured on solid nutrient agar to count and evaluate the inhibition activity by the following equation:

   R (%) = [(A-B) / A] × 100

   R : Inhibition rate.

   A: Control medium colonies number.

   B: Colonies number from treated with CFS.

   This method was done according to[20].

   (B) Plug method: In this method, *P. acidilactici* cultured on MRS agar for three days, in every day an agar-plot is cut aseptically with a sterile cork borer and deposited on nutrient agar plates cultured with pathogenic bacteria separately. Antibacterial activity of *P. acidilactici* culture was measured by measure the inhibition zone around the agar-plot by mm [21].

   (C) Disk method: Disks from filter paper (0.22) µm were prepared, sterilized and submerged with *P. acidilactici* broth culture for 10-15 min, then lift with sterile forceps and put on nutrient agar plated cultured with pathogenic bacteria separately, incubated at 37˚C for (24-48) hrs. The inhibition activity was measured by measure inhibition zone around the disk by mm. This method was detailed in [22].

7. **A quantitative estimate of Pediococcus acidilactici effect against biofilm-producing pathogenic bacteria by OD:** Antibacterial activity of *P. acidilactici* CFS included concentrated CFS and non-concentrated against biofilm production of test bacteria was studied by using flat bottomed micro titration plates, the wells were filled as following:

   1. The first well was filled with (180) µl (brain heart infusion broth) included 2 % sucrose and (20) µl test bacteria culture separately, this was considered control treatment for test.
   2. Second well was filled with (100) µl of not concentrated (CFS) and (100) µl brain heart infusion broth added 2% sucrose and included test bacteria culture separately.
   3. Thired well was filled with (100) µl of concentrated CFS and (100) µl of brain heart infusion added (2%) sucrose that inoculated with test bacteria separately.

The plate was covered with Para film, incubated with 37 ˚C for 24 hrs. After that all plate contents were neglected and washed with distilled water left to dry in

room temperature for (15) min. (200) µl from crystal violate dye to wells, left for (20) min. Wells were washed more than once with distilled water, also left to dry in room temperature for (15) min. (200) µl of ethyl alcohol with (95%) concentration was added for each well. The optical density was read with 630 n. using ELISA Reader systems. The inhibition ratio was tested and calculated as equation described in following [23,24].

% inhibition of biofilm formation =

[(O.D control – O.D treatment) / O.D control] × 100

Results And Discussion

In this study showed the ability of *Staphylococcus aureus* and *Serratia marcescens* to biofilm formation;also the results showed the antibacterial activity of CFS and culture of *P. acidilactici* in Four method, in Co-culture method, the inhibition ratio was very good of CFS and higher ratio was when the treatment was (1:1) (medium : CFS), it was reach to 76% against *Staphylococcus aureus* and 80% against *Serratia marcescens*, this ratio was reduced when treatment was (medium 1.5 : CFS 0.5), it was 69% against *S. aureus* and 72% against *Serratia marcescens*. The lower ratio was 62 and 63 % against *Serratia marcescens* and *S. aureus* respectively when the treatment was (medium 1.75 : 0.25 CFS) – Table (1).This antibacterial activity of *P. acidilactici* against pathogenic bacteria may be explained by secreting *P. acidilactici* to many compounds including bacitracin, lactic acid, hydrogen peroxide and bio surfactant that exhibiting the activity as all probiotic [25].

Table (1): Inhibition ratio of *P. acidilactici* CFS against pathogenic bacteria by Co-culture method.

Treatment (medium : CFS)	Growth Inhibition ratio %	
	S. aureus	Serratia Marcescens
(1 : 1)	76	80
(1.5: 0.5)	69	72
(1.75:0.25)	62	63

Antagonistic activity of *P. acidilactici* culture against pathogenic bacteria by plug method is illustrated in Table (2). The higher diameter of inhibition zone 8 mm in third day against *Serratia marcescens*, whereas the lower diameter of inhibition zone 9 mm in first day against *S. aureus*.

Table (2): Antibacterial activity of *P. acidilactici* culture against pathogenic bacteria by Plug-method.

Culture of *pediococcus acidilactici* / Hours	Inhibition Zone (mm)	
	S. aureus	Serratia marcescens
24	9	11
48	11	15
72	15	18

This method allowed to the substances to diffuse from the plug to the agar medium, so the active substances of *P. acidilactici* will be contact with pathogenic bacteria cell and because of the spread of growth, when the lactic acid bacteria that cultured in MRS medium and incubated an aerobically for 48 to 73 hours at 28-30 C^{o} lead to increase concentration the inhibitory substances in MRS media. it can compete with the pathogenic bacteria on the nutrient in the medium and grow more quick than them, so it causes the inhibition the growth. This idea agrees with many of researchers that showed all probiotics have this mechanisms [18,26]. Also in the current study, the *P. acidilactici* culture improved the antibacterial activity against pathogenic bacteria by disk diffusion method the decrease in inhibition was very obvious comparative with Co-culture and plug method, when we see Table (3) we found *P. acidilactici* could inhibit the pathogenic bacteria just in (10) mm and (7) mm to *S. aureus* and *Serratia marcescens* respectively.

Table (3): Antibacterial activity of *P. acidilactici* culture against pathogenic bacteria by Disk method.

P. acidilactici culture	Inhibition zone (mm)	
	S. aureus	Serratia marcescens
Paper disks	10	7

Paper disk did not saturated with the active components of *P. acidilactici* because it is very thin and could not keep these components, for this reason, this method gave lower inhibition zone comparative with the two others method [27]. According to the results, the *P. acidilactici* CFS gave the best and larger inhibition zone against the pathogenic bacteria, so we choose it for following test after concentrated once just.

Table (4): Inhibition ratio of *P. acidilactici* CFS concentrated and non against biofilm production of pathogenic bacteria by ELISA system.

Pathogen Bacteria	O.D Reader of bioflim			The percentage of inhibition of biofilm production	
	Control	Treatment with			
		CFS nc	CFS c	CFS nc	CFSc
S. aureus	0.596	0.253	0.155	57.55	73.48
S. marcescens	0.667	0.278	0.143	58.32	77.68

*Control: (tested bacteria + medium without CFS)., *CFSc : CFS concentrated, *CFSnc : CFS not concentrated.

The efficiency of CFSc was larger than CFSnc because of aggregate the components in less quantity of CFS, this components can interference with the growth of bacteria and its virulence properties, these results are nearly similar to the results of another study since they found decrease in the production of biofilm after mixing with CFS [27], another source showed that effects of all *Pediococcus sp.* are sustained mainly by producing a group of organic acids like: succinic acids, lactic, propionic,acetic,...etc. That has the lethal effect on bacterial cell, these compounds are found in cell free supernatant of probiotics[1,28], in the same time, *Pediococcus sp.* especially *Pediococcus sp.* can live in different conation and resist the acidity in the medium, it is also able to utilize a variety of carbon sources for growth.[3]

Conclusion

This *study* was carried out to screen for *antimicrobial* activity that producing from the *P. acidilactici* (CFS and culture) against growth of pathogenic bacteria (*S. aureus* and *Serratia marcescens*) by (Co-culture, Plug and Disk method) and against biofilm formation by microtiter plate assay (OD/ELISA system). The principle of Co-culture assay & microtiter plate assay depends on dilutions technique, while plug & disk test depends on diffusion technique . The CFS and culture of *P. acidilactici* showed inhibitory activity against growth *S. aureus* and *Serratia marcescens* and their biofilm formation by quantitative analysis. The *P. acidilactici* need more experiments to confirm the inhibition ability on other pathogenic bacteria or microorganisms from different environments or other virulence factors.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Science, Mustansiriyah University, Baghdad-Iraq and all experiments were carried out in accordance with approved guidelines.

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Effectiveness Dental Education and Training of Tooth Brushing on Knowledge, Attitude, Index Plaque of Patients with Schizophrenia

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Abstract

Background: Schizophrenia is a psychotic mental disorder that affects the activities of daily life, one of which is oral hygiene.These symptoms affect the ability of schizophrenic patients to clean their teeth and mouth, thus manifesting into the oral cavity. Teeth that are not cleaned give rise to plaque and its severity can be assessed by plaque index.

Objective: This study aims to determine the effectiveness of education and training teeth brushing on the knowledge, attitudes, and index of plaque.

Materials and Method: Quasi-experimental was conducted among schizophrenic (n= 104), with experimental group (n=52), and control group (n=52). The questionnaire distributed to 104 outpatients, to know the patient's level of knowledge and attitudes toward oral health, measurement of plaque index using TQHI (Turesky Modification of The Quigley-Hein Index). Education and training of teeth brushing are given to the experimental group with one-week intervals.

Results: Mann Whitney U test on the experimental-control group showed significant results with $p < 0.05$. Increased knowledge and attitudes are also showed by experimental groups with $p < 0.05$. The results showed there was a decrease in the plaque index in the experimental group compared to the control group.

Conclusion: Dental education is needed to improve the oral health of schizophrenic patients. In the future, it is expected that there will be an education and training program for scheduled toothbrushing outpatients for schizophrenia to improve oral health.

Keywords: *Dental education, schizophrenia, knowledge, attitude, plaque index.*

Introduction

Schizophrenia is a psychotic mental disorder characterized by major disorders in the mind, emotions,behaviors, various thoughts not logically interconnected, erroneous perception, flat or inappropriate aspects, and various disorders of motor activity bizarre. The symptoms of schizophrenia are shown to affect the activity of daily life, such as avolition. These symptoms indicate a lack of energy and an absence of interest to perform daily routine activities. Patients are not interested in dressing up and doing self-hygiene, such as uncombed hair, dirty nails, unbrushed teeth, messy clothes.[1]

Avolition symptoms affect the ability of schizophrenic patients to perform oral hygiene, thereby manifesting to the oral cavity. Uncleaned teeth cause plaque and severity can be assessed by the plaque index.[2] Plaque or biofilms are a collection of non-

mineral microorganisms organized in the organic matrix of mucopolysaccharides as the main etiological factor in the formation of dental caries and periodontal disease.[3] Dental caries and periodontal disease provide effects related to eating, nutrition, speaking, and quality of life.[4] It takes the role of a healthcare worker in a team involving medical and paramedics to provide dental education. Dental education is educational dental health to increase knowledge to change the attitude of the patient from not brushing teeth and eventually want to brush their teeth. The tooth brushing action reduces plaque, so caries and periodontal disease can be prevented. The oral health problems in schizophrenia are the accumulation of schizophrenia symptoms, lack of knowledge, lack of motivation, feelings of fear in dental examinations, side effects of psychotic drugs to oral health.[5]

Dental caries and periodontal disease are the most common diseases in schizophrenia patients. Some studies have shown high Decay Missing Filling Teeth (DMFT) figures than the general public, as well as periodontal disease. Periodontal disease caused by plaque resulted in damage to periodontal tissue so that the tooth regardless of the socket, therefore many patients schizophrenia lose teeth.[6,7] Dental health and mouth are also getting worse with the habit of poor schizophrenia patients such as smoking and lack of tooth brushing frequencies as well as consuming karyogenic foods. Side effects of medications consumed by the patient during treatment also affect the decreased flow of saliva in the oral cavity.[8]

Dental education is very necessary for the improvement of knowledge, attitudes, and a decrease in the plaque index of schizophrenia patients. Dental education may be administered in schizophrenia patients in circumstances where symptoms are shown to be controlled, cooperative, not in acute/aggressive attacks, not in the treatment of epilepsy and cerebrovascular problems. The role of family and people who care for patient schizophrenia is very important to maintain the health of his mouth.[9] This study aims to conducted to assess the effectiveness of education and training teeth brushing on the knowledge, attitudes, and index of plaque in schizophrenic patients.

Method

Subjects are carried out by data on the outpatient diagnosed with schizophrenia. Sample study (n=104) divided into 2 groups, 1 experiment (n=52) given education and others as a control (n=52). Criteria for inclusion of respondents in the following studies is an outpatient who regularly takes the drug 1 week once in Mental Hospital Soeprapto Propinsi Bengkulu (MHSPB) with a diagnosis of schizophrenia. The patient's condition is stable and has been treated with psychotic drugs. The patient can be independent, age 18-55 years, can read and write, can communicate verbally well, cooperative, willing to be a respondent. Patients with limited motor movements. Patients in unstable conditions (rowdy), edentulous, in toothache conditions were excluded. The study was approved by Institutional Ethical Committee the faculty Dentistry University of Gadjah Mada.

Demographic data and information on medical were obtained from institutional electronic records. These included age, gender, level of education, duration of disease, history of smoking. Informed consent was taken from the study participants and their attendants. The validity and reliability of the questionnaire were 30 respondents. Education 2 times with a distance of 1 week, how to brush the tooth modified Bass in the dental model as well as training teeth brushing by the patient. The study was conducted using the first observation (pretest), interview patients, a questionnaire filled, then assessed the plaque index. After 1 week of second dental education. Post test and plaque index assessments were implemented after 1 week of second dental education. The control group performs pretest, post test and plaque index assessments. Assessment of plaque Index of study responders in the dental room is conducted by 2 calibrated dentists, Cohen's kappa coefficient was 0.88.

Assessment of dental hygiene with Turesky modification of the Quigley-Hein Index (TQHI) method. For the assessment of plaque on the surface of the teeth, the teeth were stained with a plaque dye (GC Tri Plaque ID Gel), then assessed whether the precipitate was painted on the surface of the labial teeth after administration of the material.The individual plaque score is obtained from the total amount of the obtained value divided by the number of inspected surfaces, the valuation range from 0 to 5.

The data were analyzed using SPSS version 24. The normality test was carried out using Kolmogorov Smirnov,test homogeneity using Levene's and Mann Whitney U test with the significance level was set at $p < 0.05$

Result

Table 1 have showed the frequency distribution of 104 patients, the results that most male-sex patients as 77.9%, the rest of the sex women as 22.1%. The majority

of respondents were 31-35 years old by 27.9%, and at least 46-50 years old and 51-55 each year as much as 4.8%.

The last education of the majority of junior high school graduates is 30.8%, at least not as much as 1.9%. Smoking status of schizophrenia patients is mostly smoked as much as 74.0%, and the rest do not smoke as much as 26.0%. Furthermore, patients who rarely eat sweet as much as 51.9%, and often eat sweet as much as 48.1%. In addition to sweet foods also most of the patients often drink sweet as much as 79.8% and the rest rarely drink sweet as much as 20.2%. The results of p sig values all above 0.05 mean there is no significant difference in the respondent's characteristics based on the experiment and control group.

Table 1. Frequency distribution of respondent characteristics

Characteristics of Respondents	Experiment		Control		Total		Sign.
	f	%	f	%	f	%	
Gender							**0.813**
Male	41	78.8	40	76.9	81	77.9	
Women	11	21.2	12	23.1	23	22.1	
Age							**0.995**
18-25	5	9.6	6	11.5	11	10.6	
26-30	13	25.0	13	25.0	26	25.0	
31-35	15	28.8	14	26.9	29	27.9	
36-40	7	13.5	8	15.4	15	14.4	
41-45	6	11.5	7	13.5	13	12.5	
46-50	3	5.8	2	3.8	5	4.8	
51-55	3	5.8	2	3.8	5	4.8	
Job							**0.220**
Not working	29		37		66		
Private	13		10		23		
Other	10		5		15		
Education							**0.633**
No School	0		2		2		
Primary school	21		18		39		
Middle school	16		16		32		
High school	14		14		28		
Graduate	1		2		3		
Duration of diseases							**0.311**
0-5	25	48.1	22	42.3	47	45.2	
6-10	20	38.5	26	50.0	46	44.2	
11-15	7	13.5	3	5.8	10	9.6	
>= 16	0	0.0	1	1.9	1	1.0	
Smoking							0.823
No	13	25.0	14	26.9	27	26.0	
Yes	39	75.0	38	73.1	77	74.0	
Sweet Food							0.695
Rarely	28	53.8	26	50.0	54	51.9	
Often	24	46.2	26	50.0	50	48.1	
Sweet drink							0.222
Rarely	8	15.4	13	25.0	21	20.2	
Often	44	84.6	39	75.0	83	79.8	
Total	**52**	**100**	**52**	**100**	**104**	**100**	

Table 2 showed frequency distribution of knowledge, patient attitudes, and schizophrenia patient plaque index based on the experimental group–the control.

Table 2. Frequency distribution of knowledge, attitudes, plaque Index in groups experiment and control

Treatment	Variable	Experiment		Control		Total		Sign.
		f	%	f	%	f	%	
Pre test	Knowledge							1.000
	Less	0	0.0	0	0.0	0	0.0	
	Enough	32	61.5	32	61.5	64	61.5	
	Good	20	38.5	20	38.5	40	38.5	
	Attitude							0.839
	Less	0	0.0	0	0.0	0	0.0	
	Enough	20	38.5	19	36.5	39	37.5	
	Good	32	61.5	33	63.5	65	62.5	
	Plaque Index							0.687
	Less	31	59.6	33	63.5	64	61.5	
	Enough	21	40.4	19	36.5	40	38.5	
	Good	0	0.0	0	0.0	0	0.0	
Post test	Knowledge							0.000
	Less	0	0.0	0	0.0	0	0.0	
	Enough	0	0.0	30	57.7	30	28.2	
	Good	52	100	22	42.3	74	71.2	
	Attitude							0.009
	Less	0	0.0	0	0.0	0	0.0	
	Enough	6	11.5	17	32.7	23	22.1	
	Good	46	88.5	35	67.3	81	77.9	
	Plaque Index							0.000
	Less	6	11.5	34	65.4	40	38.5	
	Enough	16	30.8	18	34.6	34	32.7	
	Good	30	57.7	0	0.0	30	28.8	
	Total	**52**	**100**	**52**	**100**	**104**	**100**	

Table 3 showed the average value and the default deviation of the knowledge variable, attitude, and plaque index. This shows increased knowledge, the attitude of schizophrenia patients and significantly decreased plaque index value in the experimental group.

Table 3. Descriptive average and standard deviation of knowledge, attitude, plaque index in groups experiment and control

Treatment	Time	N	Experiment	Control
Pre test	Knowledge	52	10.48 + 1.49	10.35 + 1.70
	Attitude	52	51.25 + 2.35	51.98+ 2.91
	Plaque Index	52	2.92 + 2.83	2.82 + 0.73
Post test	Knowledge	52	14.79 + 0.96	10.62 + 1.66
	Attitude	52	55.83 + 4.21	52.19+ 2.91
	Plaque Index	52	1.31 + 0.65	2.78 + 0.68

The MannWhitney U test to determine whether there is a significant difference between the experimental treatment and control group, it showed on table 4. MannWhitney U test results showed that all post-test variables of knowledge, attitudes, plaque index based on the Experiment - control group had a p value of significance of 0.000 ($p < 0.05$).

Table 4. Mann Whitney U test of knowledge, attitudes, plaque index

Treatment	Variable	Mann Whitney U		Description
		Z value	Significance level (P)	
Pre test	Knowledge	0.477	0.634	Not significant
	Attitude	1.149	0.251	Not significant
	Plaque Index	0.759	0.448	Not significant
Post test	Knowledge	8.583	0.000	Significant
	Attitude	4.364	0.000	Significant
	Plaque Index	7.588	0.000	Significant

Discussion

Schizophrenia is a chronic mental illness that causes impaired thought processes, distortion of reality, disorganization, reduction of psychomotor, difficulty distinguishing between reality and the content of self-thought.[10] Some study depicts the gender of men more schizophrenia than women.[4,6] The results of the frequency distribution showed that the majority of male-sex patients were 77.9%, the rest of the female gender was 22.1%. The majority of respondents were 31-35 years old as much as 27.9% with a status not working as much as 63.5%.

Characteristics of schizophrenia patients also affect the health of their teeth and mouth. The characteristic in question is gender, age, occupation, education, smoking habit, consumption of food and sweet drinks between the hours of eating and the duration of schizophrenia. This study also describes the characteristics of the respondents who have schizophrenia patients as described above. Patients who rarely eat sweet by 51.9%, and often eat sweet as much as 48.1%. In addition to sweet foods also most of the patients often drink sweet as much as 79.8% and the rest rarely drink sweet as much as 20.2%.

Dental education can be given in several method such as lectures, dialogue, panel discussion, brainstorming, demonstration, group discussion, workshops, seminars, symposiums, field exercises, system modules, socio drama and others.[11] Study on dental education in schizophrenia patients is very rare because of the many things associated with the condition of schizophrenia patients, such as symptoms that arise as well as the side effects of drugs consumed by patients Schizophrenia.[10] Previously study has reported thateducational program given in mental disorders patients there are 5 causes of tooth loss, perforated tooth, periodontal disease, dental hygiene, routine visiting dental health facilities.[12,13] The results are the same as the studies conducted where there was an increase in knowledge and attitudes in patients after dental education.

Schizophrenic respondents at this study have value of significance ($p < 0.05$), meaning that the plaque index post test data shows a significant difference between experiment-control.Plaque index posttest scores of the two groups had different mean values, meaning that the posttest plaque index of the experimental group was 1.31 better (lower) than the post-control plaque index of 2.78 with a mean of 1.47. It can be concluded that brushing education and training can reduce the plaque index of schizophrenic respondents. Brushing teeth well can remove plaque that sticks to the surface of the teeth, either ordinary toothbrushes or electric toothbrushes.[14]

Conclusion

Schizophrenia is a psychotic disorder with negative symptoms make teeth is not clean, causing a build-up of plaque on the tooth surface. The dental hygiene level is assessed by the plaque index by looking at the number of plaque on the tooth surface that has been given a disclosing solution. Plaque is a collection of bacteria as a major factor in the occurrence of caries and periodontal disease. Poor dental and oral health is associated with eating disorders, nutrients, speech, quality of life. Overcoming these schizophrenia patients should be given the education to increase knowledge and change his attitude so that there is a decrease in plaque index.

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Determinants of Diarrhoea Incidence in Toddlers: Epidemiological Studies

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Abstract

This study was to determine the influence of environmental factors and social-cultural toward the incidence of diarrhoea. The methodology used in this study is a quantitative method by applying an analytical survey with a cross-sectional approach. The population of this research was all mothers who have babies in the Lueng Keube Jagat Health Center in Working Area Tripa Makmur Subdistrict, Nagan Raya Regency, as many as 1.792 mothers. Further, the sample is taken by implementing a simple random sampling technique, as many as 95 mothers. Data analysisused in this study is univariate, bivariate and multivariate analysis. The results showed that there was a significant influence between the environmental factors (p value <0,05, RP = 15,9) and socio-culture factors (p value <0,05, RP. 14,0) with the incidence of diarrhoea in infants.

Keywords: *Environmental factor, Social Culture, Diarrhea, and Toddlers.*

Introduction

Diarrhoea is a condition in which the faeces excreted abnormally. The abnormality occurs increasing of volume of faeces a liquid and the frequency of the excretion either with or without bloody mucus, which is three times or more a day[1]. A person is said to suffer diarrhoea when he/she excretes more mucous faeces, or defecates three times or more, or excretes mucus faeces without blood within 24 hours.[1]

There are some right and practical actions that can prevent diarrheal disease, generally by living a healthy life. Some practices can do the prevention of diarrhoea in children. There are a fully breastfeeding the baby for six months, providing complementary feeding to get used to adult food gradually, disposing baby's faeces correctly, and giving measles immunization immediately after they are nine months old. Another activity that can prevent the occurrence of diarrhoea is by creating a healthy environment, consisting of providing clean water, waste management, and wastewater disposal[2]. Clinically, the causes of diarrhoea grouped into six factors, which are infection (bacteria, viruses, parasites), allergies to foods such as spicy food, etc., poisoning, immunodeficiency, and other causes.[2]

Human behaviours or activities are someone's responses to stimuli associated with illness and disease. These behaviours include improving and maintaining health, preventing illness, seeking treatment, and caring for health care, food, and environment systems. Also, it contains behaviours towards the environment. Moreover, health behaviour is also necessary since it relates to someone's actions in maintaining and improving health, including efforts to prevent disease, maintain personal hygiene, choose food, and take care of sanitation. According to WHO and UNICEF, there are around 2 billion cases of diarrhoea occurring every year worldwide. Of all deaths of children under five due to diarrheal disease, 78% occur in the African and Southeast Asia.[3]

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The number of diarrhoea cases in Indonesia in 2012 was 1,654 cases and resulted in the death of 34 people. Whereas in 2013, the number of diarrhoea cases was as many as 646 cases with seven fatalities.[4] The number of evidence in Indonesia in 2014 was estimated at 8,713,537 cases, while the cases handled were 8,490,976 cases.[5] In 2015, the name of the cases estimated at 5,405,235 cases and the cases handled were only 4,017,851 cases.[4]

In Aceh Province, the number of diarrhoea cases in 2013 was estimated at 196,948 cases, of which 98,525 (50.03%) were experienced by men and 98,423 (49.97%) experienced by women. The number of cases handled was limited to 107,582, of which 51,343 cases (52.1%) in men and 56,239 cases (57.1%) in women[4]. In 2015, the cases estimated at 101,368 cases and the number of diarrhoea cases handled was only 64,589 cases.[4]

Specifically, in Nagan Raya Regency, the number of diarrhoea cases in 2014 was estimated at 2,521 cases (2.10%), and the number of cases handled was 2,438 cases (93.13%). Meanwhile, in 2015, the cases were estimated at 3,517 cases (3.20%), and the cases handled were 3,286 cases (93.4%). In 2016, the cases estimated at 3,496 cases (2.25%) and those handled were 3,329 cases.[6]

Based on observations in the field, it is seen that many infants experience diarrhoea in the work area of the Health Center of Lueng Keubeu Jagat because of the less clean environment and unhealthy behaviours of the family.[7] This statement based on the results of the interviews with twelve mothers who have 0-1-year-old babies. From the interview, there were nine mothers whose babies had experienced diarrhoea and some even vomiting with diarrhoea. Three mothers stated that this happened because their children had been fed with stale milk, while the other two claimed their carelessness caused the diarrhoea for good supplementary food given to the children. The mothers followed their parents' advice to abstain from certain foods during childbirth which had been a tradition or culture for generations, but they do not know that these are the cause of diarrhoea in infants. The other four mothers said that their children had diarrhoea because their children were eating not suitable food, e.g. not proper porridge.

Method

This study is a survey with a cross-sectional approach, where the free and bound variables studied at the same time. This study aims to find out the effect of environmental and social culture on the occurrence of diarrhoea in infants the Health Center of *Lueng Keubeu Jagat*, *Nagan Raya* Regency, Indonesia. The study carried out from November 16, 2017, to February 8, 2018. The population of this study was 1,792 mothers who had babies 0-59 months in the *Lueng Keube Jagat*. The sample used in this study was 95 mothers who had babies from 0 to 59 months, who were selected by simple random sampling.

Results

Respondents' Characteristics: Concerning the Distribution of Respondents about Environmental Factor on Diarrhea Occurrence, the following information obtained through univariate analysis. It obtained from the questionnaire that mothers who used clean water every day are only 34 mothers out of 95 (32%). Then, those who use the health-standard toilet, whose house has a good garbage dump, who have good sewage site, who always cover their babies' food and equipment, and who use boiled water for baby's milk are only 37 out of 95 respondents (37%), equally. While the other 58 mothers do not conduct all these practices. Concerning environmental and socio-cultural factors, it obtained that mothers coming from a good environment are 41 mothers (43.2%) while those coming from the poor environment are 54 mothers (56.8%). Then, those coming from the supportive social culture are 38 mothers and who do not are 57 mothers.

Regarding the socio-culture factor, the information is as in the following. In regards to socio-cultural support, there are only 31 mothers who give ORS when their babies are experiencing diarrhoea. The rest do not. And 29 of them carry the baby herbs to cure his/her diarrhoea instead of taking him/her to the health centre. However, 66 mothers do not do this. Next, 37 mothers believe that they should avoid particular food after giving birth. Later, 31 of them stated that newborns should only be breastfed, while only 37 agreed that they should be fed on bananas or other complementary food. However, 66 mothers believe that diarrhea in babies is not common, while the rest think it is common because they still eat a little amount of food. Furthermore, there are only 41 mothers who informed that their babies have three bowels movement a day, while the rest do not. And on average, there are 44 mothers whose children have experience diarrhoea as infants.

Bivariate and Multivariate Analysis: Later, concerning the results of the bivariate analysis, the information is as shown in the tables below.

Table 1. The Influence of Environmental Factors on the Diarrhoea Occurrence

Environment	The Occurrence of Diarrhea				Total		p-Value	RP
	Yes		No					
	f	%	f	%	f	%		CI 95%
Good	2	4.9	39	95.1	41	100	0.000	15.944
Poor	42	77.8	12	22.2	54	100		(4,096-62,071)

Based on the result of the chi-square test, it obtained the-value is 0,000 <α = 0.05 so that there is an influence of environmental factor on the occurrence of diarrhoea in the area where this research conducted. Further, the results of RP = 15.944 shows that the poor environment has a risk of 15,944 times for the occurrence of diarrhoea in infants in the area.

Table 2. The Influence of Social and Cultural Factor on Diarrhoea Occurrence

Socio-culture	The Occurrence of Diarrhoea				Total		p-Value	RP
	Yes		No					
	f	%	f	%	f	%		CI 95%
Supportive	2	5.3	36	94.7	38	100	0.002	14.000
Unsupportive	42	73.7	15	26.3	57	100		(3.601-54.429)

The p-value = 0,002 <α = 0.05 proves that there is an influence of social and cultural factor on the occurrence of diarrhoea and the results of RP = 14.000 shows that the unsupportive social and cultural environment has a risk of 14,000 times for the occurrence of diarrhoea.

Table 3. The correlation between Environmental and socio-cultural variable on infant diarrhoea occurrence

Variable	Category	p-value	95% CI
Environment	Good Poor	0,000	4,634 - 341,243
Social and Culture	Supportive Unsupportive	0,002	2,445 – 232,325

The logistic regression test results with p <0.05 (95% CI: 4,634 - 341,243), this shows that there is a powerful influence between the environment on the incidence of diarrhoea in infants. Likewise, socio-cultural variables show that the value of p <0.05 (2,445 – 232,325), proves that there is a strong influence between social culture on the incidence of diarrhoea in infants.

Discussions

Environmental Impacts: First, below is described the results concerning the environment impact on diarrhoea occurrence in infants. Despite the fact of living in a clean environment, the mothers whose children encountering diarrhoea caused by the mothers' negligent behaviour of not minding the cleanliness of their babies. Contrarily, the mothers who lived in a clean environment and did not have infants encountering diarrhoea was because the children's hands regularly washed, and their food was always covered. Hence, it can be claimed that flies are one of the factors causing diarrhoea in infants.[8]

Besides uncovered food, those living in an unclean domain and had their children encountering diarrhoea was because there was a lot of food waste smelling extremely horrible and, again, invites flies. This condition is exceptionally perilous for children's health.[9] Likewise, the kitchen utensils were also not covered.[10] This finding is following the consequences of different studies expressing that mothers' behaviour affects diarrhoea occurrence in infants.[11]

As indicated by Mwambete and Joseph, there are a few factors that extend the danger of babies encountering diarrhoea, for example, ecological elements that incorporate waste arrangement, sewage and water sources. Inappropriate handling of waste and sewage can also cause diarrhoea. This condition caused because the flies that have landed on garbage will later land on food. Moreover, diarrhoea can happen through polluted water, either from its source or from the storing place at home.

Another factor is housing and settlements. Settlements are a piece of the environment that may be out of individual control both in urban and remote areas. It works as neighbourhoods/individual situations and where the activities to help the livelihoods done. Housing and settlements are two things that cannot be isolated and firmly identified with monetary action issues, industrialization and local development.[12] This result is in line with Marlina's study (2015) expressing that there was a massive impact of environmental cleanliness on the diarrhoea occurrence in the family unit setting in KedaungWetan Tangerang region[13]and the relationship between the incidence of healthbehavior based on environmental sanitation aspects.[14]

Muliati (2017) found that the level of children under five years old who suffered from diarrhoea in the last 3 months was 89.1%, while those who lived in a clean environment was only 4.2%. The p-values of was precisely 0.000> α 0.05, so it deciphered that there was a connection between environment and diarrhoea occurrences in the Mangkang Health Center[15]. Moreover, Megasari (2015) further obtained that those living in poor environmental sanitation was 0.265 occasions higher to experience diarrhoea compared to those living in great natural sanitation in Barito Kuala. Godana and Mengiste(2013) suggest that the absence of ecological sanitation will expand the occurrence of diarrhoea.[16-17]

Socio-cultural Impacts: Second, the description of the results concerning the social and cultural impact is as follows. The researchers found that those living in a steady and social condition and having diarrhoea children, was because they lived in n their relatives' homes. For example, the baby was allowed to play in muddy puddles. Besides, the mothers choose to give breast milk directly, not using bottles. This practice can minimize the risk of diarrhoea.[16] Respondents who lived in an unsupportive social and cultural condition and had a child encountering diarrhoea spurred by the behaviour of the moms who did not exactly think about one another, and there was no frequent collaboration. The infants were permitted to play uninhibitedly as long as it was not risky. However, this circumstance made the infant experience diarrhoea.[17]

Culture is a way or frame of the human mind in managing nature and environment which incorporates the results of imagination, taste, goal, and work either physically, mentally, colloquially, or spiritually.[18] Culture regards all parts of human life, both material and non-material. Most specialists see that culture will create from a straightforward stage to an increasingly perplexing stage.[19] The study uncovered the impact of waste arrangement on the diarrhoea occurrence in children in Pallangga Public Health Center, Gowa (p-value 0.02820).[20] The study additionally found the effects of social and culture on the diarrhoea occurrence in children under five years old in Aceh Baroh Pasie Town, which situated in Meureubo, West Aceh.

This examination is in accordance with Ogbo, Aina, and Aderemi (2014), in regards to the connection between ecological sanitation and social variables and diarrhoea occurrence.[21] Children and environmental cleanliness impact both on children's physical and psychological entity.[22] Children living in poor conditions maintain intestinal worms and diarrhoea. Thus, sufficient educational supervision to generate a clean environment for children's growth and development is profoundly necessary.[23]

Conclusions

There is an influence of environmental and social and cultural factors on the occurrence of diarrhoea in infants (p-value <0.05), but the environmental factor has a more significant impact on the appearance of diarrhoea in infants. Further research is needed to see the possibility of other factors that influence the occurrence of diarrhoea in infants.

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Antioxidant and Apoptotic Activity of Free and Nano-Sinapic Acid on HEp-2 Cell Line

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Abstract

Background: Sinapic acid is one of the phenolic acids that widely distributed in edible plants such as cereals, nuts, oil seeds and berries. Sinapic acid shows antioxidant, antimicrobial, anti-inflammatory, anticancer, and anxiolytic activity.

Material and Method: The present study was conducted based on monitoring of in vitro cytotoxicity using MTT assay. Nano-capsulation was performed using Tween-80, and biochemical changes concerning reactive oxygen species (ROS) profile.

Findings: Data recorded revealed that the inhibitory concentration (IC_{50}) of free and Nano-capsulated sinapic acid was 646.4 µM/ml and 84.74 µM/ ml post treatment respectively. Also, cytotoxicity was concentration dependent with significant difference between free and Nano-capsulated one. Also, ROS as a biomarker was elevated in a significant way than in case of Nano-capsulated sinapic acid. In the meantime the biochemical marker (ROS) was changed post cell treatment with both formulae of sinapic acid.

Conclusion: Nano-capsulated sinapic acid is more effective as cancer chemopreventive agent with much lower concentration than free sinapic acid on HEp-2 cell line.

Keywords: *HEp-2 cells, apoptosis, Sinapic acid, Nano-capsulated Sinapic acid, ROS.*

Introduction

Cancer remains one of the highest causes of death globally. Various types of chemotherapies fail due to adverse reactions, drug resistance, and target specificity of some types of drugs. There is now emerging interest in developing drugs that overcome the problems stated above by using natural compounds, which may affect multiple targets with reduced side effects and which are effective against several cancer types[1]. Head and neck squamous cell carcinoma (HNSCC) is one of the most common cancers worldwide and account for more than half million new cases and 380,000 deaths per year[2] HNSCC, one of the most common cancers with high morbidity and mortality rates worldwide, has a poor prognosis. HNSCC ranks eighth in mortality among all cancers[3]. Chemoprevention is a strategy to inhibit, delay or reverse carcinogenesis in humans, using natural or synthetic chemical agents. Medicinal plant and its

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derivatives act as anticancer agents against different type of cancers. Two-third of the human cancers can be eliminated by lifestyle modifications including dietary changes. Consumption of foods rich in natural phytochemicals can reduce the risk of several types of cancers. Despite the significant amount of research, a clear understanding of the individual component in the plants that can prevent cancer is not comprehensive[4].

Despite significant progress in the fields of cancer diagnosis and chemotherapy, cancer remains one of the greatest causes of death worldwide. Novel approaches to cancer management often fail due to frequent genetic alterations and mutations in cancer genomes. Because of the high frequency of side effects caused by chemotherapy, metastatic cancers still need new, more effective chemotherapeutics. There is emerging interest in developing drugs to tackle these problems by using natural compounds. Natural compounds from various sources including plants, animals, and microorganisms offer a great opportunity for discovery of novel therapeutic candidates for the treatment of cancer [1]. Natural products are important sources of bioactive molecules, due to the structural diversity of their constituents. The discovery of effective anti-cancer drugs from natural products plays an important role in cancer chemotherapy [5]. Phenolic compounds are a group of key plant metabolites found abundantly in fruit and vegetables. Because of their antioxidant properties, they play an important role in preventing various disorders or diseases related to oxidative damage [6].

Phenolic compounds exhibit a wide range of physiological properties, such as antioxidants, antiallergic, anti-inflammatory, anticancer, antihypertensive and antimicrobial agents[7]. Nanotechnology has the power to radically change the way cancer is diagnosed, imaged and treated. Currently, there is a lot of research going on to design novel nanodevices capable of detecting cancer at its earliest stages, pinpointing its location within the body and delivering anticancer drugs specifically to malignant cells[8].

Sinapic acid is a small naturally occurring hydroxycinnamic acid derivative. It is a phenolic compound and a member of the phenylpropanoid family, the member that is assumed as therapeutically beneficial and generally not toxic. Sinapic acid is widespread in the plant kingdom (fruits, vegetables, cereal grains, oilseed crops and medicinal plants) and is common in human diet. Derivatives of sinapic acid are characteristic compounds of the *Brassicaceae* family. Sinapic acid shows antioxidant, antimicrobial, anti-inflammatory, anticancer, and anxiolytic activity. 4- vinylsyringol (a decarboxylation product of sinapic acid) is a potent antioxidative and antimutagenic agent, which suppresses carcinogenesis and the induction of inflammatory cytokines. Sinapine (sinapoyl choline) is considered to be an acetylcholinesterase inhibitor which might have therapeutic applications in various disease treatments [9]. The present study aimed to evaluate cytotoxicity of free and Nano-sinapic acid on HEp-2 cell line monitoring relatively to the reactive oxygen species as anticancer biomarkers.

Material and Method

Sinapic acid (3, 5-dimethoxy-4-hydroxycinnamic acid) with molecular weight of 224.21 g/mol was supplied from (Sigma Aldrich- USA), Nano-sinapic acid was prepared using bio surfactant (tween 80) (Nano-Tech Egypt for Photo-Electronics) and Human squamous cell carcinoma cell line (HEp-2) used in the present study was supplied from Cell Culture Department-VACSERA-EGYPT.

Cytotoxicity Assay (MTT assay): In the present study, Methyl Thiazol Tetrazolium (MTT) assay is a quantitative colorimetric method to determine cell proliferation. It utilizes yellow tetrazolium salt (3-[4, 5-dimethylthiazol-2-yl]-2, 5-diphenyltetrazolium bromide) which is a water soluble salt reduced to an insoluble purple formazan complex by cleavage of the tetrazolium ring by lactate dehydrogenase within the mitochondria. The cell membrane is impermeable to the formazan product and therefore it accumulates in healthy cells. The resulting intracellular purple formazan crystals can be solubilized and quantified by spectrophotometric means. This reduction takes place only when mitochondrial reductase enzymes are active, and therefore conversion can be directly related to the number of viable (living) cells. The MTT cell proliferation assay measures the cell proliferation rate and conversely, when metabolic events lead to apoptosis or necrosis, there is reduction in cell viability. For each cell type, there is a linear relationship between cell number and signal produced, thus allowing an accurate quantification of changes in the rate of cell proliferation[10].

The viability of HEp-2 post treatment with either free and Nano-sinapic acid was determined 24 hours.

For MTT assay, HEp-2 cells were seeded in 96-well culture plates and treated with 10 uM/ml sinapic acid for 24 hours. MTT as 50µL of 0.5mg/ml stock solution were dispensed to the treated wells and incubated at 37°C for 4 hours. Thereafter, the treatment medium was gently removed from the wells, cells were washed using PBS and 50µL of Dimethyl sulfoxide were added to each well to dissolve the purple formazan crystals. The absorbance was conducted at 570nm using the Dynatech MR5000 spectrophotometer. The absorbance values at 570nm were relative to the number of residual viable cells.

Determination of Reactive Oxygen Species: This immunoassay kit allows in vitro quantitative determination of Rat reactive oxygen species, ROS concentrations in serum, tissue homogenates and other biological fluids.The microtiter plate provided in this kit has been pre-coated with an antibody specific to ROS. Standards or samples were added to the appropriate microtiter plate wells with a biotin-conjugated polyclonal antibody preparation specific for ROS and Avidin conjugated to Horseradish Peroxidase was added to each microplate well and incubated. Tetramethylbenzidine substrate solution was added to each well. Only those wells contain ROS, biotin-conjugated antibody and enzyme-conjugated Avidin exhibited a change in color. The enzyme-substrate reaction was terminated by the addition of a sulphuric acid solution used as 2% and the color change was measured spectrophotometrically at a wavelength of 450 nm. The concentration of ROS in the samples was determined by comparing the optical density of the samples to the standard curve.

Results

Cytotoxicity Assay: Regarding the cytotoxic effect of free and Nano-sinapic acid on HEp-2 cells, viability was employed using MTT assay. Data recorded revealed that the mean viability percentage of Sinapic acid and Nano-capsulated Sinapic acid treated cells was concentration dependent [Fig. 1]. The IC_{50} values determined were 646.4 µM/ml and 84.74 µM/ ml for free and Nano- capsulated sinapic acid respectively indicating a significant difference [Fig. 2].

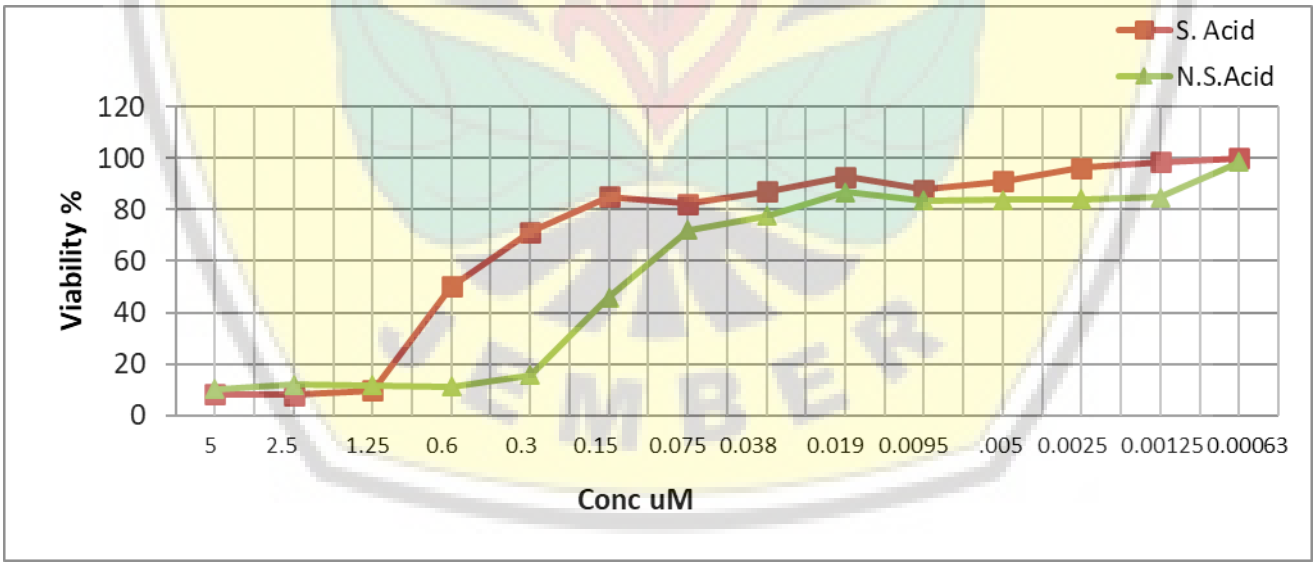

Figure (1): Evaluation of cell viability post treatment with both free and Nano-capsulated Sinapic acid using MTT assay

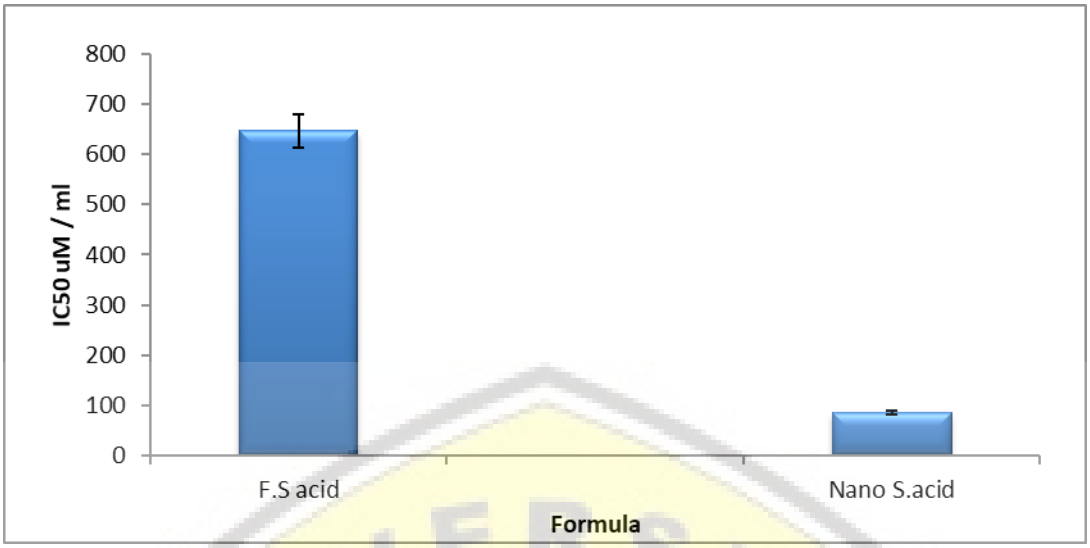

Figure (2): Evaluation of inhibitory concentration (IC_{50}) post HEp-2 cell treatment with free and Nano-sinapic acid.

Determination of Reactive Oxygen Species: The intracellular ROS level was increased in Sinapic acid and Nano-capsulated sinapic acid treated cells as compared to the untreated cells but Nano-capsulated sinapic acid cause significant increase in the intracellular ROS level than in case of free Sinapic acid treated cells [Fig.3].

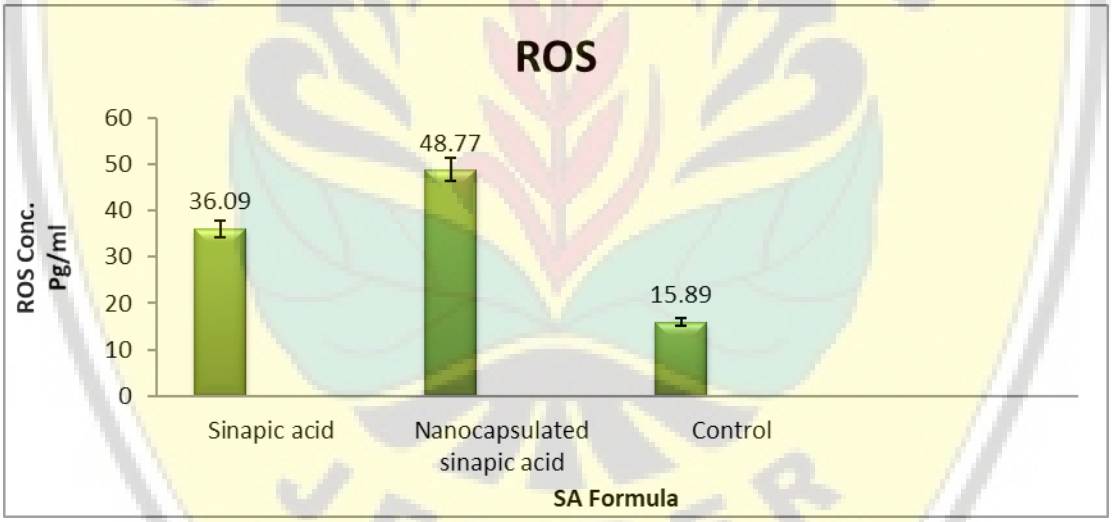

Figure (3): Bar chart revealing generation of ROS level post free and nano-sinapic acid treatment measured spectrofluorimetrically for 24 hr versus control cells.

Discussion

For thousands of years, the natural products have played an important role throughout the world in the treatment and prevention of human diseases. Over 60% of currently used anticancer agents are derived in one way or another from natural sources [11]. Sinapic acid is a small naturally occurring hydroxycinnamic acid derivative. It is a phenolic compound and a member of the phenylpropanoid family, which are assumed as therapeutically beneficial and generally not toxic compounds [(9)]. Additionally, ***Reddy and Prasad, 2011*** [12] have shown that phenolic compounds have health protective effects as well as are cytotoxic to cancer cells. Sinapic acid and other phenylpropanoids are present in vegetables and grains, e.g., Brassica juncea L., hazelnut, pea, cabbage, wheat, or brown rice [13]. Therefore, this

study was conducted to explore the in vitro cytotoxicity of free and Nano-capsulated sinapic acid on squamous cell carcinoma (HEp-2). The results of this study showed that the cytotoxicity was concentration dependent with significant difference between free and capsulated one but Nano- capsulated sinapic acid was significantly effective than free one. These results suggest that both formulae of sinapic acid could effectively inhibit the proliferation of the HEp-2 cells but Nano-capsulated sinapic acid was more effective than the free sinapic acid. In line with the present results is the findings revealed by ***(Kampa et al., 2004)*** [14] who documented that sinapic acid inhibits T47D human breast cancer cells in a time and dose dependent manner. Similarly, ***Roy et al., 2002*** [15] stated that the natural phenolic compounds curcumin, resveratrol, and capsaicin act as chemopreventive agents by inducing apoptosis in tumor cells.

In the present research, to evaluate the antioxidant properties of free and nano-sinapic acid, the intracellular ROS level was measured in HEp-2 cells treated with sinapic acid and nano-sinapic acid after 24 hours. In the present work, it was found that the intracellular ROS levels were increased in sinapic acid and nano-sinapic acid treated cells as compared to the control untreated cells.

The precise role of ROS in the signaling of apoptosis is very complicated, as both the intrinsic and extrinsic pathways are known to be associated with ROS [16]. Previous report demonstrated that oxidative stress induced by chemopreventive drugs reduced MMP and caused cyt-c to be released from the mitochondria, resulting in the activation of caspase-9 [17]. Mitochondria is a key organelle for the cell survival and are a source of ROS generation during apoptosis, reduced MMP can lead to increased generation of ROS and apoptosis [18]. The anticancer effect of sinapic acid is revealed by its ability to decrease the MMP, and thereby induce apoptosis in HT-29 and SW480 colon cancer cells [19]. In this context, ***(Galati et al., 2002)*** [20] have suggested that dietary phenolic compounds alter MMP and induce mitochondrial collapse. ROS has been implicated as a messenger in multiple signaling pathways and can play a significant role in the apoptotic process by regulating the activity of certain enzymes involved in the cell death pathway [21].

The present findings are in line with finding reported by ***Kalaimathi et al., 2014*** [22] who revealed that laryngeal carcinoma cells on treatment with sinapic acid demonstrated increased intracellular ROS levels and thereby loss of MMP. Additionally, the current findings are in accordance with that reported by ***Chandrasekaran et al., 2014*** [19] who revealed that sinapic acid acts as an antiproliferative agent in colon cancer cells through over production of ROS, apoptotic induction and the loss of MMP. Therefore, the present results propose that oxidative stress is apart in sinapic and nano-sinapic acid could induce cytotoxicity. Thus, both formulae of sinapic acid initiate cancer cell death by inhibiting cell proliferation, altering mitochondrial membrane potential, increasing intracellular ROS and inducing apoptosis in squamous cell carcinoma cell line.

Conclusion

Sinapic acid possesses cytotoxic effect on cancer cells so can be used for cancer prevention and cancer chemotherapy while Nano-capsulated sinapic acid possesses more cytotoxic effect on cancer cells with much lower concentration than sinapic acid. Thus, Nano-capsulated sinapic acid is more effective as cancer chemopreventive agent than free sinapic acid on squamous cell carcinoma.

Conflict of Interest: All authors declare that there is no conflict of interest.

Source of Funding: Self-Funding - No other source of specific funding was obtained for this work.

Ethical Approval: The study was has been independently reviewed and approved by the Research Ethics Committee of the Faculty of Dentistry, Minia University, Egypt. All procedures were in accordance with the 1964 Helsinki declaration and its amendments.

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Effectiveness of Health Education Program on Nurse's Practices toward Hydrocephalus Neonatal Baby Care at Intensive Care Unit at Medical City Complex in Baghdad City

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Abstract

This study aim to: Assessing the nurse's practices toward hydrocephalus neonatal baby care. Constructing an educational program for nurse's practices toward hydrocephalus neonatal baby care. Applying the educational program for nurse's practices toward hydrocephalus. Finding the relationships between the nurse's practices toward neonatal with hydrocephalus and socio-demographic characteristics such as (age, gender, level of education training session). Evaluation the effectiveness of an educational program for nurse's practices toward hydrocephalus neonatal baby care. Descriptive analytic (quasi experimental) design with application of a pre-test/post –test approach is conducted for the period of 7th October 10th April 2019. Non-probability (Purposive)sample of (30) nurse's working in Neonatal Intensive Care Unit (NICU) was chosen .Preliminary study, which consist of (14) nurse's, is to assess nurse's practices toward hydrocephalus neonatal baby care and prepare an educational program with pre and post-test questionnaire. The study finding effectiveness of an educational program toward hydrocephalus nurse's practices neonatal baby care, the results indicated that there is high significant difference among nurse's knowledge and practices pre-test and post-test at p-value =0.001 . which indicated that the program is effective evidence by difference in mean of nurse's knowledge and practices

Keywords: *Effectiveness, Practices, Hydrocephalus, NICU.*

Introduction

Hydrocephalus is considered a long-term condition, normally identified in early childhood, where there is excessive cerebrospinal fluid (CSF) in the ventricular system within the brain. The increased level of CSF causes ventricular enlargement resulting incompression and destruction of adjacent structures that affect brain growth and development. Seventy percent of children with hydrocephalus are managed by the insertion of a ventricular shunt, which diverts excessive fluid from the ventricles to another body compartment, commonly the peritoneum[1] Cerebrospinal shunts are considered to be permanent catheters in which the proximal end of the shunt is in the cerebral ventricle, an intracranial cyst, or the lumbar subarachnoid space; the distalend usually terminates in the peritoneal, pleural, or vascular space. A ventricular shunt is a small tube that is placed in the child's head, which carries extra fluid from the head to the abdomen, where it is absorbed. A ventricular peritoneal shunt is a medical device that relieves pressure on the brain caused by CSF accumulation. Normally, the CSF passes through the brain's ventricles to the base of the brain. The fluid then bathes the brain and spinal cord before it is reabsorbed into the blood. When this normal flow is disrupted, the buildup of fluid can create harmful pressure on the brain's tissues, which can damage the brain[2,3]. Ventirucular peritoneal shunting is the standard therapy for the management of hydrocephalus, 47% of the cases are due to obstruction and infection which constitute the major the cause [4].

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Hydrocephalus is not a new condition, and for many years there had been little in the way of new treatments or improved outcomes. That has changed in the last few decades with increasingly sophisticated imaging method, technological innovations in shunt design and placement, expanded role of endoscopy, and a renewed interest in scientific investigation. At the same time, the recognition of the burden of this illness in underdeveloped countries has inspired neurosurgeons to help develop the infrastructure and expertise to treat children with hydrocephalus and other neurosurgical conditions in geographic areas of need [5]. Hydrocephalus, as known as a disease process, is an ancient one. The disorder has described in cave paintings, in early manuscripts in antiquity, and in many clinical observations over the last 25 centuries. The treatment of hydrocephalus as a surgical disorder is very recent, only dating to the 1950s. Prior to this period, treatment surgically lead to the death of the patient in almost one hundred percent of the time. [6]. Hydrocephalus is a central nervous system disorder characterized by excessive accumulation of cerebrospinal fluid (CSF) in the ventricles of the brain. Cognitive and physical handicap can occur as a result of hydrocephalus. The disorder can present at any age as a result of a wide variety of different diseases. The pathophysiology of hydrocephalus is unclear. While circulation theory is widely accepted as a hypothesis for the development of hydrocephalus, there is a lack of adequate proof in clinical situations and in experimental settings. However, there is growing evidence that osmotic gradients are responsible for the water content of the ventricles of the brain, similar to their presence in other water permeable organs in the body[7]. Hydrocephalus can be classified into communicating and non communicating types. Communicating (non obstructive) hydrocephalus occurs when the flow of CSF is blocked after it exits the ventricles. Non communicating (obstructive) hydrocephalus occurs when the flow of CSF is blocked along one or more of the narrow pathways connecting the ventricles [(8)]. Children with hydrocephalus could also be classified as technology dependent, because the majority of children require a permanent shunt to manage the condition. However,a shunt is an internal device, and once inserted does not require ongoing maintenance unless it malfunctions [(8)]. Hemorrhage into the ventricles of the brain is of the most serious complications of preterm birth despite improvements in the survival of preterm infants. Large intraventricular hemorrhage (IVH) has a high risk for neurologic disability, and 50% of these children go on to develop progressive ventricular dilation. Increasing survival of extremely preterm infants is associated with posthemorrhagic ventricular dilation (PHVD) with high morbidity and considerable mortality. Multiple blood clots may obstruct the ventricular system or channels of cerebrospinal fluid (CSF) reabsorption initially but lead to a chronic arachnoiditis of the basal cisterns involving deposition of extracellular matrix proteins in the foramina of the fourth ventricle and the subarachnoid space [(9)]. Hydrocephalus is not a single disease. It is a manifestation of many conditions including congenital malformations, trauma, tumors, infection, and hemorrhage. It is well known that etiology is a significant risk factor for outcome in these children, and therefore clinical investigations require large numbers of children with different forms of hydrocephalus. Basic scientists are now working in a multidisciplinary cooperative way to share expertise in these many areas[10].

Methodology

The aims of the study: (1) Assessing the nurse's practices toward hydrocephalus neonatal baby care. (2) Constructing an educational program for nurse's practices toward hydrocephalus neonatal baby care. (3) Applying the educational program for nurse's practices toward hydrocephalus. (4) Finding the relationships between the nurse's practices toward neonatal with hydrocephalus and socio-demographic characteristics such as (age, gender, level of education training session). (5)Evaluation the effectiveness of an educational program for nurse's practices toward hydrocephalus neonatal baby care

Study Design: A quasi- experimental design with the application of a pre-test/post-test approach is conducted for the period of October 7th October 2018 to 10th April 2019 on nurses working in intensive care units.

Study Sample: Non-probability sampling (purposive sample) are chosen, (30) nurses is selected according to the criteria includes the nurses all educational levels working in intensive care units, nurses have one year or more of experience in intensive care units, and those who agreed to participate in the study.

Study Instrument: The study instrument was constructed depending on literature reviews and previous studies toward hydrocephalus neonatal baby care. It is a questionnaire format for the research purpose and composed of three parts and these parts are:

Part I: Which composed of demographical characteristics.

Part II: This part is related to evaluation of nurse's knowledge toward hydrocephalus neonatal baby care.

Part III: This part is related to evaluation of nurse's practices toward hydrocephalus neonatal baby care.

Data Collection the Method: The data were collected from Neonatal intensive Care unit of the selected hospitals in Medical City. The period for 7th october to 10th April 2019 then post –test data collection immediately after implementation of the program.

Statistical Analysis: The data were analyzed through the application of statistical package for social science IBM-SPSS version 24.0 and by applying of descriptive and inferential statistical tests that are:: Frequencies, Percentages, and mean of score.

Results and Discussion

Table 1 shows that nurses who are working at Neonate Intensive Care Units are Female (100%) with age group range from 20 to 29 years old (79%); with mean age (28.26) regarding educational level in nursing, about two third of sample were having secondary school education (66.6%) while remaining were distributed between diploma (medical institute) and bachelor degree (nursing college) (16.7%). The years of employment in nursing reveal that 66.7% of nurses are working for period of 1-5 years and 20.8% working for period of 6-10 years; for the same period was showing with working in NICU, 70.8% of nurses are working 1-5 years in NICU and 20.8% are working for 6-10 year. Table 2 presents the levels of nurses' knowledge regarding caring of hydrocephalus baby pre, post1, and post2-test prior to educational program; the findings indicate that nurses having poor to fair level of knowledge prior educational program (Pre-test: poor=41.7% and fair=50%), while the level of nurses' knowledge is increased to good after educational program during post-test I and post-test2 (good=100%). Table 3 presents the level of nurses' practices toward caring of hydrocephalus baby; the finding indicate that half of nurses showing fair level of practices during pre-test period (50%) and the remaining were distributed between poor and good practices (25%), while during the post-test I and II, the nurses are showing good practices toward caring of hydrocephalus baby (100%) their engagement in an educational program. Acute hydrocephalus is a life –threatening condition that condition that is usually treatable with prompt surgical intervention. Various alterations in the normal cerebrospinal fluid (csf) dynamics, which result in elevated intracranial pressure. Part I: Nurses their Demographic Characteristics

Results shows that nurses who are working at Neonate Intensive Care Units are Female (100%) with age group range from 20 to 29 years old (79%); with mean age (28.26) These results agree with findings [11-13] . regarding educational level in nursing, about two third of sample were having secondary school education (66.6%) while remaining were distributed between diploma (medical institute) and bachelor degree (nursing college) (16.7%) This outcome agree with[(14)(15)] . The years of employment in nursing reveal that 66.7% of nurses are working for period of 1-5 years and 20.8% working for period of 6-10 years; for the same period was showing with working in NICU, 70.8% of nurses are working 1-5 years in NICU and 20.8% are working for 6-10 year This outcome agree with[(16)] . And this study reveals that 79.2% of nurses are participated in a training session and courses about caring of babies with hydrocephalus and only 20.8% were not participated. The number of training session was ranged between 1-3 sessions (62.5%). All the nurses who participated in such training were inside country (79.2%) This finding agrees with[(17)].

Part II: Levels of Nurses' Knowledge about Hydrocephalus Baby at the pre-post period: Finding indicated the levels of nurses' knowledge regarding caring of hydrocephalus baby pre, post1, and post2-test prior to educational program; the findings indicate that nurses having poor to fair level of knowledge prior educational program (Pre-test: poor=41.7% and fair=50%), while the level of nurses' knowledge is increased to good after educational program during post-test I and post-test2 (good=100%)

Part II: Levels of Nurses' Practices toward Care of Hydrocephalus Baby at the pre-post Period: Finding indicated the level of nurses' practices toward caring of hydrocephalus baby; the finding indicate that half of nurses showing fair level of practices during pre-test period (50%) and the remaining were distributed between poor and good practices (25%), while during the post-test I and II, the nurses are showing good practices toward caring of hydrocephalus baby (100%) their engagement in an educational program.

Table (1): Levels of Nurses' Knowledge about Hydrocephalus Baby at the pre-post period:

Levels of Knowledge	Pre-test				Post-test I				Post-test II			
	F	%	M	SD	F	%	M.S	SD	f	%	M	SD
Poor	10	41.7	1.67	0.637	0	0	3.00	0.000	0	0	3.00	0.000
Fair	13	50			0	0			0	0		
Good	2	8.3			24	100			24	100		
Total	24	100			24	100			24	100		

Table (2): Levels of Nurses' Practices toward Care of Hydrocephalus Baby at the pre-post Period:

Levels of Practices	Pre-test				Post-test I				Post-test II			
	F	%	M.S	SD	F	%	M.S	SD	f	%	M.S	SD
Poor	6	25	2.00	0.722	0	0	3.00	0.000	0	0	3.00	0.000
Fair	12	50			0	0			0	0		
Good	6	25			24	100			24	100		
Total	24	100			24	100			24	100		

Conclusion

There is no significant relationship between nurse's knowledge and practices and nurse's level of education and socio-demographic characteristics and significant relationship between nurse's knowledge and practices and general nurse's employment years and period of working in the Neonatal Intensive Care unit (NICU) . Over all evaluation of educational program for nurse's was fair.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the pediatric Nursing Department, College of Nursing/Baghdad University- Iraq and all experiments were carried out in accordance with approved guidelines.

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Active Learning Practices for First-Grade Science Teachers and their Relationship to Students' Successful Intelligence

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Abstract

The paper aimed to identify the active learning practices of the teachers of science for the first grade and their relation to the successful intelligence of their students. The descriptive approach was used to suit the nature of the study. The researcher presented the study tools to a group of experts and arbitrators for the purpose of verifying the validity of the research tools. The data were also statistically processed using Holistic equation, arithmetic averages, standard deviations, The results of this study found that active learning practices were weak, while successful intelligence was medium. Results showed a statistically significant positive correlation between active learning practices among science teachers and between In the light of the previous results, the researcher recommended several recommendations, including the preparation of training programs for teachers of science in general and for the first grade teachers in particular the average of active learning practices and the need to hold seminars for science teachers to identify successful intelligence and provide a classroom environment that works on development .

Keywords: *Active Learning-Science Teachers-Successful Intelligence.*

Introduction

In view of what the Ministry of Education in Iraq aspires to keep pace with the educational system and the elements of the educational process for the progress made whether in the role of the teacher or the role of the learner through the use of teachers educational practices focused on making the student the focus of the educational process and active-active with the intelligence and abilities The researcher finds the need to reveal the level of active learning practices among the teachers of science and the level of intelligence in their students and the relationship between active learning and successful intelligence. Therefore, the problem of research can be formulated by the question: Is there a correlation between active learning practices The teachers of science and the successful intelligence of their students? The current era has witnessed great development in all aspects of life. We reflect this development in the field of education and teaching method[1]. Moreover, teachers do not care about strategies used with students in learning and accordingly, they follow certain modes of teaching and thinking that encouragesauto-memorization[2]. As education is a social necessity and enjoys a value and importance because it has a practical effect in all societies and educational institutions [3]. There are several modern teaching method and strategies that pay attention to the learners and deem them as the focus of the education process. The education process has been shifted from the dependence on the teacher to dependence on the learner's themselves, with minimal contribution of the teacher as a director in the education process[4]. Modern education has to keep up with the tremendous developments that happened in all aspects of life, so the teacher is no longer just a teacher but a learner of knowledge, the learner has an important role in the process of education and learning, and the teacher became organizer and guide of those processes[5] teachers have to choose method, strategies

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and teaching method which are intended to reach the aim in educational programs, the selection of these things depend on the suitability of the students' characteristics, needs, the nature of the academic content, educational aims and the available financial and human means[6]. as the use of modern strategies was not accidental, but came in response to the needs of the educational system to achieve its objectives[7]. Hence, teaching concept indicates the intentional and regulated process by which the teaching elements (teacher, learner and material) interact, and which is done according to pre-planned procedures aiming at fulfilling desirable destinations and ends[8]. The process of teaching science is fertile ground in information, facts, concepts, skills and educational values towards the students in the intermediate stage, which may contribute to the improvement of the level of students' achievement in science, but recently showed a lot of educational and scientific data such as previous studies and conferences towards the educational process In the current period, the information technology revolution has started at a rapid and rapid pace in the technological field, which still leaves clear imprints in the lives of individuals and reflects broad challenges in all areas of life. Science has played a major role in change and scientific development. It has brought with it the interest of educationalists and their partners in the hands of innovation, development, and modernization in terms of content, teaching method and teaching aids. In this sense, it is the responsibility of teachers to choose the method, strategies and teaching method intended to achieve the goal to be achieved in programs [1]. Some experts in the field of science teaching believe that the method of teaching the dominant sciences and the sciences, The traditional method is often effective in achieving the goals of science teaching, and effective science education can produce effective independent learners who are able to organize their everyday life, be productive, cooperative and have the ability to make good decisions, [9]. The teacher in general and the science teacher, in particular, should be able to have all the modern method and teaching practices to choose the appropriate educational situation. The successful middle school teacher is especially able to make the student involved in the educational process. Not a passive recipient [10]. This can only be achieved by activating active learning within the classroom, which makes the learner the focus of the learning process, participating in achieving his or her learning goals, making him active in the classroom, practicing experimentation, and conversing with the discussions within him [11]. Which makes the learner the focus of the educational process and makes him an active, active and participatory, has a role in the management of the educational process in terms of identifying some of the activities that address and commensurate with the wishes and potentials, and this type of learning is based on learning by practice and participation and research and exploration, P In the classrooms, today's learners are faced with the problem of teaching them with learning and teaching practices that do not match their mental abilities. This leads to a lack of learning. At the same time, these learners and their teachers may reach the conclusion that They have a lack of learning ability and the fact that many of them have amazing abilities to learn if taught in a way that suits them, and Sternberg believes that this claim was reached only through one case is that the success of many learners in certain circumstances and failure In other circumstances, Sternberg developed the theory of successful intelligence for the order This is done only through the development of a set of teaching and assessment method and practices to help learners reach their maximum potential and success in life [12]. Successful intelligence is one of the key cognitive processes that can outweigh information and knowledge in facilitating the adaptation and uncontroled of individual resources and resources within the context of the learner in different life situations, whether these resources are in the form of information, experiences or tools available in the learner's daily life situation[13]. The learner's ability to achieve the goals according to certain criteria or special within the social and cultural context in which the learner, that is, the learner sets goals and works to achieve them in line with the social and cultural context, which is the ability to achieve success in life by the expression of personal standards within the social context, The intellectual of the learner and consists of successful intelligence (analytical intelligence, practical intelligence, and creative intelligence). [14] There are previous studies similar to the current research variables: Al-Rawashdah and Walid (2015). The degree of active learning practice in science classes in the primary classroom in the North Eastern Bedouin schools in Jordan. And the study (happiness and Dalal) 2018 Degree of the practice of primary school teachers of active learning elements from the point of view of mentors and managers in Kuwait City. And Ahmed, Nahla (2016). The relationship between the intelligence of three-dimensional and mental alertness among middle school students. The study (Zoubi, Ahmed) 2016 The relationship between the assessment of successful

intelligence and its practice in the education of private school teachers Jordan.

Methodology

The researcher used the descriptive (associative) approach as the appropriate method for the purpose of research aimed at identifying the active learning practices of the first-grade middle school teachers and their relation to the successful intelligence of their students. The sample of the research was randomly selected by 13% of the research community. The sample of the teachers was 15 teachers and the sample was 42% of the research community. (1691) Students for the purpose of collecting data To answer the study questions and achieve their objectives, the researcher prepared a note card to observe the active learning practices after reviewing the previous studies and literature concerning active learning if the observation card consisted of (40) Which includes (9) paragraph and field (implementation), which includes (23) paragraph and area (calendar) (High, high, medium, low, very low). The researcher presented a note of active learning practices in their initial form on a group of teachers specialized in the field of teaching method and the quality of education in various Iraqi universities to express their views on the clarity and integrity of its formulation and has been modified in accordance with their observations. The researcher also prepared a successful intelligence test to measure the successful intelligence of first-grade students. The Sternberg test, which was prepared for the secondary stage, consisted of (36) multi-choice questions on the three abilities of successful intelligence (analytical ability, practical ability, creative ability) With (10,14,12) question, respectively, the researcher presented the test with instructions to a group of professors specialized in teaching method in different Iraqi universities and according to the opinions and observations, the researcher modified the test.

Conclusion

The results showed a positive correlative relationship at the level of significance between the active learning practices of the science teachers and the successful intelligence of their students Pearson correlation coefficient (0.67).

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Graduate Studies-Method of Teaching General Sciences, Faculty of Basic Education, University of Babylon, Iraq and all experiments were carried out in accordance with approved guidelines.

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Study of School Safety Climate: Case of Elementary Schools in Beji District–Depok 2018

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Abstract

Creating a positive school climate with safety being assured is vital to assist students accomplishing their expected results. More than 2,000 children and adolescents die every day as a result of accidents [20]. About 40% of children who died because of injuries aged between 1 to 14 years old [21]. This is the first study on elementary school safety climate in Indonesia. Employing the descriptive analytics approach with cross sectional research design, the study examine the school safety climate in Indonesia. We distributed questionnaire to the principal, teachers, school staff and students. The data of accidents was obtained by interviewing the principal or teacher. The results showed that the safety climate in a Primary School in Beji, Depok in 2018 had a good category. The Islamic Private Elementary School received scored higher than MI/ MIS Private Primary Schools and State Primary Schools. The highest accident data occurred due to falling. Factors that improve the safety climate are management commitment, a comfortable school environment, adequate facilities, and sufficient numbers of teachers.

Keywords: *Cross Sectional, Safety Climate, Accidents, Elementary School.*

Introduction

Creating a positive school climate with safety being assured is vital to assist students accomplish their expected results. It will create a positive relationships between school citizens, and a safe physical environment.

Elementary school children are characterized with activities which involve moving, and working in groups. This increases their chance to face accidents and illness at school. An accident occurred in October 2017 at Yos Sudarso Batam Elementary School. The student was hit by a goalpost while climbing a pole[1]. Another case occurred to a student of Harapan Utama Batam Elementary School due to a fall in the football goalpost which led to the death of the student[1].

Depok City Population and Civil Registration Service recorded an increase in the population of 47,133 people during 2016. Based on Depok education data year 2012/2013, the number of primary schools in Beji Sub district is 25 Public Elementary Schools and 10 Private Elementary Schools (Depok City Education Office, 2013). This affects the health profile of children in Depok City. The Depok City Health Office determined the status of extraordinary events in cases of food poisoning which affected 27 children[2]. We expect to gain perspectives about the existing safety system and what needs to be improved. This research aims to investigate the school safety climate in the case of elementary school in Beji District, Depok.

Method

The data was collected by distributing questionnaires and conducting interviews with 13 principals, 179 teachers, 11 staffs and 147 students from 7 public

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elementary schools and 7 private elementary schools (n = 350). The private schools consist of 4 Islamic schools and 3 general elementary schools. We provided guidance to fill out the questionnaire.

This study uses the descriptive analytics approach with cross sectional research design. We distributed questionnaire to the school principal, teachers, staff and students to obtain primary data. Secondary data was obtained through interview and observation.

The primary data in discussion is the characteristics of respondents which were discovered through the questionnaires developed by NORDIC (NOSACQ-50), namely the assessment of workers' perceptions of 1) safety management commitment and capabilities, 2) empowerment of safety management, 3) safety management justice, 4) Workers 'commitment to work safety, 5) Priority of workers' safety and no tolerance of hazard risk, 6) Learning, communication and trust and 7) trust in the effectiveness of the work safety system.

Secondary data referred to data based on interviews with principals, teachers or school staffs, and based on records of accidents and illnesses within a certain period.

Results and Discussions

From a total of 203 teacher respondents, the average score of safety climate dimension ranged between 3.20 and 3.47 with a standard deviation ranging from 0.21 to 0.43 (Table 1). The result demonstrates that all schools are deemed having an adequate safety climate. of all seven dimensions, the workers; commitment to environmental safety obtained the highest average score (3.47). The lowest average score was held by the empowerment of safety management dimension (Table 1).

Table 1: Overview of Teacher's Safety Climate at Beji District Elementary School, Depok

Variables	Mean	SD	95% CI	n
Safety Management Commitment and Capabilities	3,31	0,27	3,27-3,35	203
Empowerment of Safety Management	3,20	0,43	3,14-3,26	203
Safety Management Justice	3,23	0,38	3,19-3,29	203
Workers' Commitment to Work Safety	3,47	0,32	3,42-3,51	203
Priority of Workers' Safety and No Tolerance of Hazard Risk	3,24	0,21	3,21-3,27	203
Learning, Communication and Trust	3,25	0,33	3,19-3,29	203
Trust in the Effectiveness of the work safety system	3,29	0,38	3,24-3,35	203

Of the 147 student respondents, the average score of the safety climate dimension ranged from 3.34 to 3.69 with a standard deviation ranging from 0.33 to 0.62 (Table 2). Equivalent to the results from teacher respondents, that students at elementary schools in Beji, Depok considered schools to have an adequate safety climate. The highest and lowest average scores were obtained by the safety management justice dimension (3.69) and empowerment of safety management dimension (3.34) (Table 2).

Table 2: Overview of Students Safety Climate in Elementary Schools in Beji, Depok in 2018

Variables	Mean	SD	95% CI	n
Safety Management Commitment and Capabilities	3,57	0,55	3,48-3,66	147
Empowerment of Safety Management	3,34	0,50	3,26-3,42	147
Safety Management Justice	3,69	0,33	3,63-3,74	147
Workers' Commitment to Work Safety	3,57	0,52	3,49-3,66	147
Priority of Workers' Safety and No Tolerance of Hazard Risk	3,62	0,62	3,52-3,72	147
Learning, Communication and Trust	3,39	0,43	3,33-3,47	147
Trust in the Effectiveness of the work safety system	3,37	0,48	3,29-3,45	147

The results of this study is analogous to a study by Griffin (2000)[3], which found that safety climate is positively correlated with safety performance. Several studies have evaluated the relationship of safety climate to safety outcomes ranging from unsafe behavior[4]. safety behavior[5-7], risk perception[8], near misses[9], safety violations and motivation[10], and accident rates[11]. A positive safety climate is able to create work environment where improvements in safety performance can continue to be achieved[12].

Students face a high risk of accidents, and illness at school, because of the environment, and inadequate quality of the school facilities. Lack of teacher supervision due to the shortage of academics worsen the problem.

Dimension 1: Safety Management Commitment and Capabilities

This dimension captures the perceptions on the way school management prioritizes safety.

The safety management commitment and capabilities of the school were sufficient, proven by the average score of 3.42. It is known that the sub-dimension 'pays no attention to when a worker ignores safety' (A3) acquired the highest score. Meanwhile, the sub-dimension 'we who work here believe in the ability of the school management to handle safety' (A6) obtained the lowest score.

The principal's behavior can determine the workers' level of perception of safety management commitment[10]. Management support is one of the strongest contributions in shaping safety climate perceptions[11].

Based on observation and interview, the schools' safety management commitment, especially in Public and Islamic schools, were limited. Many buildings and facilities went unnoticed (e.g. no stairs handrail, ceilings that might have fallen, fire extinguishers unavailability). Private schools were found to have considered safety, such as providing pedestrians' signs, evacuation direction, and clinics.

Dimension 2: Empowerment of Safety Management

The dimension captures the perceptions concerning the school management's actions on gathering all stakeholders to participate in safety management. Employees', involvement means empowering the employees, which in this case is school citizen, to be involved in work and safety processes[13].

Management safety empowerment is entrustment from management concerning workers' ability and judgment about safety[22]. School citizens involvement can improve safety conditions, such as reporting injuries and dangerous situations[14].

According to our observations and interviews, the school management has not considered safety in the school policy. Their priorities is students' academic achievement. School visits to accommodate the school aspirations have also not been realized.

Dimension 3: Safety Management Justice

This dimension captures the perceptions on how the school management treat those who are in danger.

The employees have positive perceptions about the management justice on school safety. The sub-dimension "Management always blame the employees when an accident occurs" (A21) obtained the highest score and the sub-dimension "Management looks for the cause of the accident and not the guilty (A20) acquired the lowest score. The items that need to be strengthened are "the perception of school principal, teachers, staff and students about how the management investigates the people who encounter an accident (A19), "the management's treatment towards the employees who are injured" (A21, A22), and "the way of finding the cause of accidents" (A20). It is imperative for the school management to find the root cause of the accidents by using the 5W tool in order to help them determine the corrective action.

Based on observations and interviews, when an accident occurs, the school management inquired the students. However, the school have not carried out in-depth observation. Accident events are only reported to student guardians, but there have been no reports on management. To mitigate this, the school needs to produce a central reporting system.

Dimension 4: Workers' Commitment to Work Safety

This dimension captures the perceptions of workers about their involvement on work safety and whether they show high commitment to work safety, are actively promoting work safety and care about others' safety.

Andriessen (2011) found that safety motivation was not only determined by the leadership factors, but also by group intimacy[10]. Therefore, the commitment of teachers, staff and students is important to determine the perceptions within the school.

Based on observations and interviews, they always maintain student safety to the maximum extent. Teachers share their experience with other teachers about events that occur at school. This can be used to increase awareness about safety. Lack of teachers as educators and supervisors becomes obstacle, because permanent teachers in elementary schools is limited, and the teaching process is assisted by honorarium teachers.

Dimension 5: Priority of Workers' Safety and No Tolerance of Hazard Risk

This dimension captures the workers' perception about their involvement on school safety and whether they prioritize it over work targets, and avoid risky conditions. The perceptions of school citizens about risks can influence risky behavior in teaching and learning activities[15]. The results showed that the dimension "priority of workers' safety and no tolerance of hazard risk" achieved the required score. The overall average score of this dimension is 3.31, with the average score of teachers and students are 3.24 and 3.62, respectively. "We consider harmful risks as unavoidable instruments in the work place" (A29) is a sub-dimension with the highest score. Meanwhile, the sub-dimension "we consider minor accidents as part of our daily work (A30) received the lowest score

Our observations and interviews reveal that the school's stakeholders' perceptions about safety is still low. The sign of the low perceptions of safety can be seen from the buildings of several public schools which were damage but still being used. They prioritized the school main function as a place of learning and teaching but ignoring safety aspect. The teachers said that accidents such as bumping, slipping and falling are normal.

Dimension 6: Learning, Communication and Trust

This dimension examines the perceptions of teachers, staff and students about how they relate to safety in the workplace in terms of discussing safety issues, learning from work experience, helping one another to work safely to ensure safety. Individual learning processes plays a key role in the process of improving safety[16]. A large body of literatures state that communication is often regarded as a supporting factor in a positive safety climate[17,18,11,13].

Among the measures that can be taken is that the school can use the available technology, such as e-mail, WhatsApp, and text message to report the accident. The communication must involve not only the interaction between management and workers, but also among workers. Workers who have a safety interaction with their coworkers tend to have a more favorable safety perception[15].

Dimension 7: Trust in the Effectiveness of Work Safety System

This dimension captures the perceptions of teachers, staff and students about the effectiveness of work safety systems run by safety officers, safety representatives, or teachers who have a specific task to deal with safety and health in schools. Zohar (2000) argue that on defining the dimensions of the school safety climate, several aspects of the safety management system must be identified, namely the position of safety officers, the frequency of safety checks, and the emphasis on safety training[19].

Based on observations and interviews with school principals or teachers, the Public Elementary Schools and Islamic Schools have not acquired appropriate safety system. Meanwhile, the Private Primary School is already one step forward. However, the private school still does not have a safety officer. Similarly, training on emergency response has not been executed. Schools should raise the awareness of the importance of safety officers, safety audits, and risk assessment in preventing accidents.

Conclusions

Based on our study on investigating the school safety climate with reference to the NOSAC-50 safety climate questionnaire in Elementary Schools in Beji District, Depok in 2018, we found the following evidence:

a. The dimension "Safety management commitment and capabilities" are proven to be "adequate". However, several issues need to be refined on the management side, to ensure that safety issues are handled correctly.

b. The dimension "Empowerment of Safety Management" is in the good category. Although this is good, employees' perception of management in

relation to the involvement of employees in decision making must be improved.

c. The dimension "Safety Management Justice" conducted by teachers and students are proven to be adequate. Yet, there are cases when teachers are afraid to report accidents due to the sanctions.

d. The dimension "Workers' Commitment to Work Safety" is in the good category. However, a minor improvement is needed, especially in workers' perceptions regarding the handling of hazards and teachers' effort to achieve a high level of work safety.

e. The dimensions "Priority of Workers' Safety and No Tolerance of Hazard Risk" in teachers and students are in the good category. However, based on the observation and interviews, there was still a lack of discussion about safety-related issues in schools.

f. The dimension of "Learning, Communication and Innovation" is in the good category. However, based on the observation and interviews, the importance of the teachers and staff assumption about clear safety goals and training need to be improved.

g. The dimension "Trust in the Effectiveness of the work safety system" of teachers and students are in the sufficient category. However, based on the observation and interviews, it is necessary to improve teachers and students' perceptions about the function of safety officers, safety audits, and risk assessment.

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Competing Interest: There is no conflict of interest.

Ethical Clearance: Ethical clearance obtained from Faculty of Public Health Universitas Indonesia ethic committee. Ethical clearance number 558/UN2.F10/PPM.00.02/2018

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Effectiveness of an Instructional Program on Patient's Knowledge Regarding Secondary Prevention of Coronary Artery Diseases in Al Nasiriyah Heart Center

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Abstract

Secondary prevention of coronary artery disease by comprehensive risk factor modification reduces mortality, decreases subsequent cardiac events, and improves quality of life. Objective: To assess effectiveness of the instructional program on patient's knowledge regarding secondary prevention coronary artery diseases. A quasi-experimental design (two-group pretest-posttest) was used conducted in this. The present study was carried out at Al- Nasiriyah Heart Center in Thi-Qar Governorate for the period 17th of October 2018 to 6th of April 2019. A non-probability (purposive) sample of (40) patients were selected questionnaire for knowledge was constructed for the purpose of the study. Validity and reliability of the instrument were determined through a pilot study. Data were analyzed through the use of Statistical package for Social Sciences (SPSS) version. Descriptive and inferential statistical measures were employed. The study indicated that the knowledge scores of participants were inadequate for both groups in the pre-test, but the study group knowledge scores have increased after introducing them the instructional program. Therefore, there were significant differences between both groups. But the results indicated that there was no relationship with statistical significance between patient knowledge and demographic data.

Keywords: *Coronary artery diseases, secondary prevention.*

Introduction

Coronary artery disease (CAD) also known as coronary heart disease (CHD), coronary atherosclerosis and Ischemic heart disease (IHD), which is a most common type of heart disease, and it represents a major source of morbidity and mortality in developed countries [1]. CAD is results from atherosclerosis, or the accumulation of fatty plaques in artery wall that cause narrowing of the artery lumen. CAD that includes coronary syndrome, atherosclerosis, and other form of chronic ischemic disease, is responsible for many deaths. Chest pain, shortness of breath, heart attack or other syndromes can be caused by a blood clot or plaque rupture that blocks a narrowed artery leading to heart [2]. As a result, the heart muscle can't get the blood or oxygen it needs. This can lead to chest pain (angina) or a heart attack. Over time, CAD can also weaken the heart muscle and contribute to heart failure and arrhythmias[3]. CAD is usually associated with one or more risk factors. Several aspects of the association between a potential risk factor and the disease are evaluated before an association is considered causal [(4)]. The majority of these risk factors can be controlled or modified. The modifiable risk factors include sedentary lifestyle, rich fatty diet, smoking, obesity, high alcohol intake, poor stress management, social isolation and medical conditions such as diabetes and hypertension. Non-modifiable risk factors include increasing age, gender and heredity. Globally 80% to 90% of people dying from CAD have one or more major risk factors that are influenced by life style [5]. The death rates from CAD vary

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with age, gender, socioeconomic status [6]. The guidelines for prevention of heart disease by the American Heart Association target the risk factors that have the potential for change. Educating patients on cessation of smoking, dietary changes, controlling hypertension, maintaining weight, and diabetes can decrease their risk of (CAD). [7]. Knowledge of the predisposing risk factors is important. One method of targeting preventive educational strategies involves measuring and appropriately disseminating knowledge of the modifiable risk factors. Earlier studies have revealed that education programs for the elderly were effective in improving health promotion knowledge and behaviors[8]. Secondary prevention of Coronary artery disease by comprehensive risk factor modification reduces mortality, decreases subsequent cardiac events, and improves quality of life. Secondary prevention includes medical therapy and surgical revascularization in the form of coronary artery bypass grafting or percutaneous coronary intervention. Medical therapy focuses on comprehensive risk factor modification [9].

Methodology

A quasi-experimental design was carried out at Al- Nasiriyah Heart Center in Thi-Qar Governorate from 17th of October 2018 to 6th of April 2019. The sample involved All these patients who are inpatients at Al- Nassiriyah Heart Center which is divided into two groups, one is study group (40) patients and one is control group (40) patients. A randomized sample (80) patients was selected through probability sampling technique.

The instrument that used is the questionnaire which is composed of (35) multiple choice question regarding patients′ knowledge. Reliability of knowledge was determined through collecting the data from 10 patients and performing test and re-test, the reliability coefficient results are significant for knowledge and validity of questionnaire was determined through the experts.

Results and Discusion

Table (1): Distribution of the studied groups according to (SDCv.) with comparisons significant

SDCv.	Groups	Study		Control		C.S. (*) P-value
	Classes	No.	%	No.	%	
Age Groups	< 40 yrs.	4	10.0	5	12.5	C.C.=0.254 P=0.139 (NS)
	40 _ 49	10	25.0	5	12.5	
	50 _ 59	16	40.0	11	27.5	
	60 _ 69	10	25.0	19	47.5	
	Total	40	100	40	100	
	Mean ± SD	52.30 ± 8.35		57.05 ± 12.68		
Gender	Male	26	65	22	55	C.C.=0.102 P=0.361 (NS)
	Female	14	35	18	45	
	Total	40	100	40	100	
Educational status	Illiterate	10	25	18	45	C.C.=0.315 P=0.186 (NS)
	Read And Write	3	7.5	2	5	
	Primary School	10	25	6	15	
	Intermediate School	9	22.5	2	5	
	Secondary School	3	7.5	4	10	
	High Institute	3	7.5	5	12.5	
	University Graduate	2	5	3	7.5	
	Total	40	100	40	100	

SDCv.	Groups	Study		Control		C.S. (*) P-value
	Classes	No.	%	No.	%	
Occupational	Worker	8	20	7	17.5	C.C.=0.145 P=0.631 (NS)
	Government Employee	13	32.5	12	30	
	Wife House	11	27.5	16	40	
	Retired	8	20	5	12.5	
	Total	40	100	40	100	
Marital status	Married	33	82.5	33	82.5	C.C.=0.218 P=0.261 (NS)
	Widowed	2	5	2	5	
	Divorced	5	12.5	5	12.5	
	Total	40	100	40	100	

Table (2): Relationships (Analysis of Covariance) for Patients' Knowledge about Secondary Prevention of Coronary Diseases and SDCv. in Study group

Source	Type III Sum of Squares	d.f.	Mean Square	F Statistic	Sig. Levels	C.S. (*)
Corrected Model	1300.593	15	86.706	1.561	0.160	NS
Intercept	42919.79	1	42919.79	772.575	0.000	HS
Age Group	99.528	3	33.176	0.597	0.623	NS
Gender	78.662	1	78.662	1.416	0.246	NS
Education Level	265.285	6	44.214	0.796	0.582	NS
Occupation	362.388	3	120.796	2.174	0.117	NS
Marital Status	197.528	2	98.764	1.778	0.191	NS
Error	977.36	24	40.723	R-Squared = 0.494		
Total	13298.53	40				
Corrected Total	4265.502	39				

Weak relationships are a proved in light of (SDCv.), since no significant relationships were accounted at P>0.05, and according to that, it could be concluding that studied questionnaire of patient's knowledge improvements could be generalizes on studied population even though differences within their socio-demographical characteristics variables of studied subjects in the study group. With respect to age group, the study finding revealed that the majority of study group patients were more than 50-years and they are accounted 26(65%), and 30(75%) at the study and controlled groups respectively. This study agrees with Qasim, 2017 which indicated that majority of sample are 45(56.25%) between (50 – more) age group [10]. Regarding of gender, the study finding revealed that majority in the study group were males while male patients were recorded slightly increased than female and they are accounted 26(65%), and 22(55%) at the study and controlled groups respectively. This study is supported by Sobhi,2011 who stated that they are accounted (76.2%) the males were more [11].In relation to educational status, the study finding displayed that majority of study group patients were Half of studied patients has low educated levels (Illiterate, and Primary School). This study was supported by Al- Jubori,2012 who reported that degree the majority of patients low educated levels [12].Concerning to occupational status the study finding displayed that majority of study group patients were Government Employee, and House wife. This study was supported by Al-Jubori, 2012 who reported that Government Employee, and House wife the majority of patients [12].Regarding Marital status, the study finding most patients were married, and they are accounted 33(82.5%) in each group. This finding was supported by Ali, 2015 who reported that the majority patients married[13]. Statistically significant difference

for patients' knowledge of secondary Prevention of Coronary Artery Diseases (pre – post) periods through implementation of instructional program for study group. This finding indicates the positive influence of the instructional program in improvement patients' knowledge. This finding is supported by EbyKorah (2016) who reported that increased influence of participant's knowledge regarding related to Prevention of Coronary Artery Diseases [3]. The overall assessment of patient's knowledge regarding secondary prevention CAD in the posttest time, there was a fluctuant high assessment of the participants' knowledge with a statistically significant difference in participants' knowledge about secondary prevention of CAD. This finding showed that application of the instructional program was significantly effective in improving knowledge among participants. This study is supported by Korah, 2016who reported that increased participant's knowledge regarding related to Prevention of Coronary Artery Diseases [3]. weak relationships are a proved in light of (SDCv.), since no significant relationships were accounted at P>0.05, and according to that, it could be concluding that studied questionnaire of patient's knowledge improvements could be generalizes on studied population even though differences within their socio-demographical characteristics variables of studied subjects in the study group.This study is supported by Korah (2016) who reported that there were no significant differences between Patients' Knowledge and Socio-demographic Characteristics variables [3].

Conclusion

The instructional program was effective in enhancing patient's knowledge related to secondary prevention of CAD (for all subdomains and the overall).

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Baghdad, College of Nursing, Iraqand all experiments were carried out in accordance with approved guidelines.

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Detection of Vulnerable Periods of Cerebral Desaturation Assessed by In-Vivo Optical Spectroscopy (INVOS) During Superior Cavopulmonary Shunt Operation and Their Effect on Early Postoperative Neurological Outcome

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Abstract

Background: Postoperative neurocognitive dysfunction is common after Glenn operation. Cerebral oxygen saturation (rSO2) can be assessed by INVOS™ oximeter (Somanetics). We investigated the intraoperative events most associated with cerebral desaturation and the correlation between intraoperative rSO2 and early postoperative neurological outcome in a prospective observational study. Method: thirty patients with single ventricle physiology undergoing elective (Glenn) operation underwent intraoperative rSO2 assessment, including detection of vulnerable periods during which cerebral desaturation occurs, measurements of mean tissue oxygen saturation and area under the curve (AUC), which is the cumulative saturation below threshold. Postoperative neurologic outcome was assessed using the modified Glasgow coma scale for infants and children, and the occurrence of fits and its correlation to the AUC.

Results: Vulnerable periods of cerebral desaturation as detected by INVOS included induction of anesthesia, cannulation and decannulation when the procedure was performed on bypass, and SVC clamping period when the procedure was performed off-bypass, and in cases which used the temporary cavoatrial shunt there was also drop in rSO2 during SVC cannulation. Patients with drop of AUC more than 25% of the baseline had an increased risk of developing postoperative fits.

Conclusions: Intraoperative cerebral desaturation is significantly associated with increased risk of postoperative fits..

Keywords: *INVOS; Glenn; neurological outcome; superior cavopulmonary anastomosis; BDG.*

Introduction

Neurological complications are common after cardiac surgery. Risk factors identified. Include CPB, embolic events, hypoperfusion and cerebral desaturation[1]. It is crucial to study the risk factors and specify their correlation to the neurocognitive outcome, specify measures and practices to prevent or decrease their effect on the neurological outcome. In our study, we assessed the cerebral oxygen saturation (rSO2) during (Glenn), to detect periods of desaturation, and their effect on the postoperative neurocognitive outcome.

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Method

Patients: This study was approved by the Cairo University Faculty of Medicine. Institutional Review Board, and patients were enrolled after a signed informed consent was obtained from parents. The study was performed at the Children University Pediatric Hospital,

which is affiliated to Cairo University Hospitals. The study was prospective, observational study with thirty consecutive patients, who were candidates for Glenn operation. Patients were non-randomized into two patient cohorts. Group A underwent the procedure using cardiopulmonary bypass (n=15), and group B underwent the procedure without cardiopulmonary bypass (with or without cavoatrial shunt) (n=15). Patients were excluded preoperatively for preexisting neurological insult, having previous cardiac surgical procedure, abnormal neurocognitive testing, abnormal blood or coagulation profile.

Surgical Procedure: All were done via median sternotomy. For patients who underwent the procedure using CPB, Blood flow was adjusted to maintain temperature-adjusted flow and to maintain acceptable perfusion pressure and arterial oxygen saturation. cardiac arrest was achieved when reconstruction of pulmonary artery, or septectomy was planned.

In-Vivo Optical Spectroscopy: The INVOS™ oximeter (Somanetics), which provides continuous, noninvasive and real time measurement of cerebral oxygenation, is used in this study through adhesive pads applied over the frontal lobes. The near-infrared wavelengths are generated by a light source of the sensor and penetrate skin and bone. Within the brain tissue in 3 cm depth the light is either absorbed or reflected to the two detectors of the sensor. The continuous measured data are displayed on the monitor with an update every five seconds. Area under curve (AUC) account for both depth and duration of desaturation below these thresholds so they are expressed as min% values. If values of AUC from the left and right sides of the brain were different, we took the greater AUC value as relevant. The INVOS™ was applied to patients just before the induction of anesthesia.

Neurocognitive Assessment: Patients assessed preoperatively and prior to discharge, for any neurological deficits; like stroke and seizures, followed by evaluation using the modified Glasgow coma scale for infants and children.

Results

Demographic data: (table 1)

Age: group A; was in the range of 7.5 to 60 months. For group B; was in the range of 5 to 144 months. The difference was statistically insignificant (P value > 0.05).

Weight: group A; was (9.813 ± 3.0764 kg), in the range of 5.1 to 14 kg. For group B; was (10.92 ± 7.4759 kg), in the range of 4.5 to 30 kg. The difference was statistically insignificant (P value > 0.05).

Preoperative INVOS reading: For group A; was (49.53± 13.043 %), in the range of 23 to 73 %. For group B; was (47.87 ± 10.723 %), in the range of 23 to 63 %. The difference was statistically insignificant (P value > 0.05).

Superior vena cava clamp time: For group A; was (16.53 ± 4.58 minutes), in the range of 13 and 30 minutes. For group B; was (14.8 ± 7.36 minutes), in the range of 0 and 30 minutes. There difference was statistically insignificant (P value > 0.05). figure (1)

In group A: the critical threshold: rSO2 < 40 OR 25% change of rSO2 from baseline was encountered during induction of anesthesia and during cannulation prior to cardiopulmonary bypass, figures (2,3).

Table (1): Preoperative results in both groups.

	Group A	Group B	P value
Age	Median 24 m Range 7.5 - 60	Median 12 m Range 5 - 144	> 0.05
Weight	9.813 ± 3.0764	10.92 ± 7.4759	> 0.05
Preoperative O2 saturation	72.33 ± 10.349	70 ± 10.468	> 0.05
Preoperative Hb	14.553 ± 2.3055	14.093 ± 2.1848	> 0.05
Preoperative CVP	9.8 ± 1.612	10± 2.535	>0.05
Preoperative INVOS reading	49.53± 13.043	47.87 ± 10.723	> 0.05

Figure (1): Graph of mean SVC clamp/snare time in both groups.

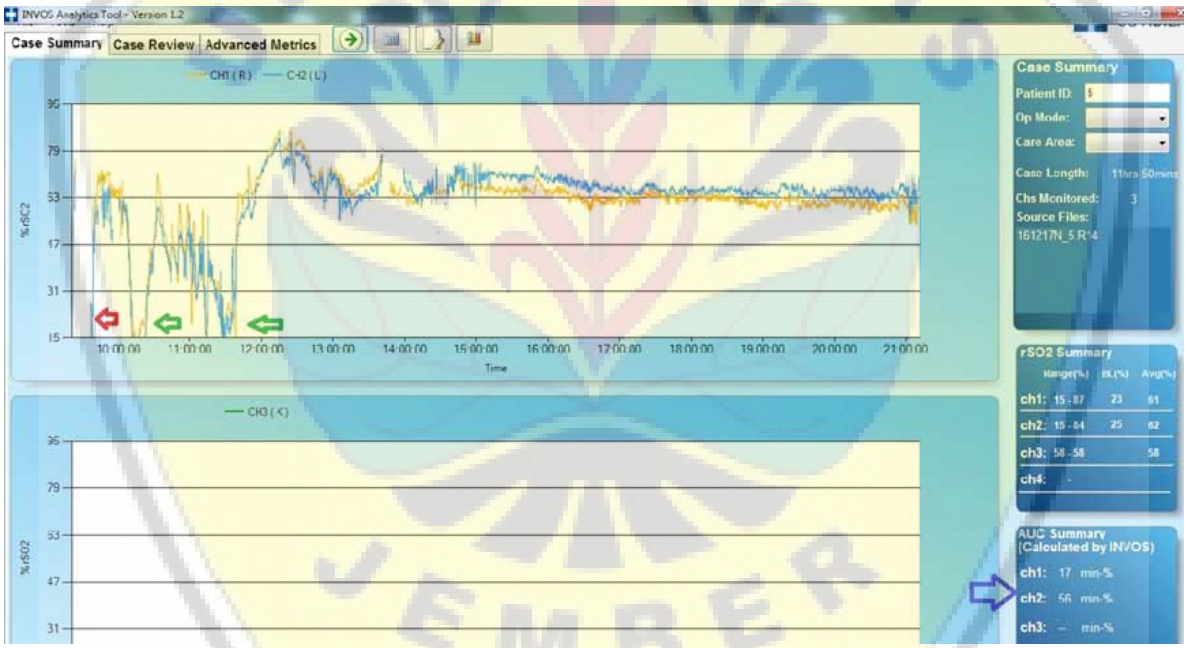

Figure (2) shows an INVOS curve for a patient underwent Glenn shunt using CPB (group A), the blue and orange curves represents ch1 and ch2 the two cerebral leads, the x-axis represents time and y-axis represents rSO2, the red arrow points to drop of rSO2 during induction of anesthesia, the green arrows point to drop of rSO2 during cannulation and decannulation stages of CPB, the blue arrow points to AUC calculated by INVOS (cumulative saturation below threshold).

In group B: the critical threshold was encountered during induction of anesthesia and during SVC clamping period; the latter's effect on the curve was less when a cavoatrial shunt was used (2 cases from the 15 cases done without using CPB), figures (4,5)

NVOS reading after Glenn shunt: For group A; was (71.07 ± 8.614 %), in the range of 48 to 80%. For group B; was (63.67 ± 15.136 %), in the range of 56 to 83 %. The difference was statistically insignificant (P value > 0.05), (figure 6).

Figure (3) shows an INVOS curve for another patient underwent Glenn shunt using CPB (group A), the blue and orange curves represents ch1 and ch2 the two cerebral leads, the x-axis represents time and y-axis represents rSO2, the red arrow points to drop of rSO2 during induction of anesthesia, the green arrows point to drop of rSO2 during cannulation and decannulation stages of CPB, the blue arrow points to AUC calculated by INVOS (cumulative saturation below threshold), in this case it was noticed that during cannulation and decannulation there was less drop in rSO2 and also AUC was less than the former case.

Figure (4) shows an INVOS curve for a patient underwent Glenn shunt without using CPB (group B), the blue and orange curves represents ch1 and ch2 the two cerebral leads, the x-axis represents time and y-axis represents rSO2, the red arrow points to drop of rSO2 during induction of anesthesia, the green arrow points to drop of rSO2 during applying the SVC clamp making a plateau in the curve corresponding to SVC clamp time affecting the AUC (cumulative saturation below threshold), the blue arrow points to AUC calculated by INVOS.

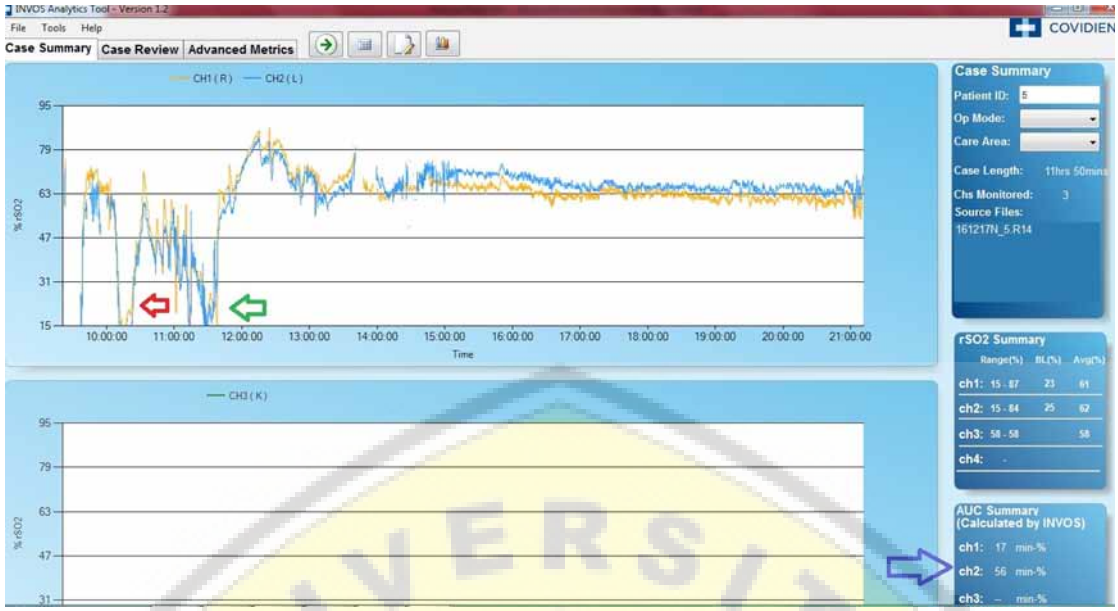

Figure (5) shows an INVOS curve for a patient underwent Glenn shunt without using CPB with cavo-atrial shunt (group B), the blue and orange curves represents ch1 and ch2 the two cerebral leads, the x-axis represents time and y-axis represents rSO2, the red arrow points to drop of rSO2 during induction of anesthesia, the green arrow points to drop of rSO2 during cannulation of SVC avoiding the plateau in the curve corresponding to SVC clamp time with less drop in rSO2 and less effect on the AUC, the blue arrow points to AUC calculated by INVOS (cumulative saturation below threshold).

Area under the curve AUC: The range of AUC for all patients was (0 - 1554 min %) with median 266.5 min%, for group A; AUC was in the range of 12 to 1554 min% with median 128 min%. For group B; it was in the range of 0 to 1419 min% with median 299 min%. The wide range is due unequally distributed data, (figure 7 A & B).

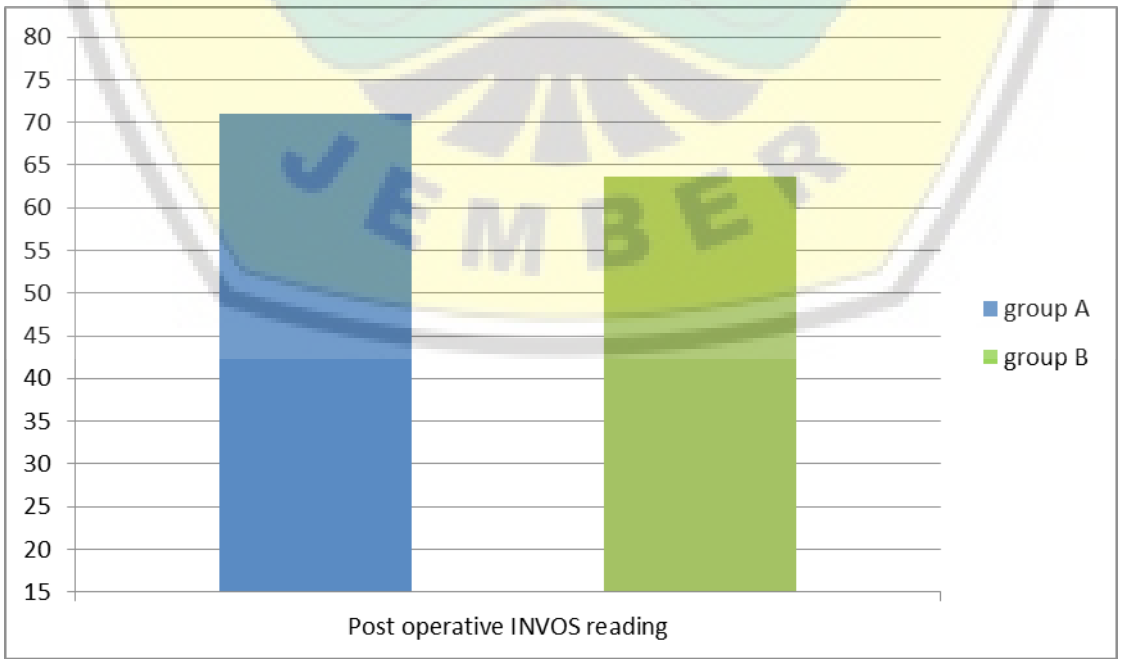

Figure (6): Graph of mean INVOS reading after glenn shunt in both groups.

Figure (7-A): Graph of median AUC in both groups.

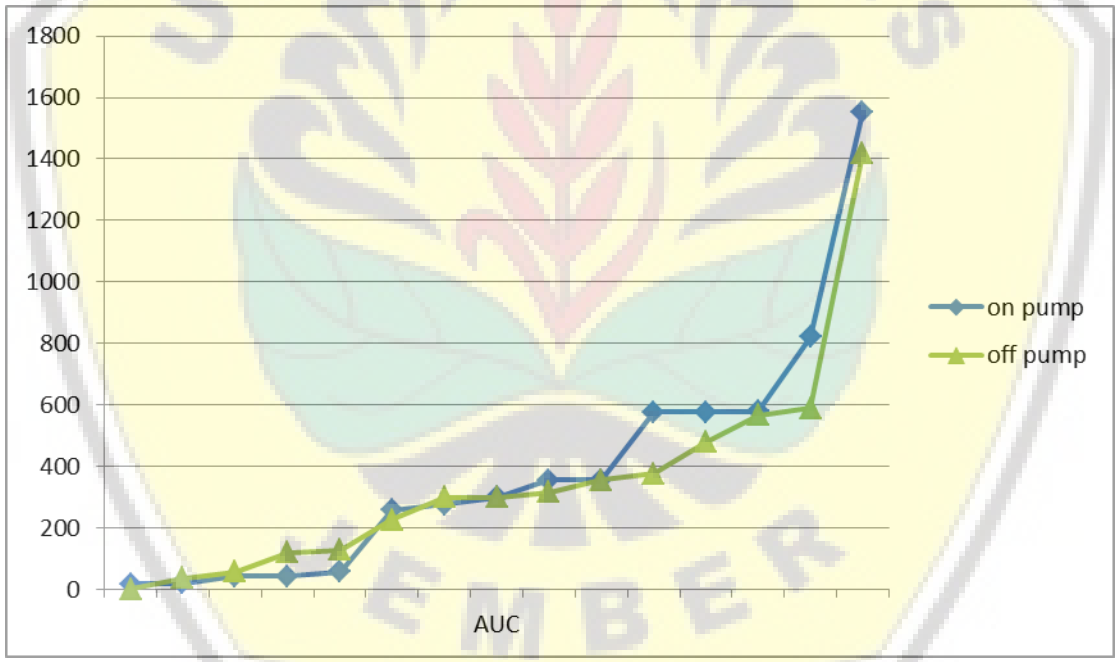

Figure (7-B): Graph of AUC values of patients in both groups.

All patients of group A (100%) had AUC (drop of rSO2 more than 25% of baseline) in their records. *In group B only one patient (6%) had zero AUC (area under the curve) which means that there was no drop of rSO2 more than 25% of baseline while other patients of the same group (94%) had AUC (drop of rSO2 more than 25% of baseline) in their records.

In group B, cavo-atrial shunt was used in two patients, with AUC recorded in one patient 56 min % and 127 min% in the other.

Mechanical Ventilation Time: For Group A; it was in the range of 6 and 72 hours with median 6 hours. For Group B; it was in the range of 5 and 48 hours with median 6 hours. The difference was statistically insignificant (P value > 0.05)

INVOS reading after extubation: For group A; it was (72.13 ± 7.444 %), in the range of 52 to 80%. For group B; it was (69.87 ± 7.15 %), in the range of 56 to 83 %. The difference was statistically insignificant (P value > 0.05).

Neurocognitive Outcome: (table 2): Postoperative neurocognitive outcome was satisfactory regarding both groups, there were no patients with major neurological insults, and there were no patients with delayed recovery. All patients were evaluated to have 15/15 on modified Glasgow coma scale for infants and children.

Postoperative fits: Out of 30 patients included in the study, only 5 patients experienced fits (16.7%), 2 patients from group A (13%) and 3 Patients from group B (20%). The difference was statistically insignificant (P Value > 0.05).

There was moderate correlation between AUC (cumulative saturation below threshold) and neurological outcome (in the form of occurrence of post-operative fits) with significant P value of 0.01, and a correlation coefficient of 0.46.

Table (2): INVOS readings in patients who had postoperative fits.

Patients who had fits	Group A P1	Group A P2	Group B P1	Group B P2	Group B P3
INVOS baseline	48	53	49	43	54
AUC	576	576	588	566	316
INVOS after glenn shunt	80	64	70	56	69
No. of attacks	3 Attacks	Once	3 Attacks	2 Attacks	2 Attacks

Morbidity and Mortality: One patient died due to failure of extubation and sepsis due bilateral phrenic injury (from group A). Another patient died due to low cardiac output (from group B).

The total mortality was 2 patients (6%). The difference was statistically insignificant (P Value > 0.05).

Intensive Care Unit Stay: For Group A; it was in the range of 2 and 37 days with median 6 days. For Group B; it was in the range of 2 and 43 days with median 6 days. The difference was statistically insignificant (P value > 0.05).

Hospital Stay: For Group A; it was in the range of 2 and 38 days with median 7 days. For Group B; it was in the range of 5 and 44 days with median 7 days. The difference was statistically insignificant (P value > 0.05).

Discussion

In our study, we used INVOS oximeter (Somanetics), so that we can identify the vulnerable intraoperative periods with cerebral desaturation below the critical threshold (rSO2 < 40% or 25% decrease of rSO2 below baseline); and the correlation between cerebral desaturation and postoperative neurocognitive outcome.

Cerebral desaturation was expressed as the cumulative area of the saturation curve; below the critical threshold. It is calculated by INVOS, and referred to as the area under curve (AUC). And we observed this for patients undergoing Glenn procedure both on pump and off pump.

In group A: cerebral desaturation was encountered during induction of anesthesia and during cannulation prior to cardiopulmonary bypass. While in group B, it was encountered during induction of anesthesia and during SVC clamping period; the latter's effect on the curve was less when a cavoatrial shunt was used (2 cases from the 15 cases done without using CPB).

As regard monitoring of cerebral oxygenation, In a study performed by Jinfen et al.[2], using near-infrared spectroscopy, they observed that the oxyhemoglobin in brain tissue decreased significantly as SVC pressure increased during clamping of the SVC, the oxyhemoglobin in brain tissue recovered to the preclamping level soon after the SVC was opened, and

it improved continually as the So2 increased. However, in study performed by Jahangiri et al.[3], described 7 patients who underwent placement of BDG without the use of either CPB or any form of decompressing shunt. They believe that no temporary shunt is needed if the cerebral perfusion pressure, is kept at 30 mm Hg or above. In Talwar et al[5], a hundred patients undergoing BDG were randomized into two groups: Off-CPB or on-CPB groups, All patients underwent near-infrared spectrophotometry (NIRS) and bispectral index (BIS) monitoring and pre- and postoperative serum 100 beta protein measurements (Sβ100) (In the developing CNS it acts as a neurotrophic factor and neuronal survival protein. In adults it is usually elevated due to nervous system damage, which makes it a potential clinical marker) and neuro-cognitive evaluation. There was a significant rise in superior vena cava (SVC) pressure on SVC clamping in the off-CPB group (23.12 ± 6.84 vs 2.98 ± 2.22 mm Hg) on-CPB group ($p < 0.001$). There was a significant fall in NIRS and BIS values from baseline in the off-CPB group during the anastomosis but there was no statistically significant change in serum Sβ100from pre-clamp to post-clamp in either group. In a study by Daubeney et al.[6], vulnerable periods with reduction in rSO2 during cardiac surgery were identified by observing the regional cerebral oxygenation in children using NIRS. There were reductions in rSO2 before bypass (during handling and dissection around the heart prior to and during caval cannulation). On the other hand in a study performed by ST Tan et al.[7], observed that periods during CPB when the rSO2 has been noted to decrease at the initiation of CPB, a decrease in rSO2 could be secondary to haemodilution. There may also be reduction in rSO2 during the rewarming after CPB due to an imbalance in oxygen supply and demand.

There was a significant correlation between low rSO2 and adverse neurological outcome; the five patients who experienced seizures had AUC more than the median value in both groups (> 500 min %). These data agreed with a study done by Austin et al[8], which studied 250 pediatric patients undergoing cardiac surgery and found that 41% of patients experienced prolonged periods of relative cerebral oxygen desaturation, defined as more than 20% decrease less than pre-bypass baseline. One-quarter of these patients with cerebral desaturation had postoperative adverse neurological events. Also, according to Slater et al. [9], stated that patients with cerebral rSO2 oxygen desaturation score of >500 min% had a significantly higher risk of post-op cognitive decline ($p=0.024$) and had a near three-fold increased risk of a prolonged hospital stay > 6 days ($p=0.007$).

It was clear that the presence of feedback from a specific indicator of an organ (cerebral oximetry) helped to raise the abilities of surgeons to detect and optimize silent but potentially adverse situations during surgical procedures. Neurological dysfunction is not always embolic, cerebral oxygen desaturation is associated with early postoperative neurological dysfunction in patients undergoing cardiac surgery.

Postoperative neurological outcome was satisfactory regarding both groups, there were no patients with major neurological insults, there were no patients with delayed recovery, all patients were evaluated to have 15/15 on modified Glasgow coma scale for infants and children and the difference in number of patients who experienced fits between both groups was statistically insignificant.

Preoperative data collected didn't show any statistical difference between both groups in preoperative risk factors so both groups were comparable. There was also insignificant difference between both groups in operative data. Postoperative evaluation was considering surgical outcome of the procedure, all patients had well-functioning Glenn shunt by echocardiography. Also there were insignificant difference between both groups regarding intensive care unit stay and hospital stay.

Funding: Self-funding

Ethical Clearance: Cleared by the ethical committee of cardiothoracic surgery department faculty of medicine Cairo University

Conflict of Interest: No

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Effects of Some Herbs on Viability of Protoscolices of Hydatid Cysts an in Vitro Study

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Abstract

In this study we evaluated the alcoholic extract of thyme "*Thymus vulgaris*", "*Salvia officinales*", "*Allium sativum*" and "thymol", "menthol" two pure compound effects on the viability of Echiniccousgranulsusprotoscolices in vitro. The different concentration of these four extracts were used (1, 1.5, 2.5, and 500 Mg/m), and (1, 10, 50 Mg/ml) for 3 different concentration each "thymol and menthol".Alcoholic extracts of both "thymol", *"Allium sativum"* and "salvia" in our results has an effecting on protoscolices viability, the best results showed in (2.500 Mg/ml) which is the highest concentration of Alcoholic extracts of both "thyme", *"Allium sativum*" and "salvia", by day 5.6 PT all protoscolices died. Salvia, thyme extracts in the (1.500, 1.000 Mg/ml) concentration. Concentration of 500 Mg/ml of these extracts showed significant effects of protoscolices activity on the 7th day. The loss of viability of protoscolices completely occurred with 500 Mg/ml concentration of these extracts at day 7th and day 8, day 3 post-treatment. "Menthol" and "thymol" menthol potent effects with 50 Mg/ml concentration at day 3 and 6 PT.

Keywords: *In vitro, hydatid cysts, protoscolices.*

Introduction

Adult of larval stages of cestodes belonging to the genus *Echinococcus* (family Taeniidae) which caused a near-cosmopolitan zoonosis (Echinococcosis). *"Echinoccousgranulosus*" and *"Echinoccousmultilocularis"* are the two major of public health and medical importance which cause cystic echinococcosis and alveolar echinococcosis.[1,2] Hydatidosis incidence has increased in various regions of the world which indicate by unfortunately numerous reports, there are two to three million human causes of hydatidosis in the world.[3] The most common mode of transmission in humans is the ingestion of *Echinococcus* eggs in feces of definitive host.[4] Echinococcosis is distributed throughout most of sheep in it, endemic in Asia, South and central North America, North Africa, Canada and Med iterance region. Hydatid cysts are more prevalent in rural areas, where there are close contact between dogs and people and different domestic animals which are play as intermediate hosts in many countries.[5] Significant advances have been made in chemotherapy of the metacestode stage of *Echinococcus*since the mid of 1970.[6] "Albendazolesulfoxide" injection demonstrated by Degere*t al.,* 2000 as a scolicidal agent in the precutaneous treatment of cystic echinococcosis, which seems to be effective in sheep[7] Synthetic anthelmintics used for treatment and control of parasitic disease, including helminthes and the appearance of its resistance stimulated the research for alternatives such as medical plants.(8) "Menthe", "Salvia" and "Thyme" are very popular medicinal plants in the Middle East with many folkloristic uses as well as all over the world. "Salvia" species used in traditional medicine for the relief of pain, *"S. officinalis* " is considered to have highest amount of essential oil compared with other in genus *"Saliva".*(9) "Thymus vulgaris" (thyme) because of his biological activity which related to their phenol compounds content such as "thymol" and caracole which represent between 40-50% of oils.(10) *"Allium sativum*" because of his biological activity which related to their Allicin substance that works on inhibiting metabolism

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or effect the growth of the parasite (*Trypanosoma spp*., *Entamoebahistolytica* and *Giardia lambilia*. The aim of this study to determine the in vitro effect of *"T. vulgaris* "and *"Salvia"* and *"Allium sativum"* and "Menthol" "Albendazole" against *"E. granulosus"*protoscolices viability in comparison with control groups.

Materials and Method

"Echinococcusgranulosus" cysts were collected of human hydatid cysts following surgical removal in Educational Baghdad hospital.Cysts were washed several times in sterile PBS, PH 7.2 their surface sterilized by 70% ethyl alcohol, and its fertility determined by the presence of free protoscolices in cyst fluid by examination in wet amount drop by microscope.

To precipitate protoscolices form cyst fluid by evacuated them into 15 ml falcon tubes without centrifugation, for an hour to obtain hydatid sand at room temperature.

In a sterile preservation solution made of a mixture of Kerbs-Ringer solution (KRS)and hydatid cyst fluid the protoscolices was maintained for all experiments, and this solution does not contain any antibiotic or antifungal drugs.[12,13]

Results and Discusion

Hydatid cysts protoscolices viability were determined by the presence of protoscolices in the cystic fluid by wet mount drop, the viability of protoscolices tested prior to the experiment during 0.1 % aqueous eosin stain.

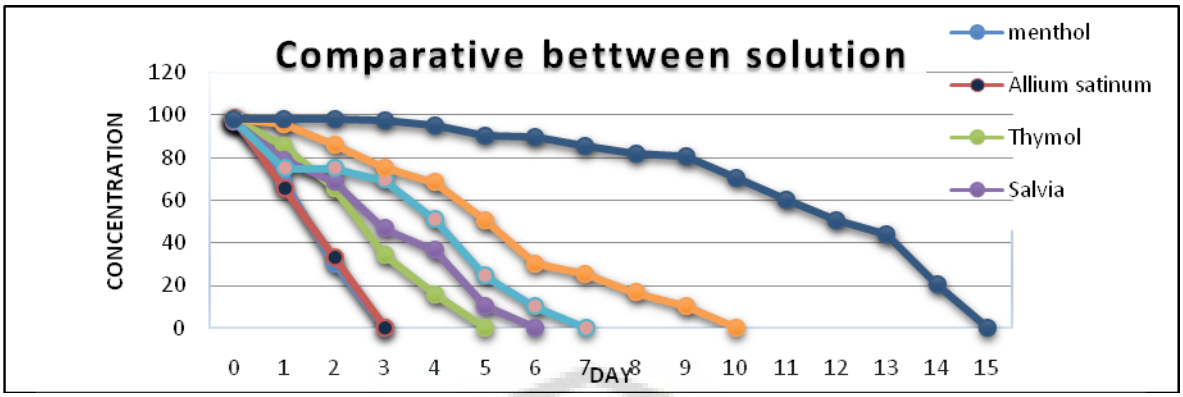
The viability of protoscolices treated with alcoholic extracts of *"Allium sativum*","*Saliva*", "thyme". Then all protoscolices treated with "menthol", "thymol" and "Albendazole".A comparison between all experimental results is summarized in table (1), fig (1)In recent years plant extracts uses against *E.granulosus*protoscolices received critical attention . Some certain plant species belonging to several families extracts my effect on the viability of the hydatid cyst protoscolices with or secondary hydatid cyst survival. [14]In our study we used the stain eosin o.1 % aqueous to assess the hydatid cyst viability andDrugs effect in vitro in hydatid cyst protoscolices . Colorless showed viable protoscolicesand other dead were absorbed to be in red color of o.1 % aqueous eosin. In this study the results agreement to the Ex in vitro studies [13,15] which recorded that best preservative medium for protoscolices was Krebs-Ringer solution with hydatid cystic fluid 4:1.This due to nutritional factors and a number of minerals (glucose, magnesium, chloride, potassium, chloride, sodium chloride, sodium phosphate dibasic and sodium phosphate monobasic) has been in Krebs-Ringer solution that gives the availability of hydatid cyst protoscolices to keep them alive for a long period of time for minimum requirement .[16]Alcoholic extracts of both "thyme", *"Allium sativum"* and "salvia" in our results has an effecting on Protoscolices viability, the best results showed in (2.500 Mg/ml) which is the highest concentration of Alcoholic extracts of both "thyme", *"Allium sativum*" and "salvia", by day 5.6 PT all protoscolices died. Salvia, thyme extracts in the (1.500, 1.000 Mg/ml) concentration causing death of protoscolices with longer period than the highest concentration. The dose of Medicinal plant extracts depend on their protoscolicidal effects on the breaking down the biological activities of hydatid cyst protoscolices by interference their metabolism.

Medicinal plant extracts maybe have specifically target sites, for example inhibitors of DNA synthesis, lick B-lactam antibiotics, inhibitors of protein, or within cytoplasm components, Allicine [11, 17, 18].

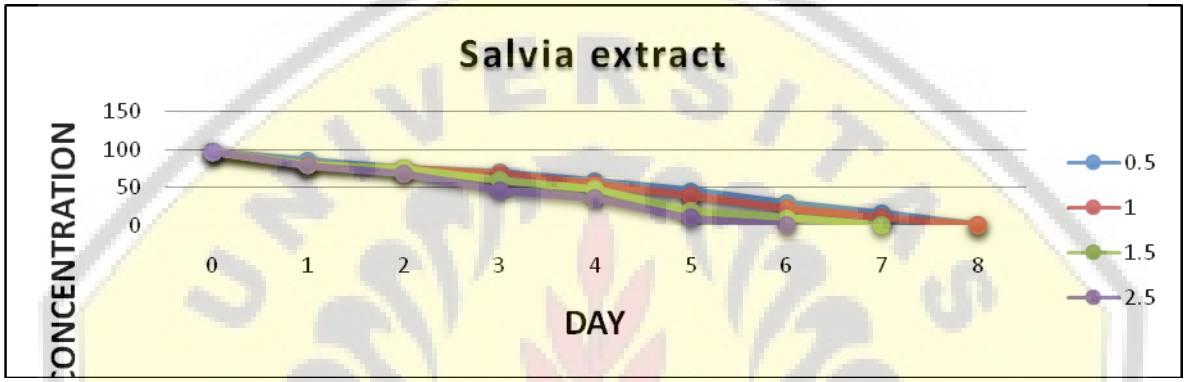
At days between 5 and 6 PT, with *"Allium sativum"* at concentration of "1.5 Mg/ml" and "1 Mg/ml" all protoscolices treated with them died, and at 4 day PT protoscolices treated with "menthol" at the same concentration.

Of both "thymol" and "menthol" "50 Mg/ml" treatment protoscolices died at days 5 and 3 PT. Successively, means menthol at 50 Mg/ml had the best effect followed by thymol at the same concentration on the viability of proscolices. our results agree with the report of Elissondo*et al*;.[19] High scolicidal activity of Methanolic extract of *"Allium sativum*" in vitro used as a scolicidal agent of the hydatid cyst surgical treatment.[20,21]

"Thymol" is one of the major components of essential oils of thyme which is defines as anti-microbial agent, and tested as a scolicidal agent an excellent effect in some studies and shows[19] Patients with hydatid disease treatment have an idea which had completely eliminated the parasite with prevention recurrence of the disease with minimal mortality and morbidity. Hydatosis available therapeutic modalities consist of, surgery, and percutaneous systemic chemotherapy treatment. [22]



(A)



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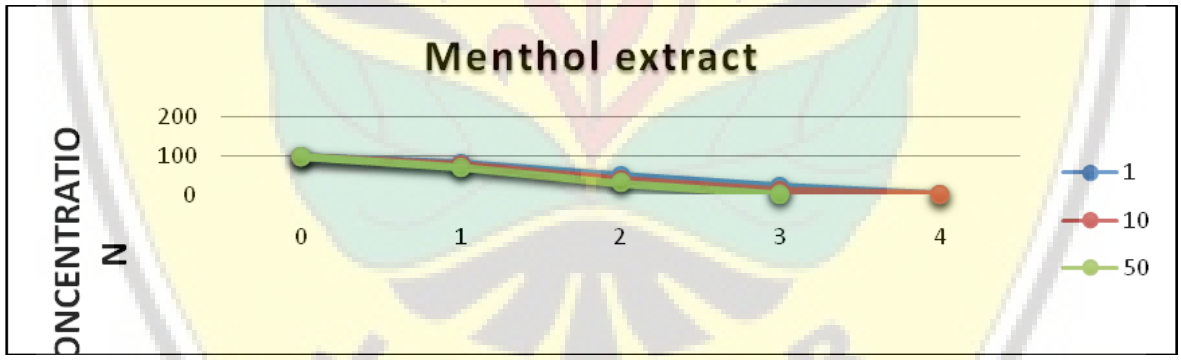

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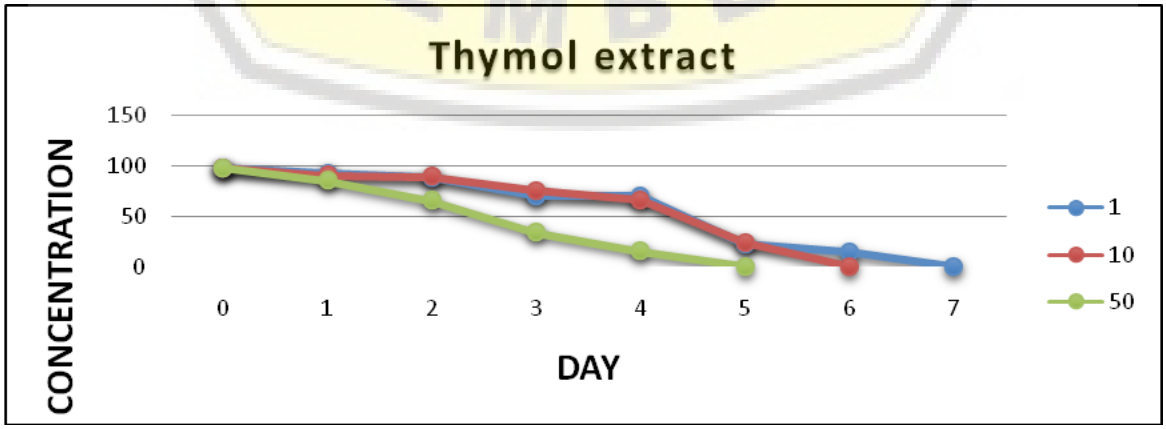

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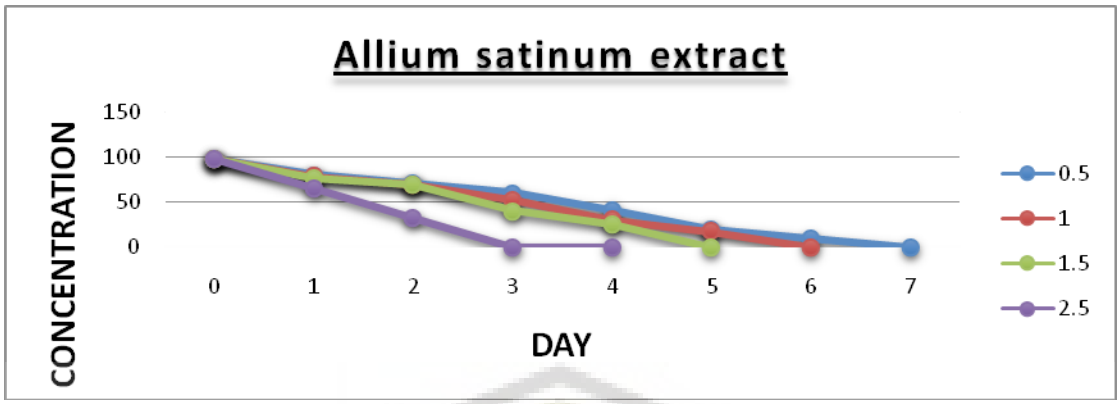

(E)

Fig. (1-A, B,C, D, E) the effects of different concentration of viability of protoscolices after incubation (day)

%

Conclusion

Medicinal plant extracts of "*Allium sativum*", "thymol", "*salvia*" results in our study to pure compounds are potent scolicidal agents at different concentration. The dose-dependent efficacy of these plant extracts and pure compounds appeared to be more effective than that of "Albendazole" which did not induce its scolicidal effect before day 10 PT.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Institute of Technical Medicine/ Baghdad -Iraq –Middle Technical University, Iraq and all experiments were carried out in accordance with approved guidelines.

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Assessment of Collagenous and Non-Collagenous Cartilage Biomarkers and Correlation to B2- Microglobulin and PTX3 in Dialysis Related Amyloidosis, Whether Diagnostic or Not?

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Abstract

Dialysis-related amyloidosis (DRA) is one of important complications occurring in hemodialysis patients and often presentsing as carpal tunnel syndrome (CTS), chronic arthropathy,subchondral cysts and pathological fracture tendency.In hemodialysis patients, there is increasing levels of beta-2-microglobulin (β-2m) in the plasma which is an important factor in DRA pathogenesis.

DRA commonly presents with CTS which is diagnosed clinically and verified by nerve conduction examination.Also(DRA) is main inducer of arthropathies in chronic HD patients due to β-2M accumulation forming amyloid fibrils which are deposited mainly on articular structures predominantly on articular cartilage in the early stage of DRA.

Cartilage biomarkers whether collagenous or non -collagenous are corresponding to cartilage destruction, degradation and turnover so their assessment is valuable in osteoarticular complications in HD patients.

The aim of this study is to access cartilage biomarkers, *β-2m* and PTX3 level changes in patients with DRA, their correlation to each other and to the clinical condition with evaluation of their value in diagnosis of DRA.

Keywords: *DRA, CTS, beta-2-microglobulin, Cartilage biomarkers.*

Introduction

Dialysis-related amyloidosis (DRA) is one of important complications occurring in hemodialysis patients and often presents as carpal tunnel syndrome (CTS), chronic arthropathy, presence of subchondral cysts and pathological fracture tendency[1]. High plasma beta-2-microglobulin (β-2m*)* level is an important factor for DRA pathogenesis.

DRA commonly presents as manifestations of CTS caused by median nerve entrapment from complexes of amyloid, its main component is β-2 microglobulin. Many authors reported it to be the most common mononeuropathy in end-stage renal disease (ESRD) patients[2,3] and considered increased beta-2-microglobulin *(β-2m)* and long duration of hemodialysis (HD) to be their most important causative factors. CTS is Diagnosed clinically and verified by nerve conduction examination.[4]

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Osteoarticular complications are common among chronic hemodialysis (HD) patients[3] and their risk of development/progression is increased[5]. Today, DRA is commonly accepted as main inducer of arthropathies in chronic HD patients.

Pathophysiologically, the amyloid comprises β2m,a subunit of the major histocompatibility complex class I molecule and normally eliminated from the kidney circulation. It accumulates because of damaged kidney or inefficient removal from the circulation by HD therapy,fluxes into the synovial fluid[6] and form β2-m amyloid fibrils. Because of their affinity to glucosaminoglycans and collagens[7]. β2microglobulin fibrils are deposited in articular structures, especially in cartilaginous tissues causing cartilage destruction[8].

To address both, collagenous and non-collagenous matrix components,serum levels of type II collagen cleavage product (C2C) and procollagen II c-propeptide (CPII),aggrecan chondroitin sulfate 846 epitope (CS-846)[(9)] and cartilage oligomeric matrix protein (COMP)[10] were measured. In case of C2C and CPII the results are presented as the ratio of C2C/CPII, whose increase correlates with cartilage destruction[11,12]

In addition, the plasma levels of pentraxin (PTX)-3 found in HD patients were associated with inflammatory markers, comorbidity score, CVD and mortality with a prognostic power of similar magnitude as IL-6[8] and other inflammatory cytokines.

This work aims to assess cartilage biomarkers, β2m and PTX3 level changes in patients with DRA, their correlation to each other and to the clinical condition with evaluation of their value in diagnosis of DRA. Regarding that β2m is a marker of amyloid deposition and cartilage degradation in the early stage of DRA.

Patients and Method

This study included 75 subjects divided into three groups. 1) The Dialysis group included 37 patients; 22 males and 15 females on regular HD were recruited from the nephrology department (TBRI) with manifestations of dialysis related amyloidosis (DRA) as carpal tunnel syndrome (CTS), arthropathy, or both. All patients have HD sessions three times per week using low flux dialysis membranes. 2) The 2nd group included 21 patients (13 females and 8 males) with manifestations of CTS and/ or or arthropathy and were not on HD. Patients with a history and diagnosis of joint diseases were excluded from the study. 3) The third group included 17 normal subjects (10 females and 7 males).

All study subjects went into full history taking and clinical examination. Clinical grading of DRA was assessed through Function Status scale 4 [FSS] and Symptom Severity Scale [SSS] for CTS with measuring of pain intensity using a 100-mm pain visual analogue scale and Through [WOMAC Osteoarthritis Index], [Lequesnce Osteoarthritis Index] and visual analog scale [VAS] to provide information concerning joint pain 11.

Electrophysiological Diagnosis of median nerve entrapment at the level of the wrist (CTS) was confirmed by Nerve conduction studies (NCS) according to the American Association of Neuromuscular and Electrodiagnostic Medicine (AANEM)[6] by performing median nerve motor and sensory conduction studies to all cases as well as needle electromyography of the abductor Pollicis brevis muscle to selected cases for evaluation of CTS severity by using Deymed TRU-TRACE EMG NCV 4 Channel System machine (AU7-12060002) at the EMG unit of the Medical Center of Scientific Excellence of NRC.

Plain X_ Rays were done for all HD patients for detection of osteoarticular changes of DRA.

The sample size calculation was based on previous publications in this field which yielded a sample size of less than 15 for a ~100% difference with regard to serum levels of C2C, CPII and CS-846

Biochemical Assessment: Blood samples were obtained from each subject and serum was collected to be immediately frozen and stored at -25°C. The sample were thawed once to aliquot them and then refrozen, then thawed again to assay them. The ELISA biomarker assays (C2C, COMP, CP II, CS 846) were obtained from IBEX (Montreal, Canada). The intra-assay reproducibility of measurements of concentrations of C2C, CPII, COMP and CS846 was 9.7%, 6.4%, 10% and 11.5% respectively. Human Aggrecan neopepitope CS846 test was conducted using GSCIENCE (Glory Science Co., Ltd) ELIZA technique. Human Pentraxin 3 (PTX3), type II Collagec degradation (C2C) and Synthesis (CPII), Cartilage oligomeric matrix protein (COMP) tests were conducted using Sino Gene Clon Biotech Co., Ltd Eliza technique. Human β-2 microglobulin test was conducted using ORGENTEC Diagnostika GmbH Eliza technique.

Statistical Method: Statistical analysis was done using IBM© SPSS© Statistics version 22 (IBM© Corp., Armonk, NY, USA).Numerical data were expressed median and range.For quantitative data, comparison between two groups was done using independent sample t-test or Mann-Whitney test. Spearman-rho method was used to test correlation between numerical variables. A p-value < 0.05 was considered significant.

Results

In this study, we found by assessment of cartilage biomarkers in all groups no significant difference between all groups except in C2C level and B2-microglobulin level with (P value <0.001) where B2-m level is higher in group of dialysis patients than the other two groups, while C2C level is higher in both osteoarthritis group {with or without HD} than normal control group with no significant difference between each of the two osteoarthritis groups.

Table 1: Correlations between cartilage markers, B2microglobulin, PTX3 and clinical findings

			CPII	PTX3	C2C	Ratio	MICROgl	cs846	comp
Spearman's rho	PTX3	r	.112						
		p	.327						
	C2C	r	.180	.057					
		p	.113	.617					
	Ratio	r	-.098	-.012	.939				
		p	.391	.917	.000				
	MICROgl	r	.003	-.029	.857	.900			
		p	.977	.800	.000	.000			
	cs846	r	.391	.414	.565	.507	.512		
		p	.000	.000	.000	.000	.000		
	comp	r	.252	.084	.467	.465	.453	.625	
		p	.025	.462	.000	.000	.000	.000	
	Duration of dialysis	r	-.296	.207	.737	.803	.967	-.013	.076
		p	.075	.218	.000	.000	.000	.938	.653
	FSS	r	.157	.251	.134	.003	-.077	.322	.140
		p	.497	.273	.564	.991	.741	.155	.545
	SSS	r	.218	-.064	.284	.086	-.042	.006	-.231
		p	.341	.784	.212	.710	.858	.980	.313
	Lequesne Osteoarthritis Index	r	.183	.179	.187	.049	-.198	.228	-.015
		p	.428	.439	.417	.832	.389	.320	.950
	WOMAC	r	.431	.193	-.012	-.370	-.431	.466	-.066
		p	.074	.443	.963	.131	.074	.051	.794

B2-microglobulin level, was significantly higher in hemodialysis group than the other 2 groups with significant correlation to C2C, CS846, COMP and increased significantly **[P value <0.001]** with increasing duration of dialysis. **Fig [1].** B2-microglobulin level also significantly correlated to C2C/CPII ratio.

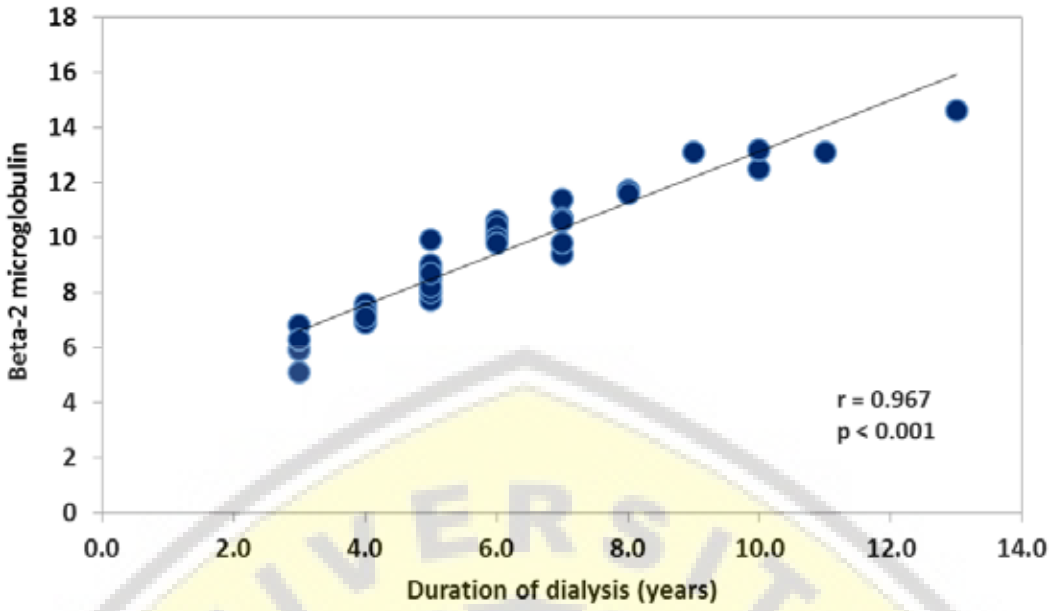

Fig [1]: Relation of B2-microglobulin level to duration of dialysis (years)

By following C2C/CPII Ratio, which is valuable measurement to express cartilage degradation, we found elevation in patients group whether on dialysis or not.

More important there was significant elevation in this ratio in hemodialysis patients after 5 years of dialysis with appearance of radiographing findings of DRA {juxta-articular soft tissue swellings, subchondral cystic lesions, mild periarticular osteoporosis} suggesting using this ratio as marker of occurrence of DRA

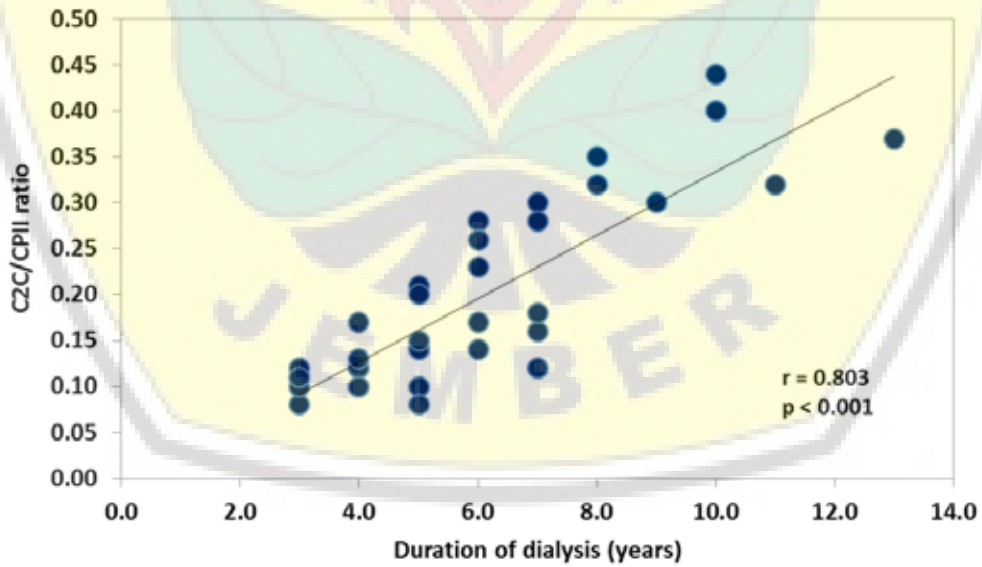

Fig [2]: Relation of C2C/CPII ratio to duration of dialysis (years)

Table [2]: Comparison of C2C, C2C/CPII ratio in HD patients < and > 5years dialysis

	3-5 years on dialysis	>5 years on dialysis	P value
C2C	10.4 (3.1-14.7)	15.6(3.7-29.1)	<0.001
C2C/CPII ratio	0.08 (0.02-0.33)	0.15 (0.02- 2.5)	<0.001

Table [3]: Severity of Median nerve entrapment among hemodialysis patients detected by nerve conduction studies

	Mild	Moderate	Severe
No of patients	32.4%	27.2%	37.8%

Discussion

Dialysis-related amyloidosis is a major complication of long-term dialysis therapy due to deposition of amyloid fibrils,formed of β2 microglobulins (β2-m), in the osteoarticular structures and viscera,leading to a variety of pathological conditions affecting patient's quality of life[9].

Arthritis and carpal tunnel syndrome are the most prevalent musculoskeletal manifestations among hemodialysis patients with highly significantly affected physical function and disability[13]. In our study there was no significant correlation between clinical scales of osreoarthritis (WOMAC and Lequesence) and those of carpal tunnel(FSS and SSS) with serum biomarkers of the patients group.Some authors described a destructive arthritis which has not been attributed to amyloid deposition[14], while others reported a triad of shoulder periarthritis, carpal tunnel syndrome (CTS), and flexor tenosynovitis of the hands which was referred to β2-microglobulin amyloid deposition[15]. Busch et al.[16] also detected that CTS is a highly common manifestation of dialysis-related amyloidosis and that serum B2-microglobulin is one of its significant predictors. According to Nerve Conduction Studies, 37.8% of our hemodialysis patients had severe CTS requiring surgical release.

This study assessed serum B2-micriglobulin and cartilage biomarkers and their relation to DRA manifestations and to each other, we found high serum B2 microglobulin level among hemodialysis patients which is a specific predictive marker of DRA. Also we found by assessment of cartilage biomarkers that there is no significant difference between hemodialysis patients with manifestations of DRA in form of (osteoarthritis, carpal tunnel or both) and patients with manifestations of CTS and/or arthropathy not on HD except in C2C level and B2-microglobulin level, where B2 microglobulin level is higher in group of dialysis patients (B2-microglobulin initially deposits in articular cartilage initiating its destruction), while C2C level is higher in both osteoarthritis group {with or without HD} than normal control with no significant difference between each of the two osteoarthritis groups. A measurable increase in type II collagen denaturation is observed in early OA with a net loss of this molecule. This is associated with increased cleavage of collagen by collagenases.Conrozier et al foundC2C significantly lower in MSOA {multiple sites OA} than in OHOA {only hip OA}[17].

By studying correlation of cartilage biomarkers (C2C, CPII, Cs864 and COMP) as well as b2-Microglobulin, PTX3 with each other and with duration of dialysis, we found no significant correlation except relation between duration of dialysis and {B2-microgobulin, C2C and C2C/CPII Ratio} which was significant. As regarding B2-microglobulin level, it was significantly higher in hemodialysis patients than the non-HD patients and normal subjects. Asim et al found the β2-m levels were significantly elevated compared to control subjects [18].

High level of β2-m in this study was due to use of low-flux type of dialyzer in HD for our patients because to inability of low-flux dialyzers to clear these molecules with molecular weight of 12000 Da, conventional, this resulting to their accumulation in the body. Martin, et al.[19] also found that the cumulative pre-dialysis serum β2-m level was significantly lower with use of high-flux dialyzers than with use of low-flux dialyzers. The main reasons for using low-flux dialyzers in our patients are financial conditions.

By studying correlation between B2-microglobulin and cartilage biomarkers, there was significant correlation to C2C, CS846, COMP as well asB2-microglobulin level also significantly correlated to C2C/CPII ratio.

B2-microglobulin was found in this study increasing significantly with increasing duration of dialysis. As said by Schiffl et al. [20]. For the development of clinical effects of β2m, more than five to seven years are required.

Also Cs846 was found in this study, significantly correlated to other cartilage biomarkers including (CPII, C2C and COMP) as well as to B2-microglobulin and PTX3. These results are different from those of Ma et

al.[21] that showed no increase in CS-846 or COMP levels and hypothesize that after β2m-induced enzymatic release the majority of those molecules, or at least the sGAGs, were incorporated into the β2m deposits, as sGAGs enhance β2m amyloid formation and stabilize the fibrils [21].

By following C2C/CPII Ratio in our study which is a valuable measurement to express cartilage degradation, we found elevation in patients group whether on dialysis or not.

More important that there was significant elevation in this ratio in hemodialysis patients after 5 years of dialysis with appearance of radiographing findings of DRA {juxta-articular soft tissue swellings, subchondral cystic lesions, mild periarticular osteoporosis} suggesting using this ratio as marker of occurrence of DRA.

While Sunk, et al. [22] mentioned that patients on chronic HD for less than 5 years (1–2 years and 3–5 years HD groups) have significant increase in type II collagen degradation, as reflected by an elevated C2C/CPII ratio. As well as they observed a normalization of the C2C/CPII ratio after 5 years of HD. These results are different from ours as elevation of C2C/CPII was more after 5 years of dialysis as this is related to more cartilage distraction with longer dialysis therapy.

As many studies found significant elevation of B2-microglobulin level in patients on HD and increasing with duration of dialysis with significant correlation to occurring of DRA, they suggest using B2 microglobulin as a marker for DRA[22]. Also by accessing C2C/CPII ratio in our study and its significant correlation to duration of dialysis, radiographing findings of DRA and B2microglobulin level, this suggests using this ratio as a marker of DRA.

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Ethical Clearance: Research Ethics committee at National Research Centre, Cairo, Egypt(16/366).

Conflict of Interest: The authors declare that no conflicts of interest.

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Prevalence of Klebsiellapneumoniae in Renal Failure Patients Using Genes Specific Primers

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Abstract

Renal injuries were a big public problem all over the world that led to health complications and mortality. The current study was done to identify the bacteria isolated from patients with renal failure undergoing hemodialysis. The study included one hundred and two blood samples [sixty one male samples (59.8%) and forty one female samples (40.1%)], one hundred and fifty urine samples for patients undergoing hemodialysis in Marjan Teaching Hospital from November 2013 to June 2014. Sample were identified on plates. In addition to that, PCRs were applied using specific primers for detection of bacteria. Bacteriological investigations revealed positive cultures were 89.3%. The total number of isolates was 150. Gram negative bacteria were predominant and represented 84.3 %. While gram positive group were 15.67%. The most causative bacteria are *Escherichiae coli* [38.8%], followed by *Klebsiellapneumoniae* [34.32%], *Enterobacterspp* [6.71%] and *Pseudomonas aerogenosa* [4.47%] which belong to Gram negative bacteria. Whereas gram positive bacteria represent *Staphylococcus aureus* [13.43%] and *Staphylococcus epidermidis* [2.24%]. PCR assay were performed to identify the presence of some genes of *Klebsiellapneumoniae* isolates, and some of virulence, included [*cps, phoE*], the study revealed that *cps* gene found in 11 isolates out of 28 [39.28%].

Keywords: *K.pneumonia, cps, phoE, PCR, dialysis.*

Introduction

Renal failure is the inability of the kidneys to eliminate the metabolic end-products, and loss of the control to regulate the electrolytes, fluids and pH balance [1]. Some of the reasons of the renal failure may be local or systemic diseases or defects. This disease can be either acute or chronic. The acute type of renal failure can be cured if not left untreated. In contrast, chronic type means the permanant damage of the kidneys, and it may take years to develop[2]. Studies found the most common causative organism is *Escherichia coli* of kidney failure, but *Pseudomonas aeruginosa, Staphylococcus aureus* and *Staphylococcusepidermidis*may also cause this infection. Other gram-negative rods including *Klebsiellapneumoniae* and *Enterobacter spp*. are also cause Kidney failure [3]. The infection by these organisms can be due to virulence factors that present in these organisms such as pili, capsule and toxins; or caused as a result that some of the organisms considered as opportunistic pathogens [4]. Molecular study showed that the *cps* gene is found in *Klebsiellapneumonia*e and is considered as the major determinant for *K. pneumoniae* infections that could protect the bacteria from phagocytosis and killing by serum factors [5]. The *cps* gene also helps the bacteria to colonize the tissues and in biofilm formation[6]. The current study aimed to isolate and identify the bacteria correlated with renal failure, then used a molecular assay for the diagnosis of the predominant bacteria

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Materials and Method

Collection of Samples: The patients were advised to clean the urethral area and allow the first drops of urine

to pass, then collect the samples of urine in a sterilized screw-cap container with 10 ml volume [7].

Isolation and identification of Bacteria: Standardized loop [2 mm in diameter] was used for transferring loop full of urine sample and streaking on nutrient agar, blood agar and MacConkey agar medium, incubated at 37˚C for 24-48 h.[8]. A single colony was taken from each primary positive culture and its identification depended on the morphology properties [Colony size, shape, color, type of pigments, translucency, edge, elevation, and texture]. After staining the bacteria by gram stains, specific biochemical tests were done to reach the final identification [9]. Various biochemical reagents and tests were used for the identification of bacteria [10]. For molecular assay, DNA was extracted from pure bacterial isolates by using a Geneaid DNA purification kit and in accordance with the manufacturer's protocols. The lyophilized oligonucleotide upstream and downstream primers were prepared according to the manufacturing company [Bioneer] and kept at -20 ºC.Polymerase Chain Reaction (PCR) were performed in a total volume of 20 µl containing 3µl of both the forward and reverse primers, 5 µl master mix, 4 µl free water nuclease and 5 µl of the extracted DNA [as DNA template], then DNA amplification was carried out with the thermal cycler.

Thermal Cycling Conditions: The reaction was performed in a PCR thermal cycler apparatus, and after several trials, and according to the manufacture's troubleshooting guide the program was adopted as table 1.

Agarose Gel Electrophoresis: The method performed in this study was according to Bartlett and Stirling, 1998. The amplified PCR products were detected by agarose gel electrophoresis was visualized by staining with ethidium bromide. The electrophoresis DNA bands were detected by using gel documentation system. The positive results were distinguished when the DNA band size of the sample equals the target product size Bartlett and Stirling,1998. Finally, the gel was photographed using E-graph gel documentation system.

Results and Discusion

The present study included the collection of 150 urine samples collected from hemodialysis patients, from laboratories of the artificial kidney unit in Merjan Teaching Hospital. Morphological and biochemical characterization indicated that 134 [89.3%] of the samples had bacterial growth and 16 [10.6%] of them had no growth, as shown in table [2] below. The results of the urine cultures and biochemical tests for isolated bacteria from hemodialysis patients revealed that *Escherichia coli* is the most common bacteria 52 [38.8 %], followed by *Klebsiellapneumoniae* 46 [34.32%], *Staphylococcus aureus* 18[13.43%], *Enterobacter spp.* 9 [6.71%], *Pseudomonas aeruginosa* 6 [4.47%] and *Staphylococcus epidermidis*3 [2.23%] as shown in figure (1).

Diagnosis of Klebsiellapneumoniaeisolates by PCR: A total of 150 urine samples were collected from hemodialysis Patients. Only 46 isolates [34.32%] of *K.pneumoniae* were identified according to the morphological characterization, biochemical tests, and the two genes selected for molecular diagnosis of *K. pneumoniae*.

Detection of the cps gene: Capsular polysaccharide gene [cps] was investigated through a specific pair of primers for 28 isolates that identified by biochemical test. It was found that 11 [39.28%] isolates of *Klebsiellapneumoniae* gave positive results for this gene whereas 17 [60.71%] isolates gave negative results. These results were shown in Figure (2).

Detection of phoE gene: Phosphoporin protein E gene [*phoE*] was investigated through a specific pair of primers for 28 isolates that identified by the biochemical tests. It was found that 8[28.57%] isolates of *Klebsiellapneumoniae* gave positive results for this gene, whereas 20 [71.42%] isolates gave negative results . These results were shown in Figure (3).

The present study included the collection of 150 Urine samples, Morphological and biochemical characterization indicated that 134 [89.3%] of samples had positive bacterial cultures and 16 [10.6%] of them had negative culture. Patients with kidney failure are more prone to developing urinary tract infections, the mere act of passing urine tends to flush out the urinary tract of infectious bacteria to prevent causing urinary tract infection [12]. The bacteria live in the intestine can infect the urinary tract which may be explained by a greater incidence of urinary obstructions which in turn lead to infections [13].These results were agreed with another result obtained by [14], which had reported that 78.4% of patients with UTI had positive culture and those with negative culture may be associated with Mycoplasmal or Chlamydial infections. Approximately, 20% of women attending to sexually transmitted diseases clinic have *Mycoplasma* in their urinary tract[15]

The results of urine culture and biochemical tests for isolated bacteria from hemodialysis patients revealed that *Escherichia coli* is the most common bacteria with 52 isolates [38.8%], followed by *Klebsiellapneumoniae* 46 [34.32%], *Staphylococcus aureus* 18 [13.43%], *Enterobacter spp.*9 [6.71%], *Pseudomonas aeruginosa* 6 [4.47%] and *Staphylococcus epidermidis*3 [2.23%]. These results were agreed with another result obtained by[16], when he studied genitourinary tract infections among women in Mosul and showed that [33.6%] of UTI in women were caused by *Escherichia coli*. Additionally[17] showed that 47% of UTI were caused by *Escherichia coli*,Generally, *Escherichia coli* is the most common bacteria because it has some virulence factors which helps in pathogenesis. Components such as pili, which are responsible for the adherence in the urinary tract epithelium, aids the bacteria to ascend to the kidneys[18]. However, it appeared that *K pneumoniae* is the second causative agent in this study because it is isolated from [34.32%] of all isolates. So, it was different from [16], who showed that only [10.8%] of UTI among women in Mosul were caused by *K. pneumonia*e. On the other hand, [19] who showed that 11% of UTI were caused by *K. pneumonia*e. The difference between the recent study[19] and[16] may reflect the difference in population behavior or personal hygiene because *K. pneumonia*e is present in feces of about 5% of normal individuals [15], so bad hygiene may lead to the UTI.In addition to *E. coli* and *K. pneumonia*e, *Staphylococcus aureus* was important causative agent that found in this study, because itrepresented [13.43%] of all isolates.So, these results were different from the results obtained byepidemiological studies which reported that 40-60% of hemodialysis patients are carriers of *Staphylococcus* as normal flora [20,21]. One of the most cause of UTI in hospitalized patients is *Pseudomonas aeruginosa* due to its ability to resist different types of antibiotics and other chemicals which used in sterilization processes in hospitals[22]. A total of 150 urine samples were collected from hemodialysis Patients. Only 46 isolates [34.32%] of *K.pneumoniae* were identified according to the morphological characterization, biochemical tests and the two genes that were selected for the molecular diagnosis of *K. pneumoniae*. Capsular polysaccharide gene [*cps*] was investigated through specific primer for 28 isolates that identified by the biochemical tests. It was found that 11 [39.28%] isolates of *K. pneumoniae* gave positive results for this gene, whereas 17 [60.71%] isolates gave negative results. The presence of the *cps* reduces the binding of antimicrobial peptides to bacterial surface and this will promote the bacterial resistance to antibiotics. The genomic organization of chromosomal *cps* region is responsible for *cps* biosynthesis in *K. pneumoniae*, indicates thatthe majority of clinical isolates of *K. pneumoniae* express pronounced capsule polysaccharide that is essential to virulence of *Klebsiella*[23]. In this study, only 11 [39.28%] bacterial isolates gave positive results for this gene. The variation in isolation rate may be due to a technical error or to variation in strains of bacteria. Also[24] found that *cps* of *K. pneumoniae* is mostly responsible for serotype of *K. pneumoniae* capsular polysaccharide. Additionally[25] found that *cps* of *K. pneumoniae* is responsible for serotype *K. pneumoniae* capsular polysaccharide, *cps* is considered as the major determinant for *K. pneumoniae* infections that could protect the bacteria from phagocytosis and killing by serum factors[26]. The gene *cps* is also helping the bacteria to colonize the tissues and Biofilm formation[25]. Phosphoporin protein E gene [*phoE*] was investigated through specific primer for 28 isolates that identified by biochemical test. It was found that 8 [28.57%] isolates of *K. pneumoniae* give positive results for this gene, whereas 20 [71.42%] isolates give negative results. Because this gene is important for *Klebsiellapneumoniae*, crystallographic studies showed that *phoE* forms a 16-strand anti parallel barrel[27]. The PhoE unit consists of three fragments[28].

Table 1. The thermal cycler conditions of the primers used in the study

Thermal cycler conditions	Size of amplicon	Sequences5'- 3'	Markers
95 C°for 5min 94C°for 1min 55 C°for1min 72 C°for1min 72 C°for5min	368 b P	5'TGGCCCGCGCCCAGGGTTCGAAA3'	phoE
		5'GATGTCGTCATCGTTGATGCCGAG3'	
95 C°for4min 94 C°for30sec 59 C°for30sec 72 C°for30sec 72 C°for5min	416 b P	5'GTCGGTAGCTGTTAAGCCAGGGGCGGTAGCG3'	cps
		5'TATTCATCAGAAGCACGCAGCTGGGAGAAGCC3'	

Table 2. Number and Percentages of positive and negative sample cultures.

Urine Culture	Number	Percentage
Culture positive	134	89.3%
Culture negative	16	10.6%
Total	150	100%

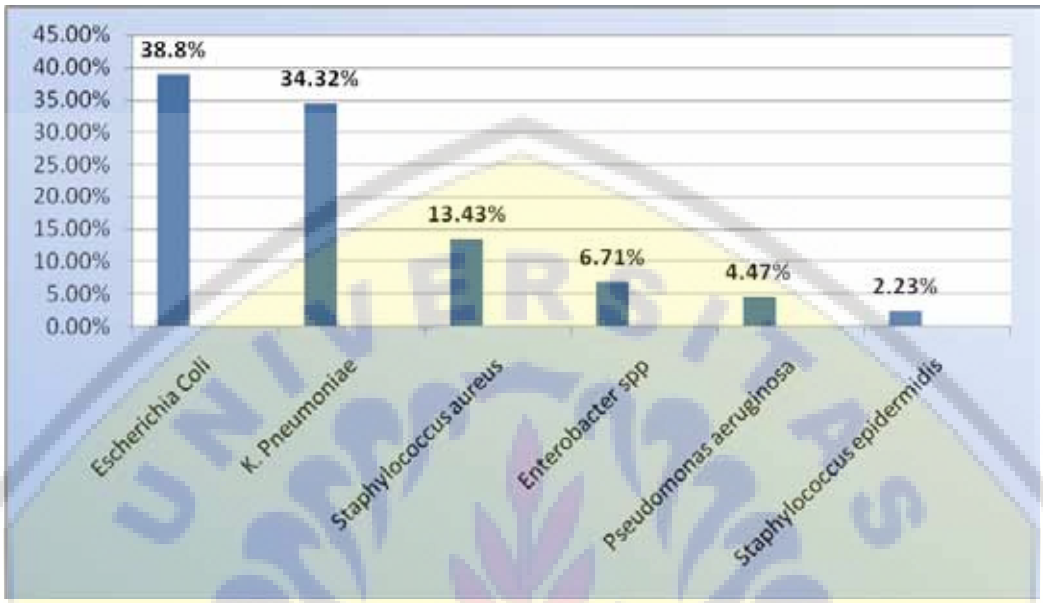

Figure 1. Incidence of bacterial isolates in renal failure patients.

Figure 2. Agarose gel electrophoresis of PCR products for the detection of Capsular polysaccharide [cps] gene in Klebsiellapneumoniae. Lanes 1-12 refer to isolates' number. L= DNA ladder.

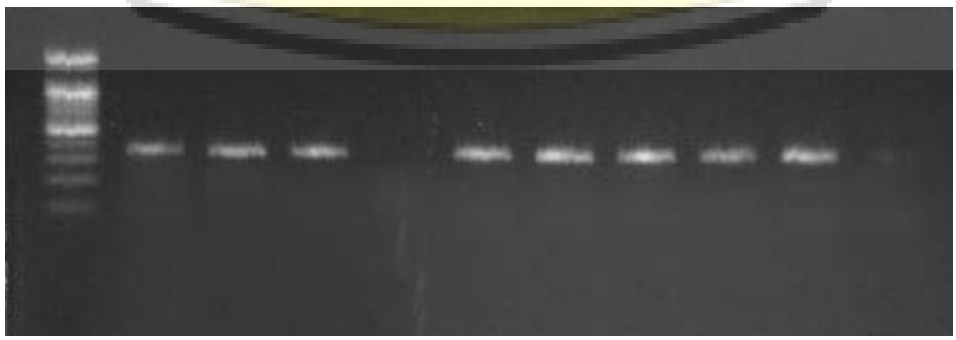

Figure 3. Electrophoresis image for the detection of the phosphoporin protein E[phoE] gene in Klebsiellapneumoniae. Lanes 1-10 refer to isolates' number. L= DNA ladder.

Conclusion

Various types of pathogenic bacteria were isolated from urine samples of hemodialysis patients. *K. pneumonia*e form one of the most isolated bacteria that identified with conventional and molecular investigations. Virulence genes included [*cps, phoE*] were investigated to identify the presence of *Klebsiellapneumoniae*, both genes gave a positive result with percentages [39.28%] and [28.57%], respectively .

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Biology, College of Science for Women, University of Babylon, Iraq and all experiments were carried out in accordance with approved guidelines.

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Impact of Weight Loss on Ventilatory Functions in Obese Asthmatic Children

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Abstract

Background: The effect of weight loss by whole body vibration on ventilatory functions in obese asthmatic children. Materials and Method: Forty obese asthmatic children from both sexes aged from 8 to 12 years were participated and were assigned to 2 groups of equal number. Group A received balanced caloric diet and breathing exercises. Group B received the same program of group A in addition to whole body vibration. The treatment program was conducted 3 sessions/week for 3 successive months.

Anthropometric measures (weight, height, body mass index and waist circumference) and ventilatory functions measures (FVC, FEV1, FVC/FEV1%, PEFR) before and after 3 mon for both groups. Results: Significant improvement of all measuring variables including anthropometric and ventilatory functions parameters in both groups after treatment ($p<0.05$). However, no significant differences were found among control and study groups after treatment in all measured variables. Conclusion: The balanced caloric diet and breathing exercises were effective in decreasing Anthropometric measures and improving ventilatory functions in obese asthmatic children.

Keywords: *Asthma, obesity, ventilatory functions, whole body vibration*

Introduction

Asthma is chronic inflammatory disorder of the airways. Chronically inflamed airway is hyperresponsive become obstructed and air flow is limited[1].

Overweight and obesity are worldwide health crises in children .More than 33% of children have overweight or obese[2]. Overweight teens mainly would track to adult as overweight and led to health problems[3,4].

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Obesity observed with medical and social morbidity which could be led to respiratory problems and bronchial hyperactivity[5].

Differences of asthma and obesity are provided by pervious investigations, where they found the risk for asthma increases with increase BMI[6-9]. Obesity is high risk for incident asthma and increase from being overweight to obese[10]. as obese asthmatic loses body weight, their asthma symptoms and lung functions improve[11].

Lung function measurements in children results with asthma include forced expiratory in FEV1, FVC, FEV1/FVC and PEFR. Related to lung volumes vary with age, sex, and height, FEV1 and FVC were noted as % predicted values based on nomograms of children healthy[12].

Researchers analyzed data from Childhood Asthma

Management to determine the effect of BMI on lung function, whose reported increase BMI with increase FEV1 and FVC % predicted and reduced FEV1/FVC of airway obstruction.

Diet programs may produce weight loss in 67% of people lost more than 10% body mass and maintain or continue to lose weight later. Average maintained weight loss of more than 3 kg or 3% of total body mass could be sustained for 5 years[13].

WBV is alternative exercise modality become increase in gyms and might address time constraints and compliance issues[14].

Vissers et al.[15]: found adding WBV to a hypocaloric diet led to decrease fat % post 3, 6 and 12 months of WBV training by (4.8 %), (7.0%) and (5.5 %) respectively.

This study was performed to determine if weight loss by WBV has an effect on ventilatory functions of obese asthmatic children.

Materials and Method

Study Design: This study was an experimental study conducted at Outpatient clinic, chest department at Faculty of Medicine South Valley University, Qena, Egypt from December 2015-to April 2018.

Subjects: Forty obese asthmatic children (of both sexes) aged from 8-12 years (mean age 10.9±1.355) participated in this study after their parents signed consent form for their children's participation. Children were included if they had: controlled asthma, mild to moderate asthma, BMI 85th ≤99th percentile **(http// www.cdc.gov/growthcharts)**[16].

And excluded if; they received medication other than treatment of asthma, severe or very severe asthma, other chest problems other than asthma or cardiac diseases.

Materials:

1. **Spirometer: Micro Lab Spirometer (VIASYS)** made in **France**, desk top Spirometer with printer and color touch screen was used to assess ventilatory function (FVC, FEV1, FVC/FEV1%, PEFR) were measured pre and post 3 months of treatment for children of both groups.
2. **Standard weight and height scale** to measure weight (kg) and height (cm). These parameters are essential to feed the spirometer and to calculate BMI of all children of both groups**.**
3. **Round tape measurement** to measure waist circumference (cm).
4. **BMI chart (Growth Curves)** for gender. **(http// www.cdc.gov/growthcharts)** [16].

BMI Mass Index-for-Age Percentiles: for Boys and for Girls 2 – 20 years for the selected age (8-12).

Procedures:

Evaluative procedures:

A-Evaluation of Anthropometric measures:

1. The body height (ht) measured to the nearest 0.1 cm by standard weight and height scale.
2. The body weight (wt) determined to the nearest 0.01 kg on a Standard weight and height scale.
3. Body mass index (BMI) was calculated as body weight (kg) divided by body height (m²).
4. Waist circumference (WC) was measured at the level of the umbilicus by round tape measurement to the nearest 0.1 cm.

For all measurements, children were asked to stand with feet close together. The child had to be relaxed. Each measurement was repeated twice **(WHO report[17]).**

5. **Evaluation of ventilatory function ((FVC, FEV1, FVC/FEV1%, PEFR)** according to**: Jones and Pierce[18]** :
   - Spirometery was used to measure the selected ventilatory function parameters including (FVC, FEV1, FVC/FEV1%, PEFR).
   - Actual and predicted values for each parameter were recorded.

II. Treatment procedures:

1. Whole Body Vibration for treatment (EVERE, made in china with different speed (S0, S1, S2,…S9) and different time (100s,300s,500s).

Children in group B received balanced caloric diet and breathing exercises given to group A in addition to WBV.

1. **Diet:** Based on the energy needs of healthy children are determined on the Basis of basal metabolism, rate of growth, and energy expenditure .Dietary energy must be sufficient ensure growth but not allow excess weight gain. Intake proportions of energy are 4 5%to 65% carbohydrates for 4 to 18year olds, 2 5% to 35% fat, and l0% to 30% protein **(IOM [19]).**
2. **Breathing exercises were applied to improve ventilation, promote relaxation and to correct inefficient or breathing pattern in the form of Diaphragmatic breathing and Pursed lip breathing.**
3. **Whole Body Vibration (WBV):** 3 phases were conducted
   (a) **Warming up**: warming up period were 10 minutes in form of stretching exercises
   (b) **Active period** on vibration machine
   (c) **Cooling down**: was performed after the active period, for bringing the heart rate to its pre exercise level in form of walking in place followed by breathing exercise.

Protocol of vibration: Modified from **Vissers et al. 15:**

The protocol was conducted for children of group B

*3 months program, 3 times/week, training session consisted of different exercises including muscles of the whole body

*Exercises: from standing, sitting, squatting

- Training protocol was designed with a gradual increase in speed (S0, S1, S2,…, S9)
- Time of exercise (100 – 300 – 500 sec).
- The graduated training protocol were as follow:
- First month the time was 100s exercise and rest time 30s and speed was S0, total duration of exercise was 10 min.
- Second month the time was 100s exercise and rest time 30s and speed was S0 and S1, total duration of exercise was 10 min.
- Third month the time was 100s exercise and rest time 30s and speed was S0, S1 and S2 total duration of exercise was 10 min.

Data Analysis: All statistics were calculated by

1. **Descriptive Statistic:** The mean and standard deviation for the anthropometric(weight, height, BMI and waist circumference) and ventilatory function parameters (FVC, FEV1, FVC/FEV1%, PEFR) were calculated for each variable pre the treatment and post 3 months of treatment for both groups (A and B).
2. **Inferential Statistic:** Mannwhiteny test – was used for each variable to compare the results pre and post 3 months of treatment for each group (A and B).

Results

Table 1 showed demographical and clinical results of both groups. Mean age of group A and group B were 11.0±1.2 and10.8±1.4 years respectively.

Group A: The data in table 2 revealed anthropometric and ventilatory function parameters pre and post treatment in group A: the results showed significant difference of all measured parameters except FVC/FEV1 non-significant difference.

Group B: The data in table 3 revealed anthropometric and ventilatory function parameters pre and post treatment in group B: it showed significant difference of all parameters except FVC/FEV1 non-significant difference.

Group A & B: The data in table 4 revealed anthropometric and ventilatory functio parameters post treatment in group A and B using: the results showed non-significant difference of all parameters

Table 1: Demographical and clinical data of both groups

Measured Parameters	GA	GB	p.value	Sig
Age (y)	11.0±1.2	10.8±1.4	0.633	non-sig
Ht (cm)	146.8±7.1	148.3±12.4	0.385	non- sig
Wt (kg)	74.4±23.	71.9±21.9	1.000	non-sig
BMI(kg/m²)	33.8±8.	31.9±6.3	0.447	non-sig
WC(cm)	98.6±15.8	96.6±16.2	0.913	non-sig
FVC(L)	77.8±23.6	86.4±24.5	0.129	non-sig
FEV1(L)	83.4±30.8	90.7±28.5	0..828	non-sig
FVC/FEV1 (%)	103.2±17.2	104.8±11.4	1.000	non-sig
PEFR(L/min)	79.4±24.4	73.7±20.4	0.232	non-sig

sig: significant, G: group, ±SD: standard deviation, p.value :probability value, Ht :height,Wt: weight, BMI: body mass index, WC: waist circumference, FVC: Forced vital capacity, FEV1: Forced expired volume in one second, PEFR: Peak expiratory flow rate

Table 2: Anthropometric and ventilatory function measure parameters pre and post treatment in group A

Measured Parameters	Pre treatment	Post treatment	p.value	Sig
Wt	74.4±23.	70.2±23	.000	Sig
BMI	33.8±8.	31.5±8	.000	sig
WC	98.6±15.8	91.2±14.3	.000	sig
FVC	77.8±23.6	95.4±24.4	.000	sig
FEV1	83.4±30.8	104.4±27.8	.000	sig
FVC/FEV1	103.2±17.2	104.6±11.8	0.910	non-sig
PEFR	79.4±24.4	83.4±27.4	.000	sig

sig: significant, ±SD: standard deviation, p.value: probability value,Wt: weight, BMI: body mass index, WC: waist circumference, FVC: Forced vital capacity, FEV1: Forced expired volume in one second, PEFR: Peak expiratory flow rate

Table 3: The anthropometric and ventilatory function measure parameters pre and post treatment in group B

Measured Parameters	Pre treatment	Post treatment	p.value	Sig
Wt	71.9±21.9	66.9±20.5	.000	Sig
BMI	31.9±6.3	29.4±6.2	.000	sig
WC	96.6±16.2	88.6±14.6	.000	sig
FVC	86.4±24.5	99±24.1	.000	sig
FEV1	90.7±28.5	106.9±29.7	.000	sig
FVC/FEV1	104.8±11.4	104.9±29.7	0.11	non-sig
PEFR	73.7±20.4	79.1±20.3	.000	sig

sig: significant, ±SD: standard deviation, p.value :probability value,Wt: weight, BMI: body mass index, WC: waist circumference, FVC: Forced vital capacity, FEV1: Forced expired volume in one second, PEFR: Peak expiratory flow rate

Table 4: Anthropometric and ventilatory function measure parameters post treatment in group A and B

Measured Parameters	Post treatment Group A	Post treatment Group B	p.value	Sig
Wt	70.2±23.	66.9±20.5	.828	non-sig
BMI	31.5±8.1	29.4±6.2	.515	non-sig
WC	91.2±14.3	88.6±14.6	.913	non-sig
FVC	95.4±24.4	99±24.1	.193	non-sig
FEV1	104.4±27.8	106.9±29.7	.193	non-sig
FVC/FEV1	104.6±11.8	104.9±29.7	.193	non-sig
PEFR	83.4±27.4\	79.1±20.3	.285	non-sig

sig: significant, NS :non-significant, ±SD: standard deviation, p.value :probability value,Wt: weight, BMI: body mass index, WC: waist circumference, FVC: Forced vital capacity, FEV1: Forced expired volume in one second, PEFR: Peak expiratory flow rate

Discussion

Results of current study showed that there were statistically significant difference of the mean values before and after treatment of the group A in anthropometric (weight, BMI, WC) and ventilatory function measured parameters (FVC, FEV1, PEFR) except FVC/FEV1% showed no significant difference. This come in agreement with **Kopelman et al.**[20]: Increase excessive fat % effect on lungs activities and limits the free air[21]. Results of current study showed that there were statistically significant difference of the mean values before and after treatment of the group B in anthropometric (weight, BMI, WC) and ventilatory function measured parameters (FVC, FEV1, PEFR) except FVC/FEV1 showed no significant difference

In agreement with **Salome et al.**[22]: Obesity could potentially worsen asthma, as effects on pulmonary physiology and mechanics. Increasing weight could had profound implications on lung physiology and develop the restriction system from greater adiposity around the chest wall and abdomen. Reduced lung capacity and low expiratory reserve volume, from upward diaphragmatic displacement due to increase abdominal fat and could led to ventilation/perfusion mismatching, not the amount of fat but location of fat influences asthma perceptions **Lessard et al.**[23]. Weight loss interventions, both surgical and nutritional can improve respiratory health. Improve of BHR only with low or normal IgE levels, and different phenotypes may benefit from weight loss[24]. Spirometric variables, as forced expiratory volume in 1 s (FEV1) and forced vital capacity (FVC), tend to decreased with increased BMI[25]. On the other hand **Ross et al.**[26]: had not found any difference in pulmonary function among obese and non-obese. Various investigations reported that correlation between increase BMI and increase asthma severity[27].

The results of the current study agreed with **Roelants et al.**[28] who reported WBV training induces small increase in fat free mass had not reduced body weight, fat% or subcutaneous fat in untrained females and WBV reduction, fat accumulation and serum leptin without affecting muscle function. With agreement of the current study **Rubin et al.**[29] adipogenesis is inhibited in mice by brief, daily exposure to low-magnitude mechanical signals, delivered via WBV.

Conclusion

The diet and breathing exercise are effective in decreasing body weight and BMI and improving ventilatory functions in obese asthmatic children

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Ethical Clearance: Cleared by the ethical committee Department of Physical Therapy for Growth and Development Disorders in Children and its Surgery, Faculty of Physical Therapy, Cairo University, Egypt

Conflict of Interest: No

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Identification of Bacterial Species Associated with Dental Caries and Evaluated of Antimicrobial Activity of Aqueous and Alcoholic Extracts for Suaedaaegyptiaca and Citrus Sinensis Plants

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Abstract

Studies were carried out to identify 32 bacteria isolated from dental caries belong to the genera: *Escherichia*, *Pseudomonas*, *Citrobacter*, *Sphingobacterium*, *Staphylococcus*, *Leuconostoc*, *Acinetobacter*, *Ochrobactrum*, *Klebsiella*, *Enterococcus*, *Yersinia*, *Chromobacterium* and 18 isolates were unidentified by Vitek$_2$ compact system. Antibacterial activity of *Suaedaaegyptiaca* and *Citrussinensis* plants was investigated. Peels orange (*Citrussinensis)* were extracted with hot water, and then its antibacterial activity against Gram-positive and Gram-negative bacteriawas examined, the data demonstrate the effect was more against the bacteria S*phingobacteriumthalpophilu*m with inhibition zone of 30 mm at 500mg/ml concentration whereas aqueous extract of peels orange revealed no effect on the bacterial species (*Leuconostocmesenteroides*, *Ochrobactrum anthropic*, *Escherichia coli*). On the other hand methanol extracts of peels orange had effected on one species only (*Citrobacterfreundii*). The study also indicated that aqueous extract of *Suaedaaegyptiac*a plant do not effect on all bacterial species tested while methanol extract of *Suaedaaegyptiac*a revealed activity on the species (*Klebsiellapneumoniae, Pseudomonas oryzihabitans*, *Staphylococcus vitulinus)*.

Keywords: *Citrus, Suaeda, antimicrobial activity, Vitek 2 compact system.*

Introduction

Dental caries, also known as tooth decay, a chronic disease is unique among human and is one of the most common important global oral health problems in the world today[1,2]. Destruction of calcified tissue was caused by acids which are by product from the bacterial fermentation of dietary carbohydrates especially sucrose[1,3]. Dental caries occurs due to multiple factors such as interactions within the plaque community,diet,fluoride, hostphysiology, pH and nature of the tooth enamel, caries is also associated with poor cleaning of the mouth (1; 4). The term of medicinal plants include a various types of plants used in herbalism and some of these plants have a medicinal activities. These medicinal plants consider as a rich resources of ingredients which can be used in drug development and synthesis. some plants consider as important source of nutrition and as a result of that these plants recommended for their therapeutic values,other plants consider as important source for active ingredients which are used in aspirin and toothpaste [5].Plants as a source of medicinal compounds have continued to play a dominant role in the maintenance of human health since ancient times. According to the World Health Organization plant extracts or their active constituents are used as folk medicine in traditional therapies of 80% of the world drugs are of natural product origin [6] .Pharmaceutical companies have spent a lot of time and money in developing natural products extracted from

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plants to produce more cost effective remedies that are affordable to the population [7].Medicinal plants are a source for a wide variety of natural antioxidants and are used for the treatment of diseases during the world [8]. Some of these properties are antimicrobial [9], anti-diabetic [10], anti-cancer [11], immunomodulatory[13], anti-atherosclerosis [13], Recently, due to beneficial effects of antioxidants in the treatment and prevention of diseases, there has been a considerable interest in finding natural antioxidants from plant sources. In most of countries in Europe, herbal medicines are either fully licensed as medicines with efficacy proven by clinical trials. In Iran and in the United States, most herbal products are considered as dietary supplements and thus are not required to meet the standards for drugs[14].*Citrus* is the most economically important fruit crop in the world *Citrus* fruit is grown all over the world in more than 140 countries [15,16].*Citrus* fruits have been recognized as an important food and integrated as part of our daily diet, playing key roles in supplying energy and nutrients and in health promotion.Orange trees are widely cultivated in tropical and subtropical climates for its tasty juice and medicinal value. *Citrus senensis*peel has many medicinal properties and is widely used against various ailments, such as colic, cancer, diuretic, cormunative, immuno – enhancing, tonic to digestive system, stomachic, immune system and skin. It is also used to treat and prevent vitamin deficiencies, colds, flu, and scurvy and helping to fight viral and bacterial infections [17,18].

Suaedaaegyptiaca plant: This herb is widespread in Canary Islands, Europe, Mediterranean region, Asia, Australia, northeast coast of North America, Argentina. Many of which are adapted to live in saline soil and live in salt marches or arid saline soil [20].

The species distributed throughout Arabia in saline habitats especially on coasts and it is grow in rather different plant communities and even as weed in irrigated gardens and fields [21]. The present study aims at isolation, characterization of bacterial species are associated with dental caries and evaluates antimicrobial activity of peels *Citrus sinensis* and *Suaedaaegyptiaca* plants extraction.

Materials and Method

Collection of Samples: 60 samples were collected from patients (for both sexs females and males with different ages)suffering from dental caries from Al-Basrah general hospital by using sterile cotton swabs and dissolved into 2ml brain heart infusion broth media after then transported to the laboratory and incubated at 37°C for 48 hours.

Collection of Plants: *Suaedaaegyptiaca* plant samples were collected from garden college of scince university of Basrah and peels of *Citrus sinensis* collected from local markets in Basrah province. Aerial parts of this plant were cleaned with running water after then with sterile distilled water, and air dried at room temperature (25°C)for three days, then samples were grounded into powder by electrical sterilized mixer grinder. The powdered parts were kept in plastic bags at 4°C until use.

Identification of bacterial isolates: All the isolates were inoculated on nutrient, MacConkey and blood agar plates. The streaked plates were incubated at 37°C for 24 hours. Identification of isolates were done based on colony morphology later Gram stained (23). Identification with the Vitek-2 system was performed with ID-GN, ID-GP cards, according to the manufacturer's instructions.

Preparation of plants extracts: Water extract of plant was prepared by weighting 20g of plant powder in conical flask, and 400 ml of distilled water was added then mixed with hot plate and magnetic stirrer for six hours. The mixture was filtered through filter paper (Wattman No. 1) and the filtered extract was concentrated with rotary evaporator, then the aqueous extract left at room temperature to remove any exess water.

Methanolic extract of plant was prepared by weighting 20g of plant powder was mixed with 400ml of methanol by successive continuous hot percolation using Soxhlet extractor for 8 hours at 60ºC. The solution was evaporated to dryness in a rotary evaporator [24,25].

Antimicrobial activities assays: The antibacterial activities of the plants extracts were evaluated by agar well diffusion method [26]. Tested bacterial genera were grown in nutrient broth to match the turbidity of 0.5 McFarland standards to be inoculated on plate Muller-Hinton agar by sterile cotton swabs . After inoculation, plates were dried for 15-20 min, and the wells were punched using sterile cork borers. Once wells were formed, they were filled with 100 µl of each plant extract (water, methanol) that dissolved in dimethyl sulphoxide (DMSO), where each plant extract was prepared with different concentrations (100,200,300,400,500) mg/ml. Plates were incubated for 24 hours at 37°C to allow plants extracts to diffuse through the agar media to

form zones of inhibition. The diameters of the zone of inhibition for different plants extracts against different bacteria were measured in millimeter. An agar well (6 mm) showing no zone of inhibition was considered as no antimicrobial activity. All experiments were done in triplicate and the mean values were used [25].

Results and Discusion

Identification of bacterial isolates: Among 60 clinical samples were collected from patients suffering from dental caries from Al-Basrah general hospital in Basrah province,50 isolates characterized by using conventional method, whereas the isolates exhibited differential hemolysis pattern on blood agar and some of isolates ferment lactose when grown on MacConkey media.

The results showed some isolates were Gram positive and other isolates were Gram negative when stained with Gram stain. The identification results with $Vitek_2$ compact system were grouped in Table 1. Among 50 bacterial isolates,32 isolates identified to genera *(Escherichia*, *Pseudomonas*, *Citrobacter*, *Sphingobacterium*, *Staphylococcus*, *Leuconostoc*, *Acinetobacter*, *Ochrobactrum*, *Klebsiella*, *Enterococcus*, *Yersinia*, *Chromobacterium*),18 isolates were non identified. The results demonstrated that the bacteria isolates characterized at spec- ies level by $Vitek_2$ compact system was divided into four groups based upon thethe probability of accurate identification as follows:14 isolates with probability of accurate identify-cation (96-99%),9 isolates with (93 - 95%),6 isolates with good (89- 92%),3 isolates with (85 - 88%).

Antibacterial activity of aqueous and methanolic extracts of Suaedaaegyptiacaand Citrussinensis plants on some bacterial species: The present study showed the antimicrobial activity of peels oranges plant aqueous extract against some of bacterial isolates which obtained from dental caries for both Gram positive and Gram negative bacteria, whereas S*phingobacteriumthalpophilu*m had the highest microbial sensitivity (zone of inhibition 30 mm with concentration 500mg/ml of peels oranges aqueous extract) and this inhibitory effect increased with increasing aqueous extract concentration, Fig. 1. Aqueous extract of peels oranges revealed different inhibition zones against other bacterial isolates and this study demonstrated that this aqueous extract do not revealed any effect on the isolates (*Leuconostocmesenteroides*, *Ochrobactrum anthropic*, *Escherichia coli*). methanol extracts of peels oranges effected on one isolate only (*Citrobacterfreundii*) and do not effect on the other bacterial isolates as show in Table 2, Fig.2. The results showed that aqueous extract of *Suaedaaegyptiac*a plant do not effect on all bacterial isolates tested while methanol extract of *Suaedaaegyptiac*a revealed activity on the isolates (*Klebsiellapneumoniae, Pseudomonas oryzihabitans*, *Staphylococcusvitulinus)* with different inhibition zones whereas*Klebsiellapneum- oniae* had the highest inhibition zone 15mm in 500mg/ml concentration as show in Table 3, Fig.3.Oral diseases sources major health problems in the worldwide [27].In the recent study the bacterial isolates isolated from dental caries identified with $Vitek_2$ compact system after identified by conventional method because $Vitek_2$ compact system is an option which proven to reduce turn around times and improve the quality and reproducibility of microbiology results, the $Vitek_2$ system have several advantages that may be of clinical interest for routine testing of gram-negative and gram-positive isolated from the clinical samples: Rapid identification (during three hours), a high level of automation and taxonomically updated databases [28,29].From the generalized data is revealed that the greater zone of inhibition exhibited by hot aqueous extract of peel orange (*Citrussinensis*) against*Sphingobacterium*thalpophilum while hot methanolic extract of peel orange do not effect against all isolates exception *Citrobacterfreundii* this inhibition effect may be related to its active compounds that includes tannins, saponins, phenolic compounds, essential oils and flavonoids and others[34] this results do not agree with study of [18], who explained that the alcoholic extracts more effective against pathogens than the aqueous extractsof peels orange (*Citrussinensis*).Inhibition zone of all extracts against pathogens in this study increased with increase in concentration which is in agreement with previous studies[17].also results obtained showed the aqueous extract of *Suaedaaegyptiaca* do not effect on all bacterial isolates were tested this study does not similar to those obtained by [24] who reported antibacterial activity of aqueous extract of *S. aegyptiaca*was examined against four pathogenic bacteria: *Staphylococcus aureus, Escherichia coli, Salmonella typhi and Shigelladesynterial*. whilemethanolicextract of *Suaedaaegyptiac*a revealed activity on the isolates (*Klebsiellapneumoniae, Pseudomonas oryzihabitans*, *Staphylococcus vitulinus)*, this results agreement with study [24], who showed that ethanolic extract had inhibitory effect on *Staphylococcus aureus, Staphylococcus.*

*epidermidis*and *Klebseillapneumoniae*. Chemical analysis showed that *S. aegyptiaca* contains different active compounds: phenols, alkaloids and terpens .

Table 1: Bacterial species identified by Vitek 2 compact system

No. Isolate	Bacterial species	Numbers
1	Escherichia coli	8
2	Pseudomonas oryzihabitans	4
3	Citrobacterfreundii	2
4	SphingobacteriumThalpophilum	2
5	Staphylococcus lentus	2
6	Staphylococcus vitulinus	2
7	Staphylococcus auricularis	2
8	Staphylococcus haemolyticus	1
9	Leuconostocmesenteroides	2
10	Acinetobacterbaumannii complex	2
11	Ochrobactrum anthropic	1
12	Klebsiellapneumoniae	1
13	Enterococcus faecium	1
14	Yersinia ruckeri	1
15	Chromobacteriumviolaceum	1

Table 2: Inhibition zone dimeter (mm) of aqueous and methanol extracts of Citrussinensis plants against some bacterial species

Bacterial Species	100mg/ml		200mg/ml		300mg/ml		400mg/ml		500mg/ml	
	Aqueous	Methanol	Aqueous	Methanol	Aqueous	Methanol	Aqueous	Methanol	Aqueous	Methanol
A	0	0	7	0	8	0	9	0	14	0
B	0	0	9	0	9	0	10	0	10	0
C	11	0	15	0	20	0	28	0	30	0
D	10	0	11	0	15	0	15	0	20	0
E	7	0	7	0	10	0	11	0	12	0
F	0	0	0	13	0	20	0	20	0	22
G	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0	0
I	0	0	8	0	8	0	10	0	14	0
J	0	0	0	0	0	0	0	0	0	0

Table 3: Inhibition zone dimeter (mm) of aqueous and methanol extracts of Suaedaaegyptiacaplants against some bacterial species

Bacterial species	100mg/ml		200mg/ml		300mg/ml		400mg/ml		500mg/ml	
	Aqueous	Methanol	Aqueous	Methanol	Aqueous	Methanol	Aqueous	Methanol	Aqueous	Methanol
A	0	0	0	0	0	11	0	12	0	12
B	0	10	0	10	0	10	0	10	0	11
C	0	0	0	0	0	0	0	0	0	0
D	0	0	0	10	0	11	0	15	0	15
E	0	0	0	0	0	0	0	0	0	0
F	0	0	0	0	0	0	0	0	0	0

Bacterial species	100mg/ml		200mg/ml		300mg/ml		400mg/ml		500mg/ml	
	Aqueous	Methanol	Aqueous	Methanol	Aqueous	Methanol	Aqueous	Methanol	Aqueous	Methanol
G	0	0	0	0	0	0	0	0	0	0
H	0	0	0	0	0	0	0	0	0	0
I	0	0	0	0	0	0	0	0	0	0
J	0	0	0	0	0	0	0	0	0	0

A=Pseudomonas oryzihabitans, B= Staphylococcus vitulinus, C=SphingobacteriumThalpophilum, D=Klebsiellapneumoniae, E= Enterococcusfaecium,F=Citrobacterfreundii,G=Leuconostocmesenteroides,H=Ochrobactrumanthropic,I=Chromobacteriumviolaceum, J=Escherichia coli

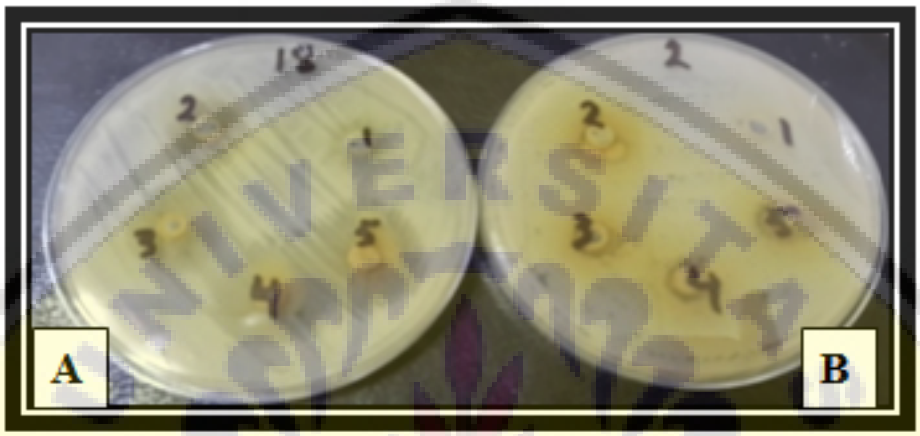

Fig. 1: Effect of aqueousextract of Citrussinensis plant on A:Sphingobacterium Thalpophilum, B: Pseudomonas oryzihabitans

Fig. 2: Effect of methanol extract of Citrussinensis planton, C: Citrobacterfreundii

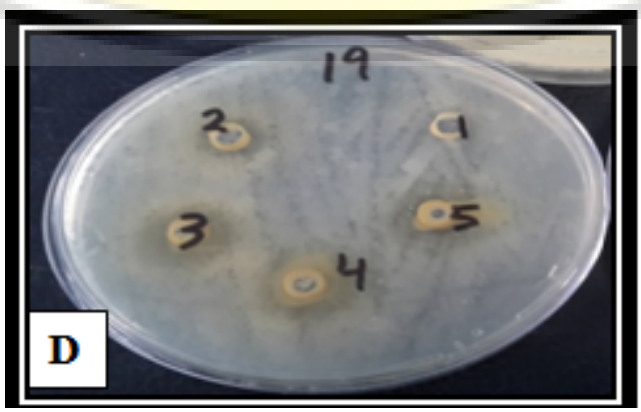

Fig. 3: Effect of methanol extract of Suaedaaegyptiaca plant on D: Klebsiellapneumoniae

Conclusion

In the present study confirmed the anti- microbial potential of *Citrus sinensis* peel and *Suaedaaegyptiac*a extracts plants against bacteria isolated from dental caries tested whereas the data demonstrate that the effect of oranges peels aqueous extract was more against the bacteria S *phingobacteriumthalpophilu*m.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of biology, College of Science,University of Basrah, Iraqand all experiments were carried out in accordance with approved guidelines.

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Exercises Versus Acupuncture for Overweight Children

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Abstract

Background and Objective: Overweight is an ailment wherein abundance muscle to fat ratio has gathered to the degree that may contrarily influence health. The motivation behind this examination was to look at between the suitability of activity and acupuncture therapy in diminishing weight of the overweight children.

Materials and Method: Forty overweight offspring of both genders ages went from 9-12 years were arbitrarily separated into 2 gatherings of equivalent number. Youngsters in gathering (I) got practice treatment program and gathering (II) received needle therapy treatment notwithstanding diet therapy for the two gatherings. Exercise treatment program was led for 60 minutes and the needle therapy treatment was directed for 30 minutes. Treatment was directed day after day a week for three progressive months. In Body 270 apparatus was used to assess body weight, muscle to fat ratio mass, all out Absolute body water and midsection hip proportion when three months of intervention.

Results: Significant improvement in weight reduction, muscle versus fat mass, complete Absolute body water and midriff hip proportion was gained in the both groups while there is huge contrast in this values for gathering (II)

(Conclusion: It can be concluded that activity treatment program or acupuncture related to diet therapy program significantly reduced weight in overweight children.

Keywords: *Acupuncture, Muscle versus fat mass, Exercises, Overweight, Absolute body water, Waist-hip ratio.*

Introduction

Overweight can be characterized as an illness wherein abundant fat has aggregated to a degree that wellbeing is adversely influenced. Body mass index is an estimation which is generally used to appraise the commonness of overweight and corpulence inside a populace, and it is determined as weight (kg)/stature squared (m2). Cut off purposes of 25 Kg/m2 and 30Kg/m2 are perceived worldwide as meanings of overweight and heaviness, separately has been demonstrated that BMI is fundamentally related with all out muscle to fat ratio for most of individuals [1].

After BMI is resolved for adolescents and youngsters, it is imparted as a percentile which can be gotten from either a diagram or a percentile calculator. These percentiles express a youngster\'s BMI near with kids in the U.S who partook in national reviews that drove from 1963-65 to 1988-94.since weight and height change during advancement and improvement, as does their association with body strength, a youth's BMI must be deciphered relative with posterity of a comparative sexual orientation and age [2].

Children with BMI underneath the 5th percentile are seen as underweight. Those with a body mass index among between 5th percentile to not exactly the eighty

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fifth percentile are seen as normal or wellbeing weight kids. The overweight youths are 85th to not actually the 95th percentile. Forceful youths are comparable to or more conspicuous more prominent than the ninety fifth percentile [2].

The commonness of youth corpulence has expanded drastically during the previous decades everywhere throughout the world. Most of corpulence in adulthood has its sources in youth which makes heftiness a pediatric concern and the period when intercessions ought to be finished. Obesity is related with increased expanded dismalness and mortality in grown-up life and several adverse consequences in childhood, for example, insulin opposition, type 2 diabetes, dyslipidemia, polycystic ovarian disorder, aspiratory and orthopedic issue and mental issues. Both hereditary and natural elements assume a job in the evolution of fatness. Nourishment and expanded physical action must be empowered, advanced, and organized to safeguard kids [3].

The impacts of a combined nutritional-behavioral-exercise intervention for childhood obesity had a significant weight loss, diminished BMI, decreased muscle to fat ratio, expanded ongoing physical action and improved wellness, just as diminished aggregate and LDL cholesterol levels, among fat youngsters and adolescents[4].

The impacts of needle therapy on fat people haven't completely illustrated. In China and Asia, the after effects of numerous examinations exploring the utilization of needle therapy for weight control give primer proof of the potential impact of needle treatment on weight decrease. Late investigations have demonstrated that needle therapy can decrease weight of the body in kids with straightforward heftiness, just as lower their percentile weight list (PBMI) and midriff hip proportion (WHR) [5].

Therefore, the point of this examination was to look at exercise efficiency and acupuncture efficiency in overweight kids.

Materials and Method

Study Design: This investigation was an experimental study that was performed at the General Mansoura hospital out-patient clinic of Mansoura, Daqahlia, Egypt. The examination was led from February till June, 2018.

Subjects: Forty overweight kids of the two sexes, with age ranged from 9 to 12 years (mean age: 123.6 ± 11.76 months) participated in this examination Children were incorporated on the off chance that they met the accompanying criteria: (1) Overweight according to BMI-for-age percentile (between 85th and 95th percentile), (2) The ability to walk independently, (3) Normal systolic/ diastolic blood pressure (120/65 mm Hg), and (4) The ability to understand the directions during assessment and treatment. Children were rejected on the off chance that they had: (1) Visual and/or auditory defects, (2) Any medical problems, (3) Sensory impairment and/or [6] Diet therapy. Members were haphazardly separated into two gatherings of equivalent number (Group I and II).

Materials:

In Body 270 apparatus: It has upset the field of (BIA) and is as of now the most developed item in the market. Gold standard body composition method like dual energy X ray analysis are correlated with the percent of 98%. The In body 270 apparatus uses 10 impedance measurements by utilizing two distinct frequencies to gauge the five body segments to give more than 25 parameters important and explicit to body organization. The In Body 270 allows the mentor/wellbeing expert to normally screen the degree of muscle to fat ratio, slender bulk and solid advancement[7]. It was used to quantify body composition just as waist-hip ratio.

Acupuncture Tool: Needle acupuncture is the type of needle therapy that includes infiltrating the skin at anatomical focuses on the body with meager, strong, metallic needles that are manipulated manually. For treatment of obesity, usually 4 –7 auricular needle therapy focuses on one ear are selected in per the patient's symptoms, and the auricular needle therapy needles are embedded using forceps.

Procedures:

Evaluative Procedures: The In body 270 apparatus was used to assess the following parameters pre and post twelve weeks of treatment for both groups:

1. **Body Composition Analysis:**
   a. Weight of body in kilograms (kg). Complete body water (total sum of water in body) in liter (L).
   b. Muscle to fat ratio mass (utilized for putting away abundance energy) in kg.

1. **Waist-Hip Ratio (WHR):** It is the proportion of midsection circuit to hip circumference.

Treatment Procedures: Participants were isolated into two groups of equivalent (20 participants in each) by random assignment (https://www.random.org/).

Group (I): Children in this gathering received diet therapy in addition to the exercise therapy program conducted for one hour in the form of cycling, abdominal exercises, resistance training and electrical treadmill training.

Group (II): Children in this gathering received diet therapy and acupuncture therapy conducted for 30 minutes in the form of abdominal needle therapy and auricular acupuncture held for around 3 days. The aforementioned process was repeated on the other ear after 1–3 days until deemed unnecessary [8].

Data Analysis: Statistical studies were done using (SPSS) version 20 for Windows which defined as package for statistical and social sciences. Descriptive statistics (mean and standard deviation) of the children's ages, weight, water, fat mass and waist- hip ratio were conducted. Paired sampled t-test was used to test statistical contrast among pre and post measures for each group. Unpaired t-test was used to the difference concerning the statistics among both groups before just as after treatment for each variable. Every single measurable were significant at 0.05 level of probability.

Results

When comparing between the pre and post measures, the results uncovered a huge reduction of the entirety measured deliberate factors in group (I) just as in group (II). However, the percentage of improvement in group (II) is bigger than that of group (I)(Table 1).Results revealed a non-huge contrasts among the two gatherings regarding the measured variables before intervention. However, there is noteworthy contrasts among the two gatherings regarding the measured variables after intervention in the sake of group (II) (Table 2).

Table (1). Body composition analysis and ratio of waist to hip in every group.

Variables (Mean±SD)		Weight (Kg)	Body Water (Litre)	Body Fat Mass (Kg)	Waist-Hip Ratio
Group (I)	Pre	53.07±10.73	21.91±3.04	23.47±7.12	0.85±0.05
	Post	48.82±10.12	18.75±3.78	20.01±6.99	0.81±0.05
	t. value	18.26	12.81	23.95	20.47
	p. value	0.0001*	0.0001*	0.0001*	0.0001*
	% of improvement	8%	14.42%	14.74%	4.7%
Group (II)	Pre	51.27±7.79	20.66±3.52	22.77±4.74	0.84±0.03
	Post	42±7.69	15.15±3.12	15.32±4.18	0.77±0.04
	t. value	12.49	4.38	7.59	12.25
	p. value	0.0001*	0.0001*	0.0001*	0.0001*
	% of improvement	18.08%	26.67%	32.71%	8.33%

SD: Standard deviation. t-value: Paired t- test value. p-value: Probability value. *: Significant.

Table (2). Body composition analysis and ratio of waist to hip between both groups.

Variables (mean±SD)		Weight (Kg)	Body water (Litre)	Body fat mass (Kg)	Waist-hip ratio
Pre-Measures	Group (I)	53.07±10.73	21.91±3.04	23.47±7.12	0.85±0.05
	Group (II)	51.27±7.79	20.66±3.52	22.77±4.74	0.84±0.03
	t. value	0.61	1.2	0.36	0.61
	p. value	0.547	0.237	0.719	0.549

Variables (mean±SD)		Weight (Kg)	Body water (Litre)	Body fat mass (Kg)	Waist-hip ratio
Post-Measures	Group (I)	48.82±10.12	18.75±3.78	20.01±6.99	0.81±0.05
	Group (II)	42±7.69	15.15±3.12	15.32±4.18	0.77±0.04
	t. value	2.4	3.28	2.57	2.5
	p. value	0.022*	0.002*	0.015*	0.017*

SD: Standard deviation. t-value: Un-paired t- test value. P-value: Probability value. *: Significant.

Discussion

The aftereffects of this investigation demonstrated a huge reduction of each and every estimated variable (weight, body water, muscle versus fat mass and waist hip ratio) in the both groups following twelve weeks of treatment, but for group (II).

It is accepted that needle therapy known as acupuncture attempts to adjust focal sensory system synapse levels by animating peripheral nerves at acupoints. These invigorated nerves at that point convey the sign halfway including to the spinal cord, pituitary and midbrain. Initiated focuses would then be have the option to discharge neurochemicals: endorphins monoamines and cortisol [9].

Using acupuncture may increase the arrival of synapses and may improve mind-set, which, thusly, might prompt improved guideline of food intake. This comes in concurrence with Dung [10] who detailed that that needle therapy may smother hunger by endorphin-instigated diminishes in pressure and discouragement Shiraishi et al. [11] also reported that constructive outcome of standard acupuncture and electroacupuncture is presented on mood by altering serotonin levels that have been observed in treating clinical depression, improving temperament and weight reduction.

The after effects of this examination come in concurrence with Caroli, Burniat, Cole, Lissau, & Poskitt [12] who reported that with balanced low-calorie diets, weight reduction of roughly 0.5 kg/week can be accomplished even over longer periods.

The finding of this examination comes in concurrence with Sothern [6] who compared body composition characteristics between over-weight kids who were participating in physical exercises and the people who were most certainly not. The study declared that in over-weight youngsters who were participating in physical exercises, there is less need to severe dietary restriction in effective weight-loss program.

The noteworthy improvement in overall bod composition analysis and the ratio of waist to hip post treatment for group (I) could be credited to the physical movement that may protect or even increment sans fat mass during weight decrease.

This is significant eventually as sans fat mass generally decides resting metabolic rate, the level of vitality used in rest, which is the best piece of absolute vitality consumption. Thusly, compelling weight reduction is well on the way to happen when a blend of dietary schedule and exercise is prescribed. Physical movement further upgrades negative vitality balance. The more calories are used through physical action, the less serious dietary limitation is required. Also, cooperation in physical action improved mental prosperity and cardiovascular wellness. In particular, physical movement assumes a significant job in the upkeep of weight reduction. Cooperation in acquatic exercises or activities diminished fat levels as this consequently given wellbeing and wellness benefits. weight-bearing errands might be significantly less debilitating and can executed into the program [13].

The huge improvement in group (II) using needle therapy might ascribed to stimulation of the auricular regions associated with the ventromedial hypothalamus that influences the satiety center and prompts improved weight reduction (or diminished gain). Likewise, there have been reports of decreased hunger and longings from patients wearing auricular needle therapy gadgets (press needles, staples, or beads)[5].

Improvement of complete body water, muscle to fat ratio mass, waist-hip ratio and body weight following twelve weeks of treatment for group1 could be ascribed the improvement occurred in energy expenditure by 1000-1500 Kcal per week whereas a caloric shortfall of 500– 1000 kcal every day is usually induced by energy - restricted diets. Addition of exercise to food restriction produces a normal increment in weight decrease of about 1.5 kg in overweight subjects [4].

This agrees with Garrow and Summerbell [14] who found that adding activity to a vitality confined routine may also help to preserve fat-free mass. The meta–analysis indicated that for each 10 kg weight reduction by eating regimen alone, the normal loss of sans fat mass is 2.9 kg in boys and 2.2 kg in girls. At the point When a similar weight reduction is accomplised by exercise joined with dietary confinement, the normal loss of fat–free mass is diminished to 1.7 kg in boys and girls. Resistance exercise may bring about a progressively viable conservation of without fat mass during atimeodf vitality limition than intence exercise result in a more effective preservation of sans fat mass during a time of vitality limitation than endurance training.

Our findings are supported by the findings of Catenacci and Wyatt [15] who found that regular exercise is of crucial importance for successful weight reduction upkeep after a time of weight reduction. Most of the proof originates from nonrandomized weight reduction studies with an observational follow-up. People who effectively keep up weight reduction are characterized by significant levels of physical activity, low fat in diet and high dietary carbohydrate intake, and normal self-checking of weight and nourishment intake.

It is accepted that such insertion of needles in specific points will help, correct, and rebalance the progression of qi (Blood and Body Fluids are the most essential substances that comprise the body of wellbeing and keep up its useful activities) flowing along the energy path ways meridians [16].

Normal auricular dots utilized in the management of weight incorporate “Appetite” and “Stomach” dots (for satiety and completion) and “Shenmen” (for sedation and absence of pain). The vagus, glossopharyngeal, trigeminus, facialis, and branches (the second and third) of the cervical spinal nerves are innervating the auricle. The vagus nerve is thought to interface with cranial nerves and those of the stomach related tract, as these nerves share a typical way to the cerebrum [17].

Conclusion

The consequences of this investigation provided the proof that the combination of physical exercises and/or acupuncture with diet therapy can reduce body heftiness in overweight kids.

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Impact of Dietary Habits on Patients with Urolithiasis at Kirkuk City

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Abstract

Aim of the study:-In order to assess to assess impact of dietary habit on urolithiasis patients in Kirkuk city and to find out the relationship between some socio _ demographiccharacteristic (age, gender,) and urolithiasis. A descriptive study of aquantitative design was conducted at Azaditeaching Hospital (Llithotripsy unit) for urolithiasis patients in Kirkuk city from 3rd august 2017 to the 20th of March 2018.a questionnaire format was constructed which contains (51) Demographic data include (6) items, medical data include (5) items dietary habit include (40) items. Statistical analysis was used of 3- likert scale option was used in the rating scale as: (3) for always, (2) for sometimes, and (1) for never. Content validity was determined by presenting the questionnaire to a panel of (10) experts . The data were collected through the interviewing . They were analyzed through the application of descriptive statistical analysis (frequency and percentage) and inferential statistical data analysis (chi-square), T. **test** and ANOVAs . The findings of the study indicated that No (30%) of the patients were in age group between (20_29)-(30-39)years, No(60%) were males, No (77%).

Keyword: *Impact, Dietary habit, Urolithiasis patients.*

Introduction

Kidney stone disease has been a well-known entity for centuries. This has been markedly established by different archeological findings, as well as by writings about painful stone colic and therapeutic trials for stone removal .In ancient centuries urolithiasis was often a disastrous disease, with a catastrophic outcome all too often leading to the patient's death. Examinations of Egyptian mummies have revealed kidney and bladder stone disease. For example, in 1901, the English archeologist E. Smith found a 5,000-year-old bladder stone at the funeral site of El Amrah, Egypt [1] However, he reported only four cases of urolithiasis in thousands of examined mummies, which led to the conclusion that stone disease must have been less prevalent in ancient Egypt. Regimens for treatment of diseases of the urinary tract, including stones, had already been found in the papyrus Ebers (1500 BC), being the main origin of our knowledge of old traditional Egyptian medicine. Although the ancient Egyptians were famous for their mummifying techniques, they obviously did not know how to remove kidney or bladder stones[2] Urolithiasis is one of the most common diseases with approximately 750,000 cases per year in Germany. While most patients have only 1 stone episode, 25% experience recurrent stone formation. Thus, urolithiasis has a significant impact on life quality and socioeconomic factors[3] Several groups have reported a worldwide increasing incidence and prevalence, which seems to be more pronounced in industrialized countries. Clinical observations indicate a changing incidence and composition of urinary calculi as well as a dynamic of gender and age related incidences[4] Urolithiasis is a significant source of morbidity, affecting all geographical, cultural, and racial groups. The lifetime risk is about 10- 15% in the developed world, but can be as high as 20-25% in the Middle East. The increased risk of dehydration in hot climates, coupled with a diet that is 50% lower in calcium and 250% higher in oxalates

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compared to Western diets; accounts for the higher net risk in the Middle East. Although one might expect more calcium oxalate stones, uric acid stones are actually more common in the Middle East than calcium-containing stones[5] Urinary stone is an increasing disease due to the changes in nutritional behavior and in the general life style. Urolithiasis is manifested by the repeated medical symptoms and potential cause of structural harmful of the renal and of the urinary system in addition to the potential enhance in systemic blood pressure. Furthermore, numerous need for medical treatment and invasive urological procedures increase the patient's exposure to adverse effects of these managements[6]

Specific objectives of the study:

1. To assess impact of dietary habit on urolithiasis patients in Kirkuk city .
2. To find out the relationship between some socio _ demographic characteristic (age, gender,) and urolithiasis.

Methodology

To achieve the objectives of the study quantitative design (descriptive study) was conducted on urolithiasis patients from 3rd August 2017 up to the 20th of March 2018 . To assess impact of dietary habit on patients with urolithiasis at Azadi teaching hospital in Kirkuk city.

Setting of study the study was conducted at Azadi teaching hospital in Kirkuk city, which are receiving large number from urolithiasis patients.

The Sample A non-probability (purposive) sample of (100) patients definitely diagnosed with urolithiasis who were attended to the Lithotripsy unit at Azadi teaching hospital. Through extensive review of relevant literature, a questionnaire was format constructed for the purpose of the study with interview technique. Overall items included in the questionnaire were (51) items, demographic data include (6) items, medical data include (5) items diatary habit include (40) items. 3- likert scale option was used in the rating scale as: (3) for Always, (2) for Some time, and (1) for Never .

Validity of study content validity was determined by presenting the questionnaire to apanel of (10) experts in different specialties three physicians experts in urology surgery, three experts in adult health nursing, three experts in internal medicine,one expert in statistic. Those experts were asked to review the questionnaire for content clarity, relevancy, and adequacy .Their responses indicated that minor changes should be performed on few items. All modifications were made relative to their recommendations .

Data collection the data collection process was performed from the period 10th August 2017up to the 19th of December 2017 .

Data Analysis: The collected data were analyzed through the application of descriptive statistical analysis (frequency and percentage) and inferential statistical data analysis (chisquare), T. **test** and ANOVAs.

Results and Discusion

Table 1 indicates that the mean of score was low significant in items (2,6) and moderate significant in items (4,3,7) and high significant in items (1,5,8,9,10). Table 2 indicates that the mean of score was low significant in items (5,10) and moderate significant in items (1,2,3,6,8,9) and high significant in items (4,7,11,12). Table 3 indicates that the mean of score moderate significant in items (1,2,3,4). Table 4 indicates that the mean of score was low significant in items (1,4,5,6) and moderate significant in items (2,3). The results shows urolithiasis is common in male and constituted of (60.0%) . The study reveals that (68%) of the study sample were male, these results supported by Soller (2004) who stated that the occurrence of urolithiasis is more common in male than female by the ratio of 1.3[(8)]With regard to residence (78.0%) were living in urban areas, the explanation of result related to the place of Azadi teaching hospital in center of governorate there for receive large patients number from urban area, Also result show most of the patients were married and constituted (77.0%) These findings agreed with the common idea ‘’the most inflammations leading to infection ‘’the close partner (husband) the best transmitter for diseases and primarily uro-genetical tract organs is a good route and area for bacterial growth (Dark and moist area), and personal bad hygiene.With regard to occupation (31.0%) of the sample were free work Such people are busy to use water circulation. Such obligatory delay from urination would mostly lead to stone formation. This finding agreed and similar to the results of Al-Kaabee who stated that the large frequency of study sample is employed [(9)] with regard to the educational level (31.0%) of the sample were primary school graduates . this mean the most of patients were in low level of education, Patient level of education play

important role in identify the risk factors for recurrent urinary stone and preventive measures for stone formation. Table (1) demonstrate the medical data and shows duration of complaint were between (1-4 years) and represent (42.0%) while (51.0%) from patients were take treatment for less than one year, Muhbes (2012) stated that many patients will be experienced anumerous stones during their age, with expected return rates of half of them within 5–10 years and 75% within 20 years[10] with regard to the stone site (93.0%) from patients were have stone in kidney . (63.0%) from patients were free from other disease because of large number from patients were between 20-29 years there for free from disease, with regard to the history of stone removed (73.0%) from total patients were have history for stone removed. The result shows (53.0%) from total sample were have family history for urolithiasis. The picture could be seen from a window that the effectiveness of the life habits is similar in each family. Al-Kaabee supported this result, he found that people with family history of urinary tract stone at higher risk than those without relatives having stone formation [9]Table (2) of Animal sourcethis table indicates that the mean of score was low significant in items (2,6) and moderate significant in items (4,3,7) and high significant in items (1,5,8,9,10). Table (3) shows large number of sample eating a large quantity of red meat, liver and tuna. Johri agree with this result, who said; that urinary citrate excretion is commonly found in those with a high dietary intake of animal protein, whereas vegetarians tend to have higher levels of citrate excretion. So is high intake of protein is dangerous for SF [11]

Table (1): Mean of Scores for Other substance items with frequency, percentage and severity and Chi-square.

No.	Other substance	Always		Some time		Never		MS	Severity
		F	%	F	%	F	%		
1	Do you prefer salt food	32	32.0	37	37.0	31	31.0	2.0	MS
2	Do you eating ice cream	27	27.0	46	46.0	27	27.0	2.0	MS
3	Do you eating chocolate	36	36.0	45	45.0	19	19.0	2.1	MS
4	Do you eat condiments	23	23.0	52	52.0	25	25.0	2.0	MS

Table (2): Mean of Scores for drink of water of patients items with frequency, percentage and severity and Chi-square

No.	Drink water	Always		Some time		Never		MS	Severity
		F	%	F	%	F	%		
1	Do you drink water continuously	2	2.0	38	38.0	60	60.0	1.4	LS
2	Do you drink water at morning before eating	16	16.0	27	27.0	57	57.0	1.6	MS
3	Do you drink three glass at morning	36	36.0	39	39.0	25	25.0	2.1	MS
4	Do you drink water between meal	9	9.0	44	44.0	47	47.0	1.6	LS
5	Do you drink water during eating	11	11.0	30	30.0	59	59.0	1.5	LS
6	Do you drink water before sleep	7	7.0	25	25.0	68	68.0	1.3	LS

Obs.X^2=83.077 DF= 10Crit. X^2 =18.31

Table (3): One –way analysis of variance for the difference between animal source, plant source,beverage, other substance and drink of water and their age.

Categories	S.O.V	S S	M S	F.Obs
Animal source	Between Groups	46.974	7.829	.882 NS
	Within Groups	825.536	8.877	
	Total	872.510		

Categories	S.O.V	S S	M S	F.Obs
Plant source	Between Groups	65.945	10.991	1.347 NS
	Within Groups	758.565	8.157	
	Total	824.510		
Beverage	Between Groups	191.993	31.999	2.915 S
	Within Groups	1020.767	10.976	
	Total	1212.760		
Other substance	Between Groups	58.099	9.683	3.343 S
	Within Groups	269.341	2.896	
	Total	327.440		
Drink water	Between Groups	14.043	2.340	.412 NS
	Within Groups	528.707	5.685	
	Total	542.750		

Table (4): T-test for comparison for the difference between animal source, plant source,beverage, other substance and drink of water regarding to their gender.

Categories	Sex	No.	X	S.D	T.obs	P≤ 0.05
Animal source	Male	60	19.8000	3.02980	0.534	NS
	Female	40	20.1250	2.90170		
Plant source	Male	60	17.5167	2.71525	0.366	NS
	Female	40	17.3000	3.15578		
Beverage	Male	60	26.4333	3.79726	1.359	NS
	Female	40	27.4000	2.95088		
Other substance	Male	60	8.1500	1.60323	0.067	NS
	Female	40	8.1750	2.12298		
Drink water	Male	60	9.5667	2.38190	0.0434	NS
	Female	40	9.7750	2.30370		

Conclusion

The result shows the high percent of patients were between (20-29years) (30-39 years)and constitute (30%). Also the results shows urolithiasis is common in male and constituted of (60.0%). Most of the patients were married and constituted (77.0%) and (31.0%) of the sample were free work with regard to the educational level (31.0%) of the sample were primary school graduates. Most of the samples were complaint from kidney stone between (1-4 years) and represent (42.0%) while (51.0%) from patients were take treatment for less than one year. The study concluded large number from study sample were take large quantity from red meat, tuna, drink tea and beverage. The study concluded most of the study sample were not drink water in sufficient amount. Also the study concluded that there is minor significant relationship between urolithiasis and age, gender of patients.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of fundamentals Nursing, College of Nursing, University of Kirkuk, Iraq and all experiments were carried out in accordance with approved guidelines.

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Test Anxiety in Terms of the Test Wisdom and Learning Patterns of Students in Faculties and Departments of Physical Education and Sports Sciences

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Abstract

The study aimed to identify the level of test anxiety and the test Wisdom and the pattern of the prevailing learning for students of faculties and departments of Physical Education and Sports sciences at the universities of Al-furat Al-Awsat, and the study tool was 3 measures, the test anxiety consisted of (36) paragraph divided by (3) dimensions and the test Wisdom consisted of (38) paragraph divided by (6) dimensions and the List of Kolb consisted of (9) positions each position consists of (4) options, while the number of sample application (217) student, the most important findings of the study are the controlled and validation of test anxiety measurements and test Wisdom as well as knowledge of the sample level on both scales either The most important recommendations were the adoption of standards as a criterion for identifying students at the level of test anxiety and test Wisdom patterns.

Keywords: *Test anxiety, Test Wisdom, Learning patterns.*

Introduction

With the increased use of tests and their role in the life of the individual scientific and practical, the need to possess skills and strategies emerges to help the student to provide tests in an effective and comfortable manner, and to possess the test Wisdom helps the student to reduce the anxiety associated with the test and develops positive attitudes towards the tests in general and towards the subjects in which these tests are conducted.

The tests are supposed to be an honest tool to treat fairly the student and grant her right, and to measure their abilities, knowledge and skills in subjects, and it's supposed that the difference between the students in their test results is due to their abilities in the field of school subject, but it is easy to discover all teaching through feedback of the tests, the wisdom of the student to answer or the test Wisdom can be an important factor in preventing this purpose, as some students complain that they do not get grades equivalent to their understanding and readiness while others show their satisfaction with grades compared to their preparation and their readiness. This is evidence that test Wisdom represents a source of variation in grades. The test Wisdom skills are found in a group of students who are used to answer questions that they do not know by using the skills of guessing or taking advantage of the mistakes of those who put the test, which are indicators and stimuli for the student to be useful in guessing and anticipating the correct answer and appear clearly in the tests (multiple choice questions, pairing, true and false), and it should not be understood that having such skills and strategies is sufficient for the student to succeed without the readiness, understanding and preservation of lessons as well as without having the necessary knowledge to provide the test, The importance of research in addressing the variables of test anxiety and the test Wisdom and learning pattern. Knowing of the test Wisdom strategies in terms of a particular learning pattern may help students create an environment that reduces test anxiety.

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Methodology

Determining the method of drafting the test anxiety and test Wisdom scales and their bases: It is a good test that uses a variety of method to accurately measure what is placed for it, so researchers have used the Likert method to prepare the two scale articles.

Preparation and compilation of test anxiety and test Wisdom articles

Preparation and compilation test anxiety articles: The Researchers looked at several measurements and references that have addressed the test anxiety as a study[1-10]. The researchers looked at several measurements and references that have addressed the test anxiety as a study [11-14] The researchers prepared the instructions and took them to be clear; pointing out that what the researchers get is for the purposes of scientific research, as the answer instructions contained in the Search tool are a guide for the respondent.

Implementation of the conditions for conducting of the two scales: The researchers tried to adjust the internal factors to ensure the safety of the procedure as much as possible and ensure that the instructions are clear-meaning to simplify the process of testing performance and achieve the desired goal.

Conduct the two- scales experiment and the Kolb list of learning patterns: After you have prepared and compiled the scales articles, the main step is to experiment of scales and consist of:

The Exploratory experiment: The researchers conducted their exploratory experience of the test anxiety and test Wisdom scales as well as Kolb's list of learning patterns on 25/12/2017 at 9 a.m. on a sample of 19 students, selected in the stratified random from the research community, and the results were encouraging towards the Measurement tool.

The main experiment: The researchers began their main experiment on 3/1/2018, on the controlled sample (97) students, to analyze its articles statistically by using (two-group), where each terminal group represented (27%) The number of (26) students per group during the period between (3/1 to 15/2/2018) and under the same conditions and instructions. The researchers collected the data for the members of the controlled sample, arranging them in tables for statistical analysis.

Correction of test anxiety and test Wisdom scales: The total grade was extracted and the lowest grade got it tested for the test Anxiety scale is (36) and the highest grade is (180) and the hypothetical median is (108), as for the Test wise scale, the lowest grade got it tested is (38) and the highest grade is (190) and the hypothetical median is (114).

Statistical analysis of test anxiety and test wisdom scales

Researchers have followed the following method:

Extract the coefficient of discrimination for the test anxiety scale

To extract it follow the following steps:

Two terminal groups: The total grades were divided into two maximum and minimum sections, and like each section (26) a student of the controlled sample (97) All of the scale articles were found to be distinctive, with the arithmetical median of the minimum group ranged between (1.00) and the standard deviations between (0.01) and the maximum group ranged from (5.00) and the higher deviations between (0.02) below the level of significance (0.05) and the degree of freedom (50).

Extraction of the coefficient of distinction for the test wisdom scale

To extract it, the researchers followed the following steps:

Two Terminal Groups: The total grades were divided into two maximum and minimum sections, and like each section (26) a student of the controlled sample (97) All of the scale articles were found to be distinctive, with the arithmetical median of the minimum group ranged between (1.00) and the standard deviations between (0.03) and the maximum group ranged from (5.00) and the higher deviations between (0.06) below the level of significance (0.05) and the degree of freedom (50).

The Internal Consistency: The higher the degree of correlation coefficient of the sub-tests in the total grade of the test as the internal consistency of the test as a whole is indicated and internal consistency has been achieved through the following indicators:

Internal consistency of the test anxiety scale:

Coefficient of correlation between the degree of the paragraph and the total degree of scale: The researchers used the Pearson correlation coefficient between the degree of the paragraph and the total degree of scale where its value ranged from (0.60 – 0.39) which is significant below the level of significance (0.05) and degree of freedom (98).

Correlation coefficient between the degree of the paragraph and the total degree of the dimension: The researchers used the Pearson correlation coefficient between the degree of the paragraph and the total degree of the dimension, where the first dimension ranged between (0.55 – 0.37) and the second dimension (0.57 – 0.37) and the third dimension (0.60 – 0.39), which is significant below the level of significance (0.05) and degree of freedom (98).

Correlation coefficient between the degree of dimension and the total degree of scale: The researchers used the Pearson correlation coefficient between the degree of dimension and the total degree of scale, which ranged between (0.81 – 0.86 – 0.88), which is significant below the level of significance (0.05) and degree of freedom (98).

Internal consistency of the test wisdom scale

The Statistical Method: Researchers used Statistical Package for the Social Sciences (SPSS)

Results and Discusion

The forms were corrected (233) and 16 of them were excluded from the failure to complete the answers of the members of the sample application, so the sample consisted of (217) students. In order to identify the prevalence of the test anxiety and test wisdom scales, the arithmetical media and standard deviation have been extracted table1.

Level of test anxiety and test wisdom patterns: Three standard levels of the test anxiety were identified, with different rates, where the level of anxiety was low (15.73) and average anxiety (68.27) while the level of anxiety was high (15.73), and five levels of the Test wisdom scale were very weak and very good (4.862) While the two levels were weak and good (24.522) and the average level was (40.962). The table 2. For the test anxiety scale, the prevailing level was (average anxiety) by (58.53) of the area under the normal distribution curve and by the number of (127) students and achieved degrees ranged between (100-138) degrees on the scale.

The test wisdom scale was the prevailing level (average test wisdom) of (43.78) of the area under the normal distribution curve and of the number (95) of students and achieved degrees ranged between (130 - 149) degrees on the scale.

Identify the patterns of prevailing learning among female students of faculties of physical Education and sports sciences: In order to identify the method of prevailing Kolb among students of faculties and departments of Physical Education and sports sciences it appeared that the divergent method represented by (44) student, the Convergent method represented by (70) student, the comprehension method represented by (64) students and the adaptive method represented by (39) students.

Identify the relationship between the test anxiety scales and the test wisdom patterns: In order to identify the relationship between the test anxiety scales and the test wisdom of the students of faculties and departments of Physical Education and sports Sciences, the numbers shown in the table 3.

Table (1): Showing level of test anxiety and test wisdom scales

Test Anxiety Scale				
Categories - Levels		**61 – 99 Low anxiety**	**100-138 average anxiety**	**139-177 High anxiety**
Standard (ideal ratios)		15.73	68.27	15.73
Achieved Number	Test anxiety	50	127	40
%		23.04%	58.53%	18.43%

Test Wisdom Scale						
Categories - Levels		**90-109 Very weak**	**110-129 weak**	**130-149 average**	**150-169 Good**	**170-189 Very good**
Standard (ideal ratios)		4.862	24.522	40.962	42.522	4.862
Achieved Number	test wisdom	15	50	95	44	13
%		6.91%	23.04%	43.78%	20.28%	5.99%

Table (2): Shows the relationship between test anxiety and test wisdom patterns and the Kolb's list of learning patterns

	The Sample	Correlation Coefficient		Significance Level		Statistical Significance	
		Test Wisdom	Learning Method	Test Wisdom	Learning Patterns	Wisdom	Patterns
Test Anxiety	217	0.49	0.10	0.001	0.17	Significance	Non-Significance

Table (3): Shows the results of the analysis of the variance of the test anxiety scale by the variable of educational stages

Source of Variance	Total Deviations	Degree of Freedom	Average Deviations	Calculated F Value	Sig	Statistical Significance	Kolb Method
Between Groups	1314.694	3	438.231	1.886	0.048	significance	Convergent
Within Groups	9296.033	40	232.401				
Between Groups	3220.620	3	1073.540	2.001	0.022		Divergent
Within Groups	35403.323	40	536.414				
Between Groups	933.044	3	311.015	0.568	0.638	Non significance	Comprehension
Within Groups	32867.393	40	547.790				
Between Groups	2367.134	3	789.045	1.589	0.029	significance	Adaptive
Within Groups	17376.097	40	496.460				

Conclusion

Through the fourth chapter of the presentation, discussion and analysis of results, the results showed: The possibility of validation the test anxiety scales and the test wisdom patterns for students of faculties and departments of Physical Education and sports Sciences. The prevailing level of test anxiety and test wisdom was the average level of students in faculties and departments of Physical Education and sports Sciences. There is no relationship between test anxiety and the test wisdom patterns of students in faculties and departments of Physical Education and sports Sciences. Predictability of test anxiety in terms of test wisdom and kolb's learning patterns.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the AL-Qasim green university – Iraq and all experiments were carried out in accordance with approved guidelines.

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The Diagnosis in Terms of the Cognitive Assessment System (CAS) for the Intelligence of the Sample of People with Special Needs

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Abstract

The current research aims at diagnosing students with special needs (learning difficulties, slow learning, mentally handicapped, learning disabilities, distraction/hyperactivity). Where the descriptive approach was used in the current research. The sample of the study consisted of (100) students and students who are present in primary schools in the center of Babil governorate in the academic year 2019-2018 and between the ages of 10-6 years. Cognitive Assessment (CAS), which includes four basic knowledge processes (planning, attention, carefulness, sequencing), each of which has three sub-tests, and after verifying reliability and consistency, the data were collected and analyzed by using arithmetical averages, standard deviations. The results of the study indicate There are statistically significant differences among students with special needs, the four mental processes and in the light of these findings the researcher recommended that more research and studies using the variables of this research with one or more categories of special education classes.

Keywords: *Diagnostic, diagnostic battery (CAS) for intelligence, people with special needs.*

Introduction

The school is the second social institution that contributes to the formation of young people. The main objective of the school is to reach the students for the best possible performance through accurate and good diagnosis that stands on the strengths and weaknesses and tries to improve the strengths and address deficiencies in their performance. This is to determine educational programs and appropriate enrichment for each individual, and applied in a procedural manner to develop the educational process in a positive way[1], and the diagnosis is through the tests provided to the individual, and based on the person shows the correct responses are the degree Wei DD level, ie that these tests are interested outputs that appear through the performance[2]. Diagnosis and evaluation are among the main issues in the field of special education, for several reasons, the most important of which is the use of measurement and evaluation tools to identify the cases of unusual children and diagnose them as a differential diagnosis and turn them into educational and therapeutic programs and services commensurate with their abilities and potentials [3].A number of studies, including Shosha (2001), have pointed out that diagnosticians of special needs use psychometric measures of intelligence that focus in particular on one factor, abstract intelligence (general), which is contrary to the work of mental processes and cognitive functions of the brain in terms of Vigilance, planning, deliberation and sequence, which makes this diagnostic and measurement process incomplete and inaccurate at all[4]. Because there is no precision in diagnosing the difference and in assessing the performance of students with special needs, although there are many measurement tools that consider measuring intelligence as a single unit, it is based on the degree obtained by the examinee (which represents the level of intelligence in general). In the classification or

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diagnosis of people as special needs, and in many cases rely on the evaluation of teachers as a tool for diagnosis, which can not be relied upon for several reasons, including the few experience in this area and objectivity, and here must be identified method of effectiveness and efficiency In diagnosing metabolic problems Amzh with special needs [5].In order to overcome the problems facing traditional diagnostic method, the Cognitive Intelligence System (DAS), which was developed by Das to measure intelligence through PASS, attempted to accurately define the four basic cognitive processes that occur within the brain and are responsible for input processing. Where the importance of the current research stems from the need for the diagnosis of students with special needs and special importance in the field of psychology in general and private education in particular, as this research employs the battery of cognitive assessment of intelligence (CAS) in the measurement, diagnosis and evaluation of these students and according to their categories Which facilitates easy scientific and practical work The brain is the center of the learning process. It also controls the patterns of learning and thinking. Thus, the knowledge of brain functions is essential for educators and practitioners. The brain hemispheres can be divided into four main sections Called lobes. These lobes are not differentiated units, but anatomical regions, each of which has specific functions but is interactive and integrated. The four cerebral lobes of the hemispheres can be illustrated as follows: The knowledge of the functions of the brain hemispheres helps the educators and the learning process to understand the learning process and thus can diagnose and evaluate students with special needs through the knowledge-based cognitive assessment system (CAS) based on PASS theory (Ibrahim, 2012: 23).

Methodology

The researcher used the descriptive approach in this research because it is the appropriate method for the nature of the research and its objectives.

Community Search: The research community consists of (720) students and students in the special education classes from the first stage to the fourth stage distributed in (40) primary schools where there are special education classes 420 students and 300 students, as indicated by the Department of Educational Statistics in the General Directorate of the province of Babylon.

Sample Search: The researcher selected the research sample by class method, four categories of special education (learning difficulties, slow learning, mentally handicapped, learning disabilities, distraction/ hyperactivity) and 25 students per class.

Search Tool: In order to achieve the current research objectives in the detection of students with special needs (learning disabilities, slow learning, mentally handicapped, learning disabilities, distraction/ hyperactivity), the researcher used the cognitive assessment system (CAS) to assess children aged 5-17 years where the battery of the four cognitive processes (planning - attention - careful - relay) and each of these processes include three sub-tests and give a score of 10 and a standard deviation (3(.

Psychometric Characteristics of the Knowledge Assessment System: Psychometric characteristics are used in educational and psychological research as indicators of the accuracy of standards. The extraction of honesty and persistence is one of the most important characteristics. Therefore, the researcher undertook a number of procedures to extract honesty and consistency, as follows:

A Virtual Honesty: The honesty is a kind of honesty required in the construction of tests and measurements, and this kind of honesty refers to the appearance of the test and how it seems appropriate for the purpose for which it was developed and uses this kind of honesty to conduct preliminary examination of the contents of the test. Ebel (2009) states that the preferred method of checking the veracity of the instrument of measurement is that a number of competent experts determine the veracity of the paragraphs to measure the degree to which they were established. In accordance with the verification of this type of honesty, the paragraphs of the standard were presented to the Committee of Experts with specializations in special education and psychology. The researcher asked each one of them to indicate about each paragraph in terms of being valid or invalid, or need to be modified with The proposed amendment was mentioned. The researcher adopted a point of agreement of the experts on the validity of the paragraph is (80%) if the agreement on the validity of equal or higher than the point of agreement depends paragraph, although less than rejected or adjusted according to the observations of the Committee of Experts.

A box to determine the percentage of expert approval for the validity of the scales of the cognitive assessment

system for intelligence. The value of the square of Kai is a function of all the paragraphs. The value of Ka 2 is greater than the value of Ka 2 at the degree of freedom (1) and the level of significance (0,05).

Construction Certifications: The researcher was able to apply the equation of the Pearson test coefficient after the data collection and analysis by means of the statistical method SPSS in order to find the relation of each paragraph of the scale in the overall degree.

The coefficient of excellence: Is the ability to distinguish between the upper and lower categories. And to distinguish between individuals who obtain high grades and individuals who obtain low grades in the measured attribute in the sense that the distinction of the paragraph is consistent with the distinction of the test (Ebel, 1972: 399). To extract the coefficient of discrimination, the researcher used the coefficient of discrimination by the two extreme groups, The results ranged between (21-46) and lowest (27%), ranging between (8-26) of the correct answers on the test paragraphs by (50) in each group to become the total number (100) students and students. Discrimination using the discrimination equation and the table below illustrates this.

Reliability: Stability is a cykometric property that must be verified to demonstrate the validity of the scale as well as honesty, making it more robust and robust. The validity of the measurement depends on the degree of stability of its results. The constant measure yields the same results almost if the same property is measured in successive times.There are several method to calculate stability, and the researcher used the following method to extract stability:

A. **Test Retest Method:** The stability of the cognitive assessment system was obtained by re-applying the scale to the sample of the students examined, consisting of (50) students and students with special needs. The scale was applied again 15 days after the first application. The students' degrees in the first and second applications using the Pearson correlation coefficient and the stability coefficient value of the total scale (0.90). This value is good and indicates the high stability coefficient of the cognitive evaluation system scale.

B. **Split Half Method:** The stability coefficient of the scale can be predicted if we can find a half-stability coefficient. Therefore, the researcher extracted the stability in the half-split method of the system scale.By dividing the paragraphs of the scale into individual and odd paragraphs to verify the validity of the internal consistency of the scale. The correlation coefficient was calculated between the individual and the pair. The coefficient of stability was determined using Pearson correlation coefficient (0.84) The stability obtained by using the Spearman-Brown equation to find the value of the stability coefficient of the scale as a whole. The stability value after correction (0.91) is a good indicator and expresses a strong and high relation to the total stability coefficient of the scale.

Statistical Means: The researcher used the SPSS program to extract the results of his research and used the following tools:

A square as: to extract the virtual truth of the scale.

B Pearson correlation coefficient of stability.

The Spearman-Brown Act was used to correct the Pearson correlation coefficient.

W Test of correlation coefficient.

Results and Discusion

After the extraction and analysis of data in the program of statistical truthfulness SPSS results were reached according to the objectives of the research as follows: The objective is to find the differences of statistical significance for students with special needs (learning difficulties, slow learning, mentally handicapped, learning disabilities, excessive attention/ activity)Based on: A planning process. B. Attention process. The process of delay. W The relay process. To achieve this goal, the researcher used the multivariate analysis test and the following results were obtained: It is clear from the above table that people with learning disabilities and mentally disabled are demoted because the level of significance is less than 0.05 and the slow learning and attention distraction is D because the level of significance is higher than 0.05. In order to follow the differences, the researcher used L. S. D test the least significant difference, and obtained the table 3.

Table 1. The multivariate analysis test

Source of Contrast	Total sum of squares	The degree of freedom	Average quadrature	The F Value	Level of significance
Functions	3286.558	3	1095.519	73.244	0,000
	1.292	3	.431	.073	
	2671.367	3	890.456	91.751	
	26.825	3	8.942	1.361	
Error	1735.033	116	14.957		
	685.700	116	5.911		
	1125.800	116	9.705		
	761.967	116	6.569		
Total	22615.000	120			
	7155.000	120			
	15998.000	120			
	6739.000	120			

Table 2. L.S. D test the least significant difference

Special Needs	Functions	Differences in averages	Level of significance	Interpretation
Learning difficulties	Planning • Attention	0.7	0.94	Not a function in favor of planning
	Planning • Carefulness	10.00	.000	Not a function in favor of planning
	Planning • Relay	10.83	.000	
Mentally Disabled	Planning • Attention	10.33	.000	Not a function in favor of planning
	Planning • Carefulness	63.	.433	Not a function in favor of planning
	Planning • Relay	97.	232.	

Conclusion

The results of the study indicate There are statistically significant differences among students with special needs, the four mental processes and in the light of these findings the researcher recommended that more research and studies using the variables of this research with one or more categories of special education classes.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon/ Faculty of Basic Education/Special Education, Iraqand all experiments were carried out in accordance with approved guidelines.

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The Duration and the Severity of Menstrual Bleeding in Iraqi Women Using Intrauterine Contraceptive Device (IUD): Cross Sectional Study

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Abstract

The objective of this study was highlight the adverse side effects associating the use of IUD in terms of severity and duration of menstrual bleeding and their correlation to a number of demographic characteristics such as age, residency, occupation and past obstetric history in addition the correlation to duration of use of IUD.52 women with IUD were enrolled in this cross sectional study that was carried out in some governmental and nongovernmental obstetric institutes in Al-Diwaniyah province, Mid-Euphrates region, Iraq. The study stared one January 2018 and ended on March 2019. The main outcomes were the severity and duration of menstrual bleeding. The mean duration of intrauterine contraceptive device (IUCD) was 2.39 ± 1.91 years and the duration ranged from one month up to 7 years. The duration and the severity of menstrual bleeding are shown in table 2. Four women (7.7 %) had 2-4 days/cycle duration of menstruation, 13 women (25.0%) had 4-6 days/cycle duration of menstruation and 35 women (67.3 %) had > 6 days/cycle duration of menstruation.

Keywords: *IUCD, duration, severity, menstrual bleeding.*

Introduction

In spite of the fact that up to 15 % of couples will suffer subfertility worldwide [1,2], almost all the rest of couples (85 % or more) will use some method of contraception at some point of their reproductive lives in order to control family number [3-5]. The use of contraceptives is both beneficial for the prevention of unplanned and unintended pregnancies [6,7] and for control of some symptoms associating natural menstruation such as pain and bleeding [8,9] as well as to reduce the risk of ovarian and endometrial cancer [10,11]. There several method to prevent pregnancy including hormonal and non hormonal based method. Among the long list of contraceptives, the well known method included oral contraceptive pills, injectable contraceptives, intrauterine devices, vaginal rings and patches. These were the hormonal based method; the non hormonal techniques included copper based intrautetrine devices, diaphragm and condoms [12]. None of these, hormone based and barrier method is free of side effects and complications [13-17]. Intrauterine contraceptive devices, whether hormone or cupper based, are still among the most commonly used contraceptive method by women in their reproductive age [15,16]. However, IUD is frequently associated with adverse complications such as long duration of menstrual bleeding, heavy menstrual bleeding, infection, expulsion and perforation [18,19]. It has been reported that a number of women with IUD have decided to remove the device because of heavy and or prolonged menstrual bleeding [20]. Some forms of IUD particularly cooper containing ones are said to be associated with heavy menstrual bleeding at the beginning of its usage that lasts for a couple of months and then women get used to it and satisfactory because of reduced amount and duration of bleeding [20]. Sufficient controversy existed in

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published articles about side effects and complications associating the use of IUD and about the correlation of these adverse side effects to a number of demographic characteristics, ultrasound findings and duration of IUD usage [21]. Moreover, Iraqi literatures dealing specifically with duration and severity of menstrual bleeding accompanying the use of IUD are usually of small sample size and of controversial opinions [22,23]. Therefore, the current study was planned and conducted to include as much as possible a significant number of women using IUD and various duration of usage, in the Mid-Euphrates region of Iraq at Al-Diwaniyah province. The objective of this study was highlight the adverse side effects associating the use of IUD in terms of severity and duration of menstrual bleeding and their correlation to a number of demographic characteristics such as age, residency, occupation and past obstetric history in addition the correlation to duration of use of IUD.

Methodology

This cross sectional study was carried out at some governmental health institutes such as Al-Diwaniyah Maternity and Child Teaching hospital and Al-Shamiyah teaching hospital and some private clinics. The beginning of the study is dated back to the 2nd of January 2018; the study continued till end of March 2019 and included 52 women. Inclusion criteria included any women with IUD with no limitation for the duration of use so that women with as long as 7 years and women with as short as one month duration of use were included in the study. The questionnaire form included age, duration of IUD, parity, abortions, residency, occupation and characteristics of menstrual bleeding. The severity of menstrual bleeding was categorized as light (< 10 pads per cycle), moderate (11-20 pads per cycle), heavy (21-30 pads per cycle) and very heavy (> 30 pads per cycle), whereas, the duration menstruation was grouped into: 2-4 days, 5-6 days and > 6 days (24). The study was approved by the institutional approval committee and verbal consent was obtained from all participants following full illustration of the aim and procedures of the current study. Data were then transformed into an SPSS (version 23) spread sheet. Numeric data were expressed as mean, standard deviation, median, inter-quartile range (IQR) and range, whereas, categorical data were expressed as number and percentage. Correlation was calculated using Spearman correlation test and the level of significance was chosen at $P \leq 0.05$.

Table 1: Characteristics of menstruation

Duration of Menstruation	**n**	**%**
2-4 days/cycle	4	7.7
5-6 days/cycle	13	25.0
> 6 days/cycle	35	67.3
Severity of Bleeding	n	%
Light (< 10 pads)	18	34.6
Moderate (11- 20 pads)	5	9.6
Heavy (21- 30 pads)	18	34.6
Very heavy (> 30 pads)	11	21.2

Table 2: Correlations of bleeding severity and duration to demographic characteristics and duration of IUCD

	Severity		**Duration**	
Characteristic	**r**	**P**	**r**	**P**
Age	0.078	0.584	0.090	0.526
Occupation	-0.040	0.778	-0.201	0.152
Parity	0.096	0.497	0.148	0.297
Abortion	0.098	0.490	0.204	0.146
Residency	0.111	0.433	0.185	0.188
Mode of previous deliveries	0.214	0.103	0.178	0.207
Duration of IUCD	0.019	0.908	0.129	0.363

Table 3: Ultrasound findings

Ultrasound Findings	n	%
Bulky uterus	4	7.7
Liomyoma	2	3.8
Thick endometrium	2	3.8
Ovarian cyst	1	1.9

Results and Discusion

Demographic characteristics of the study sample are shown in table 1. This study included 52 women with IUCD with a mean age of 29.83 ±7.13 years and an age range of 17 – 44 years. According to parity the study included 22 (42.3 %) and 30 (57.7 %) women who were low multiparous (parity = 1-3) and grand multiparous (parity > 3); median parity was 4, the inter-quartile range was 3 and the range was from 1 to 8. Participants were categorized according to abortion into: 37 (71.2 %), 3 (5.8 %), 4 (7.7%), 7 (13.5%) and 1 (1.9%) as having no previous abortion, single, twice, three and 4 times previous abortions. With respect to mode of delivery, women were classified into: 27 (51.9 %) women with all previous deliveries happened through normal vaginal route, 11 (21.2 %) women who delivered all their babies by cesarean section only and 14 (26.9 %) women who have delivered some of their babies normally through vaginal route and the rest of their babies by cesarean section. The study included 31 (59.6%) women from urban areas and 21 (40.4%) women from rural areas. The study enrolled 32 (61.5%) women who were employed and 20 (38.5%) women who were housewives. The mean duration of intrauterine contraceptive device (IUCD) was 2.39 ± 1.91 years and the duration ranged from one month up to 7 years. The duration and the severity of menstrual bleeding are shown in table 2. Four women (7.7 %) had 2-4 days/cycle duration of menstruation, 13 women (25.0%) had 4-6 days/cycle duration of menstruation and 35 women (67.3 %) had > 6 days/cycle duration of menstruation. On the other hand, 18 (34.6 %) women experienced light bleeding, 5 women (9.6 %) had moderate bleeding, 18 (34.6 %) women described heavy bleeding and 11 (21.2 %) women complained of very heavy bleeding. Age, occupation, parity, abortion frequency, residency, mode of labor and duration of IUCD showed no significant correlation to severity or duration of menstrual bleeding (P> 0.05), table 3. Ultrasound examination revealed the presence of bulky uterus in 4 cases, submucosal liomyoma in 2 cases, thick endometrium in 2 cases and ovarian cyst in a single case as shown in table 4.Among the list of adverse effects and complications associating IUCD, long duration and heavy menstrual bleeding remain among the most frequent causes that necessitate the removal of the contraceptive device by significant proportion of women (22, 23).In this cross sectional study, a significant number of women experienced heavy or very heavy menstrual bleeding accounting for 55.8 %. On the other hand 67.3 % of them had relatively long duration of menstruation of > 6 days per cycle. Therefore more than half of women enrolled in the current study had a bad experience of long and heavy menstrual bleeding associating the use of IUCD. We aimed to link the severity and the duration of menstrual bleeding to some demographic characteristics such as age, residency, occupation and past obstetric history or to the duration of IUCD use; however, we failed to obtain a significant correlation. For that reason, we suppose that the use of IUCD by itself is associated with heavy and long menstrual bleeding regardless of the duration of use or any other demographic characteristic. Current study revealed the existence of bulky uterus, thick endometrium, submucosal liomyoma and ovarian cyst in a minority of patients; however, these causes may contribute very little to the problem of bleeding severity and duration since they were seen in very small fraction of enrolled women and that more than half of women were suffering heavy and prolonged menstrual bleeding.

Conclusion

Significant proportion of Iraqi women using IUD suffer from long and heavy menstrual bleeding that are unrelated to duration of use.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Obstetrics and gynecology/Al-Diwania/Iraq and all experiments were carried out in accordance with approved guidelines.

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The Effect of Analysis of Partial Experimental in Expression and Creative Thinking for the Students

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Abstract

The researcher adopts the method of partial experimental research as a methodology for his research procedures. To achieve this goal, the researcher has used the following zero hypothesis (there is no significant difference in (0,05) between the average achievement of the students of the experimental group who study the subject of expression according to the analysis of the Quranicsimile and the average achievement of the students of the control group who study the same subject in the traditional method). The researcher randomly selected (Afaksecondary school for boys) as a sample to conduct his research, and in the same way chose Division (A) to represent the control group, the number of students (30) thirty-one students, and (B) to represent the experimental group, the number of students (30) thirty students, the number of students in the research sample (60) students. T-test for two independent samples, a square (Ka 2), and a Pearson correlation coefficient)) .

Keywords: *The impact of the Quranicsimile - thinking - creative expression - the fourth literary scores.*

Introduction

The researcher feels that there is a clear weakness in the students' expression through his work experience as a teacher at intermediate and secondary schools and this weakness is not represented the existence of a specific course and that there are grammatical and morphological errors in their writings, that there is weakness in their creative expression, as they find it difficult to express or formulate their ideas and implementation of the article or text of the speech for the purpose of meeting in a certain forum. This weakness confirmed many of the literature and previous studies [1] whereas showed that the weakness in expressive performance is due to several factors, including the lack of care of the process of education expression in terms of preparation, and method of teaching, correcting copybooks, being away from the language fluent and colloquial speech with the lack of students to the corners of the expression of vocabulary and ideas in addition to the absence the curriculum and lack of lessons [2,3]. while [4] see problems among the students in the field of expression, the learner does not have the qualifications to be able to express , because of the occurrence of spelling mistakes, or bad line, or the state of the learner psychological may have a certain disability, or stammer tongue and the few languages abilities possessed by the learner make it unable to bind, follow the expression [5]. in addition, many students are afraid to write (written expression) and are working to avoid it, perhaps the reason for the lack of training to write, or not accustomed to them in school or home, until some of them find themselves in the university, He stands in front of the need to write university research requests from him, or scientific reports in the pages, he is not able to accomplish it, moreover, the stress associated with school examinations is another source of this fear. In any case, they will eventually be surprised, when they are surprised by the great amount of writing they need after they join the fields of work, lectures, reports, and correspondence, which negatively affects their progress in their jobs.[6] Based on the above, the

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problem of research lies in the answer to the following question: (Does the analysis of the Quranic verses affect the expression and creative thinking of the students of the fourth literary?) The education is the foundation of human reform and its success which is a powerful force that can nourish souls, purify them, and guide them to the worship of the Creator, a complete worship, a force that can develop individuals, sharpen their talents, sharpen their minds and thoughts, train and strengthen their bodies, and at the same time a continuous process that is not determined by a certain period of time The entire life of the individual from cradle to grave. [7] and has been singled out by God Almighty without all human beings, education guidance, orientation, training and care by the community of the human individual to reach the degree of mental perfection, psychological, moral, behavioral and social to be able to exist and live appropriate to him [8].based on the above it be can said that education has an aim to achieve which is to prepare the human to be an active component of society, and to be productive, and able to solve the problems of his life . This can only be done by having a means of communication to do so. The language is one of the strongest obligations on the people, it is a way of thinking, planning identity, it is not a means of speech and expression only, the languages of each nation are the most important elements of its personality, and record their experiences, knowledge, and glories over time. So talk about the issues of language introduction to the rooting of thinking and the liberation of the spirit of creativity, the localization of science and its intelligence [9]. The language is therefore the instrument of intellectual communication inwhich man is able to transfer everything that goes on in his brain of ideas trying to communicate to others in order to develop his ideas, information and increase it to be a productive person. Arabic is the language of the Holy Quran,deriving its vitality and permanence from its texts and principles, and for it to turn the Arabic languageand was accompanied by died languages, as long as the Koran is a miracle of immortal remains in which the research by understanding and enriching the language, developing it and revealing new similar aspects .for the miracles and exploration of the secret of the immortality of the Koran and its greatness. Therefore, we find that any knowledge is built in the mind by mental processes, and that the structure of the mind is working permanently on the reorganization of the cognitive pattern of the learner, whereas (output) is permanently renewed and subject to representation, the relevance is mainly influenced by the learner's positive, effective, integrated experience and its individual characteristics, which make the learning process always an active movement do not stop at a certain moment and make the mind a member renew itself at every moment, its contents and structure change by changing time, space and the elements of the environment surrounding it. Language is a mirror of the human mind. It is a means of thought and understanding. It is also a means of communication and expression, to register the civilization of the nations and preserve its heritage. Before the conversion of man to learn the language lived in the from the time of forgetfulness. Language is then a means and an end in the field of creativity. the interpretation of the Koran is a characteristic of virtue preferred by some commentators, because it is a statement of words to the words of God Miraculous, which I mean in all levels (sound, morphological, grammatical and semantic).Expression is an art of linguistic communication, a mold in which a person pours his thoughts into a sound language, a beautiful picture, and is the purpose of learning the language. It is a means of understanding and learning . It is a tool for conveying thoughts and feelings. And employ them with specific and clear words that carry meanings and sensations for the reader and the reader.Based on the above, there is a need for a scientific study that deals with the analysis of the Qur'anic simile that take into account the role of the student in the educational process rather than relying on the teacher. This study is the impact of analyzing the Quranicsimile in creative expression. It is possible to say that the importance of research comes from the importance of language to man as the first way to manage his life and the means of understanding with others, and the importance of Arabic as the language that was honored to send the Koran.

Limits of human research, spatial and temporal: A sample of fourth scores literary students in the secondary and high school day schools in Diwaniya province, Afak district, for the academic year 2018-2019.

Defined as "an epistemological or cognitive impression, generated by human interaction and influenced by my intention.

Procedural Definition: This is a significant change in the scores of the students of the experimental and control samples in creative expression.

Similes: It is a phrase that contradicts its example, and the meaning of its meaning, or is the statement of

others similar to him in the case of the second in the first, or is the brevity of the word and the injury of meaning and good analogy.

An Expression: Good defined as: the selection, arrangement, development, and expression of ideas in appropriate language or in writing.

A Creative Expression: This is the kind of expression that is meant to show feelings, sensations, emotions, and winged imagination in carefully selected terms characterized by beauty, smoothness, excitement, impact in the reader or listener, and the desire to deal with their subject.

Methodology

Research Methodology: The researcher followed the experimental method, adopting the partial experimental design in the research procedures.

Research community and its sample: The research community included the fourth scores literary students in the high and secondary of day schools in the province of Diwaniyah - Afakdistrict. The researcher chose a random sample of the study and was Afaksecondary school for boys. By two divisions, one of which was randomly chosen to be an experimental group, and the other a control group. Whereas the final research sample is (60) students, and by (30) students of the experimental group, and (30) students to the control group after the exclusion of (5) students failed for the previous year as in the following table as in the following table:

He applied the experiment to the two groups and the same researcher studied the two groups, the experimental according to (analysis of the Quranicsimiles), and the control according to (the normal method).

Table 1. Research community and its samp

No.	Groups	Division	No. of students	No. of failed students	Final students no.
1	Experimental	A	32	2	30
2	Control	B	33	3	30
	Total		65	5	60

The equivalence of the two research groups: The researcher conducted a statistical equivalence between the students of the two groups of research in some variables, including:

The time-period calculated in months: It was found that there is no statistically significant difference at the significance level (0.05). The calculated T value of (0.559) is less than the numerical value of (2) and the degree of freedom (58) Where the chronological age variable, as shown in the following table:

Table 2. Equivalence of the two groups of research in the chronological age calculated in months.

Groups	Sample's size	SMA	Differences	standard deviation	KA values		Freedom's degree	Level of significance
					Calculated	Secluded		
Control	30	187.9	62.06	7.87	0.259	2	58	Not statistically significant at 0.05
Experimental	30	187.5	48.45	6.960				

Educational achievement of parents: The value of Ka2 calculated for parents (0.38), which is less than the value of (Ka2) (7.82), with a degree of freedom (3). (0.05), so that the two groups are equal in the educational achievement variable of parents,as shown in the following table:

Table 3. Academic achievement for parents

Groups	Sample's size	Primary or intermediate	Secondary	Institute	Bachelor and more level	KA values		Freedom's degree	Level of significance
						Calculated	Secluded		
Control	30	9	6	7	8	0.38	7.82	3	Not statistically significant at 0.05
Experimental	30	10	6	8	6				

The calculated value of Ka2 for mothers (0.12): Which is less than the value of the (2) tabular ka (7.82), with a degree of freedom (3). At a level of significance (0.05) thus, the two groups are equal in the educational achievement variable of mothers as shown in the following table:

Table 4. Academic achievement for mothers

Groups	Sample's size	Primary or intermediate	Secondary	Institute	Bachelor and more level	KA values		Freedom's degree	Level of significance
						Calculated	Secluded		
Control	30	5	7	10	8	0.12	7.82	3	Not statistically significant at 0.05
Experimental	30	6	7	9	8				

The scores of students of the two groups of the first course in Arabic language for the fourth literary scores: When using of T-test to find the difference between the scores of the two groups in the first course, the researcher found that the difference is not statistically significant at the level of significance (0.05), the calculated T value of (0.728) is less than the scale value of (2) and the degree of freedom (58). This indicates that the two groups are equal in the first grade in Arabic language, as shown in the following table:

Table 5. The equivalence of the two sets of research in the Arabic language grades of the first course

Groups	Sample's size	SMA	Differences	standard deviation	KA values		Freedom's degree	Level of significance
					Calculated	Secluded		
Control	30	42.73	7.006	7.87	0.728	2	58	Not statistically significant at 0.05
Experimental	30	41.93	7.279	6.960				

Research tool: To achieve the goal of research researcher presented his research tool by identifying a group of experts to select an expressive subject to write students in it was the subject (**Tolerance is a characteristic of believers**)

Statistical Method: The researcher used the following statistical means: (square Kay (Ka 2), T-test (Pearson correlation coefficient).

Results and Discusion

After the researcher applied his research tool to the two groups to write in the expressive subject the researcher collected its papers and corrected them according to the predetermined test for the purpose of correcting the creative expression after he has introduced several simulations for correction a group of experts and specialists in the method of teaching Arabic, in order select one of them through the questionnaire distributed to them. Then the researcher at the end of the research procedures statistical treatments for scores of students obtained from the final test, the results were as follows: When the T test was used to determine the significance of the difference between the average of the two groups of research, there was a significant difference at (0.05) and the degree of freedom (58)

Table 6. Determine the significance of the difference between the average of the two groups of research

Groups	Sample's size	SMA	Differences	Standard Deviation	KA values		Freedom's degree	Level of significance
					Calculated	Secluded		
Control	30	56.2	64.178	8.01	5.129	2	58	Not statistically significant at 0.05
Experimental	30	45.9	58.029	7.617				

Conclusion

In the light of the results and interpretations reached by the researcher, the following can be inferred: The analysis of the Quranic prose is one of the important method in teaching expression to the fourth grade students. Teaching the expression by employing (analysis of the Koranic simile) the teacher is equipped with a wide repertoire of intellectual knowledge that qualifies him to delve into Qur'anic simile and prepare it scientifically as a result of the required knowledge broad on various Quranic interpretations. The analysis of the Quranic verses is suitable for oral expression and the scripture, which creates a variety and makes it good for both types of expression (Functional and creative).

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon, college of Basic Education, Iraq and all experiments were carried out in accordance with approved guidelines.

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The Effect of the Multiple-Intelligences strategy on the Iraqi Fourth Preparatory EFL Students' Skills

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Abstract

The main purpose of the current study is to investigate the effect of using a Multiple Intelligences strategy on developing speaking skills of fourth preparatory students in Babil . The experimental research design was used in the study .Tools of the study include techniques and activities based on Multiple Intelligences strategy, checklists of speaking skills, and pre-posttests of speaking skills after assuring their reliability and validity by specialized jury members. The sample of the study was 60 students (30 in the experimental group, and 30 in the control group); students were selected randomly by the researcher. After the application of the experiment, the students were post tested using speaking skills test. Results of the study indicated that Multiple Intelligences strategy had significant effect on improving the students speaking skills.

Keywords: *Multiple-Intelligences, Skills, Iraq.*

Introduction

Multiple Intelligences (hence forth MI) theory opens the door to a wide range of teaching strategies that can be easily implemented in the classroom. In other cases, the theory of MI offers teachers an opportunity to develop innovative teaching strategies that are relatively new to the educational scene[1]. MI theory suggests that all children have different proclivities in the eight intelligences, so any particular strategy is likely to be highly successful with one group of students and less successful with other groups. For example, teachers who use the Songs and music as a pedagogical tool will probably find that musically inclined students respond while nonmusical students remain unmoved. As long as instructors shift their intelligence emphasis from presentation to presentation, there will always be a time during the period or day when a student has his or her own most highly developed intelligence (s) actively involved in learning [10]. In Iraq, according to previous studies such as Basim[12], Al Mudhaffar[6] and Ali et al. [4] shows that most of Iraqi learners find difficulties in using EFL speaking skill and these difficulties may be due to one or more of these elements: constant use of the mother tongue,lack of vocabulary, fear of making errors, improper listening strategies, traditional method of teaching, and the limited time. The human brain is a complex and innovative system for processing information. Information processing begins by entering sensory organs, which turn physical stimuli such as touch, heat, sound waves, or light photons into electrochemical signals.[15] and also that students that have comparative levels of comprehension, could sometimes explain the material in a more suitable way than that of the teacher[1]. Multiple Intelligences Theory (henceforth MIT) is a theory in which Gardner has been countering the traditional view that 'intelligence is a single faculty and that one person is either "smart" or "stupid" across the board'[16]. His pioneering view about intelligence shows that all learners possess at least eight different intelligences working unequally[20]. Although all learners possess these theses, they aren't developed equally[23]. Christison and Kennedy affirm that Gardner also asserted that intelligence is one's ability to apply one or more of the intelligences in ways that are valued by a community or culture which means that a person shouldn't use his intelligences in vicious behavior,

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otherwise it wouldn't be called intelligence[15]. Gardner asserts that strengths 'in most cases' are distributed in a skewed fashion; for instance, a learner may be skilled in acquiring foreign language but unable to find his/her way around an unfamiliar environment or learn a song. Likewise, weakness in learning foreign language does not predict either success or failure in other tasks[21].

Types of Intelligences: Gardner emphasizes that there are multiple ways of learning and thinking as espoused in his theory of multiple intelligences[17].

Verbal-Linguistic Intelligence: Linguistic intelligence is the sensitivity to spoken and written language and the ability to use language to accomplish a specific goal, as well as the ability to learn new languages. Lawyers, writers and poets all possess high level of linguistic intelligence according to Gardner [19].

Visual-Spatial Intelligence: Gardner has described visual-spatial intelligence as the ability to perceive all the elements which are necessary to create a mental image of something and these elements are (form, shape, line, space, colors). These mental images have a strong influence on reasoning [11].

Logical-Mathematical Intelligence: Gardner states that logical-mathematical intelligence as the ability to study problems, and to proceed scientific investigations; he also identifies mathematicians, logicians, and scientists as persons who possess high levels of this intelligence [18].

Interpersonal Intelligence: Armstrong has confirmed that interpersonal intelligence is the ability to notice and make distinctions among other individuals with respect to moods, motivations, intentions, and to use this information in pragmatic ways, such as to persuade, influence, manipulate, mediate, or counsel individuals or groups of individuals toward some purpose. Examples include the union organizer, teacher, therapist, administrator, and political leader [9].

Intrapersonal Intelligence: Self-knowledge and the ability to act adaptively on the basis of that knowledge. This intelligence includes having an accurate picture of oneself (one's strengths and limitations); awareness of inner moods, intentions, motivations, and desires; and the capacity for self-discipline, self-understanding, and self-esteem [10].

Bodily- Kinesthetic Intelligence: "The ability to do things like mime, role plays, marching, interactive spelling, design a product or make a model" refers to bodily intelligence as well as the ability to use the body to express ideas and feelings and to solve problems. And according to Gardner bodily- kinesthetic intelligence refers to the ability to use the body to express oneself (17).

1. **Musical- Rhythmic Intelligence:** This intelligence is expressed as an understanding of and a sensitivity to rhythms, melodies, lyrics, pitch, and timing. Individuals with a strongly developed musical-rhythmic intelligence think with or about music. The intelligence may be expressed through creating songs and melodies, singing, playing instruments, and appreciating music(22).
2. **Naturalist Intelligence:** Most of classroom instruction takes place inside of a school building. For learners who learn best through nature, this arrangement cuts them off from their most valued source of learning. There are two primary solutions to this dilemma. First, more learning needs to take place for these learners outside in natural settings. Second, more of the natural world needs to be brought into the classroom and other areas of the school building, so that naturalistically inclined learners might have greater access to developing their naturalist intelligence while inside of the school building(10).

Speaking Skills: Speaking is an important productive skill because students need to acquire information. In speaking, students learn to use the right pronunciation, stress, and intonation patterns in order to communicate successfully. speaking is defined as the production of auditory signals designed to produce differential verbal responses in a listener [13].Non-verbal communication has effective role in classroom environment and using nonverbal signs, improved confidence of individual listener's ability to understand heard information [3]. Bygate advocates adopting a definition of speaking based on interactional skills which involve making decision about communication [21].Speaking is an interactive process because it requires the involvement of another person unlike listening, reading or writing [24]. The researcher has adopted Brown's standards of speaking skill for her study. Brown standards include: imitative, intensive, responsive, interactive and extensive . Speaking skill is considered as a productive skill that can be directly observed and deliberately assesses the accuracy of listening skills of the listeners and that shows animportant relationship between speaking and listening

skills. Since speaking skills depend on oral production, it is difficult to maintain the accuracy and reliability of this production[13].

Types of Speaking: Basic kinds of speaking are imitative, intensive, responsive, interactive, and extensive. First kind is Imitative which is the ability to parrot back or imitate a word or a sentence. Second one is Intensive is the production of short stretches of oral language designed to demonstrate competence in a narrow band of grammatical, phrasal, or phonological relationships. The third is Responsive that includes interaction and test comprehension but at the somewhat limited level of very short conversations, standard greetings and small talk, simple requests and comments. Fourth one is Interactive; the difference between responsive and interactive speaking is in the length and complexity of the interaction, which may include multiple exchanges or multiple participants. Interaction can take two forms of transactional language, that has the purpose of exchanging specific information, or interpersonal exchanges which have the purpose of maintaining social relationships. Fifth kind is Extensive the oral production tasks include speeches, oral presentations, and story- telling. There are two skills of speaking; those are micro and macro skills. Micro skills means producing the smaller chunks of language such as phonemes, morphemes, words, collocations, and phrasal units while the macro skills imply the speaker's focus on the larger elements: fluency, discourse, function, style, cohesion, nonverbal communication, and strategic options [13].

Methodology

Includes a presentation of the procedures used to achieve the objectives of the study, starting from selecting the population and samples, neutralizing the variables of both samples, designing the instruments and tools of the study, conducting the experiment and analyzing the results.

Experimental Research Design: The experimental design has been adopted by the researchers which best fit the requirements of the study and it contains one independent variable (multiple intelligences strategy) and a dependent variable (students' speaking skills), thus the experimental design was adopted on two equivalent groups one experimental and the other is controlled that are randomly selected by the researcher.

Population and Sampling: The population of the current study is represented by the fourth-grade preparatory school students in the province of Babil for the Academic year (2017-2018) in Al –Afaq secondary school to represent both samples the control and the experimental, which are randomly selected class (A, 30 students) to represent the experimental group and (B, 30 students) to represent the control group.

Samples Equivalence: The researcher conducted a statistical equivalence between the experimental and control groups in some variables that could affect the results of the experiment. Although the researcher chose the two groups randomly, the students of the research sample from similar social and economic status and study in one school. The statistical results demonstrated that the two groups were equivalent in all the aforementioned variables and also in:

1. Students' scores in the pre-test
2. The students' age (In months)
3. Students' scores in English in the mid–year examination
4. Academic Achievement of the Parents

Controlling Extraneous Variables: Extraneous variables are independent variables that have not been controlled.

Therefore, the researcher attempts to control the influence of these variables:

1. History
2. Experimental Morality
3. Maturity
4. Selection Bias
5. Instrumentation

Teaching Material: The teaching material that was used in conducting the experiment was represented according to the MI strategy and was taught during the second course of the academic year (2018-2019) . In which the researcher set a number of activities to be learned by the experimental group, and for the lesson plans the researcher prepared a total of (28)lesson plans for each group. The experiment lasts for 9 months and the researcher teaches the two groups herself during that period of time.

Research Instrument:

Teachers' questionnaire: A questionnaire of 35 questions were designed by the researcher and were answered by 88 secondary teachers which prove according to the experienced teachers that:

- Fourth preparatory students face difficulties in speaking,
- Most teachers use traditional method of teaching, and
- MI strategy is interesting, valuable, and effective.

Pilot study testing: The researcher chose a school that is located near the main school on which the experiment was conducted, (66) students from Al-Kifah secondary school were tested by the researcher and the results of the students proved the test validity.

The pre-Test:

- The purpose of the test: the test was designed to measure the students' speaking skills.
- Determining test items: the test items were designed by the researcher to be 10 items and prepared a scoring scheme for the test.
- Test scoring: Brown's scoring scheme was adopted and adapted by the researcher.
- Test validity: the test was validated by jury members of language teaching specialists which gave some recommendations that the researcher took into her consideration. The test was also validated by testing it to a pilot study.

The test validity: The test is designed according to the general objectives in the "English for Iraq" student's book regarding the skill of speaking and had been sent to a specialized jury members who approved its validity.

The Test Reliability: Reliability of a test is defined as how the scores of the test reflects the true ability level of the students being tested and it can also be defined as the degree to which a measurement instrument gives the same results each time that it is used. To verify the reliability of the test, the researcher used "Cronbach Alpha" so when applying this method, the value of the correlation coefficients (0.935) which is calculated as a high correlation coefficients.

Results and Discusion

The students of the experimental group who were taught according to the MI strategy were superior to the students of the control group, who studied according to the traditional method in the post-test, thus rejecting the first null hypothesis and accepting the alternative hypothesis: (There is a statistically significant difference at the level of (0.05).

Table 1. The students of the experimental group who were taught according to the MI strategy

The mean results of both groups					
	Group	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Pretest	Control	30	62.23	16.65	3.04
	Experimental	30	62.47	16.88	3.082
Posttest	Control	30	63.47	16.081	2.936
	Experimental	30	72.07	14.527	2.652

Conclusion

Based on the results of the study it can be concluded that using multiple intelligences strategy is an effective way to develop the speaking skills through focusing on individual differences among students according to their multiple intelligences . It is also concluded that adopting the new trends in teaching like the MI strategy which focuses on the changing role of the teacher from being a teacher to a facilitator enhances students' achievement.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Basic Education/ University of Babylon, Iraq and all experiments were carried out in accordance with approved guidelines.

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Investigation of Some Corticosteroids in Human Biological Fluid Using Thin Layer Chromatographic

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Abstract

Corticosteroids are a type of steroid hormones, which are generated in the adrenal cortex, also there are the synthetic analogues of these hormones. Steroids play an important role in many biological actions with numerous therapeutic applications. Corticosteroids side effects associated with unpredictable risk of illness as a result of corticosteroids abused. The study was conducted in Mosul city from 15th of January 2018 to 15th of December 2018 in private clinics. Fifty outpatientswere included in this study, they were divided into five groups, and each group includes 10 patients was used one of the five types of corticosteroids, including hydrocortisone, betamethasone, dexamethasone, prednisolone and triamcinolone. Samples of 1ml collected from the patients, prepared after alkaline chloroform extraction then spotted onto the thin layer plate.Rf value were (0.72, 0.7, 0.67, 0.69, 0.7) of hydrocortisone, betamethasone, dexamethasone, prednisolone, triamcinolone respectively, some of them had the same Rf values due to the similar structure. Endogenous substances from blood samples were not found to have interferences in results with this method.

Keywords: *Thin layer chromatography (TLC), Steroids, Biological fluid, Abuse Drug.*

Introduction

Corticosteroids are a type of steroid hormones. Those hormones are generated in the adrenal cortex, also the synthetic analogues of these hormones [1]. Steroids play an important role in many biological actions with numerous therapeutic applications. It regulates digestive processes, controlling metabolism, control the development and functioning of the sexual organs and water-mineral balance. Steroid drugs are used as potassium-sparing diuretic or contraceptive drugs or anti-inflammatory, anti-asthmatic drugs and synthetic hormones[2]. Corticosteroids side effects, including poor control of the adrenal axis, diabetes mellitus, osteoporosis and opportunistic infection[3]. The possibility of Cushing's syndrome, asthma, herpes keratitis and pneumonia can be associated with unpredictable risk of illness as a result of corticosteroids abused[1]. This is because of; as a result of interest effect the drugs produce, are abused for this effect than the goal they are needed for [4]. Many techniques like Gas chromatography-mass spectrometry (GC-MS), High-performance liquid chromatography (HPLC) with ultraviolet-visible detection (UV–VIS)[5,6], High-performance liquid chromatography-mass spectrometry (HPLC-MS)[7], for dependable and good quality analysis have been used. However, high cost, time-consuming, and complication have been considered as a drawback of all the method mentioned above[8,9]. Therefore, this study choses a fast, highly-selective and low-cost screening technique (TLC). For investigation, separation and analysis of compounds, TLC is the most efficient and popular technique has been used. Worldwidely, approximately 60% of the performed analyses are based on TLC. Therefore, knowledge of the principles and functioning of TLC is a critical[10]. There are large numbers of research article published for TLC, which confirms that TLC is hugely used for the experimental purpose in pharmaceutical, drug, and cosmetology analysis of natural and synthetic steroids[11]. The separation of two

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or more compounds by moving between two phases first is stationary and other is a mobile phase is the exact definition of chromatography [12,13]. Modern approaches in thin-layer chromatography enable analysts to separate and determine steroids in complex mixtures, including various environmental samples such as biological fluids, plants and pharmaceutical formulation [2]. The aim of this study is to investigate the presence of some abused corticosteroids in a human biological fluid.

Materials And Method

The study was approved by the Medical Research and Ethics Committee of the Department of Pharmacology and Toxicology, College of Pharmacy, University of Mosul (Iraq). Before the beginning of the study, all participants were given written informed consent.

Drugs and Patients: Fifty outpatients were included in this study. They were collected from private clinics, they were divided into five groups, and each group includes 10 patients who used one of the five types of corticosteroids, including hydrocortisone, betamethasone, dexamethasone, prednisolone, and triamcinolone. Each of these corticosteroids was used by the patients for a period not less than 3 months.

Solvents and chemicals: Ethanol as an organic solvent was used to prepare standard samples (ethanol absolute, analytical grade (Scharlau/UN).

Preparation of 2N ofammonium hydroxide (NH_4OH): 2N of NH_4OH/100ml was prepared by dissolving 31.25ml of concentrated NH_4OH of 6.4 N in a 100ml volumetric flask and then the volume was aliquot to 100ml by distal water.

Preparation ofpotassium permanganate 1% location reagent: One g of potassium permanganate in sufficient water to produce 100ml.

Standard and Sample preparation:

Standard solution of each drug was prepared by dissolving appropriate weighed amount of authentic drug of the five mentioned corticosteroids obtained from SDI (Samara Drug Industry) in ethanol, and then spotted on thin layer plates.

Samples were collected about 1ml from each patient. After alkaline chloroform extraction ammonium hydroxide (0.25ml, 2N) added to each sample in a glass separatory funnel then 5ml of chloroform added. The contents were then vortexed for 30 seconds. Evaporated to dryness under a stream of air, the 4ml organic layer of chloroform then 50µl chloroform re-dissolved the residue and approximately 40µl spotted on thin layer plates.

Mobile Phase: Prepared by mixing (Ammonia solution extra pure (Scharlau/UN): Methanol extra pure (Merck/Germany) in (1.5:100).

Chromatography: Plates of thin layer plastic sheets of non-fluorescent type (silicagele-60 5×10 cm, Merck, Kieselgel 60/Germany) were used to perform Chromatography. Developed in a tank containing the mobile phase (strong ammonia solution : methanol (1.5:100)). Then plates were sprayed by potassium permanganate solution as a location reagent after they dried.

The Rate of flow (Rf) was calculated as follows:

Rf = Distance of the substance area from the sample origin (mm)

Migration distance of solvent front (mm)

From the starting line to the center of the substance spots the distance was calculated. Spots derived from the standard compounds must be similar to spots of the sample solution in their Rf values, shape, and color [14].

Results and Discusion

No interferences in results due to endogenous substances from blood samples were found with the method described above. Table (1) shows the rate of flow (RF value) and the spots color.These parameters (RF value and the spots color) are important in diagnosing the unknown spots which may be revealed from any biological fluid sample. Consumption of drug of abuse is an insult to modern world; however, the drug is either legally medicinal product or highly risk drug. The age group of 14 to 35 years old is the special ages affected in the society in addition to all age groups. One of the great problems in the society was the abused drugs and their consequences [15,16]. Due to their significant results in person, family and public level as well as in the economy [17]. Therefore, application of thin-layer chromatography TLC in pharmacy is very important. Their researches published in the field of pharmacy steadily rise. It results from the fact that interest in TLC has increased with improvements in TLC instrumentation and method [18]. On TLC plate; the Rf value were (0.72, 0.7, 0.67, 0.69,

0.7) of (hydrocortisone, betamethasone, dexamethasone, prednisolone, triamcinolone) respectively, some of them had the same Rf values, like betamethasone and Triamcinolone due to their similar structure. The drug of abuse can be investigated from different biological fluids, the choice of the sample depend on the purpose of the analysis [4], and the content of biological sample is very complex include endogenous and exogenous substances in addition to the drug wanted to be investigated, therefore, it is very important to be preceded with specific isolation procedures [19]. These method used when the investigated drug must be extracted to facilitate their isolation from aqueous solutions in organic solvents and often it needs several solvents and operations of extraction, purification and separation [20,21]. Investigation and identification of abused drugs in biological fluids gives to the specialists a key for the diagnosis of these drugs.

Table 1. The rate of flow (R_f value) and the spots color.

Drugs	Rfvalue		Spot color
	Authentic standard	Blood extract	
Hydrocortisone	0.72	0.72	Bright yellow
Betamethasone	0.7	0.7	Bright yellow
Dexamethasone	0.67	0.67	Bright yellow
Prednisolone	0.69	0.69	Yellow
Triamcinolone	0.7	0.7	Yellow

Conclusion

The choice of the separation method (chromatographic method) depends on physicochemical properties of the compound being separated, equipment available and sensitivity required for analysis. The time needed and the cost is also important. For these reasons; an inexpensive, fast, highly selective screening technique TLC used for a quick investigation of some abused corticosteroids in human biological fluid. TLC greatly contributed to the analysis of different drugs in comparison with other analytical techniques including Gas-chromatography and High-performance liquid chromatography because of their running cost, complication and time-consuming.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Pharmacology and Toxicology, College of Pharmacy, University of Mosul, Iraqand all experiments were carried out in accordance with approved guidelines.

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Solid Waste Reduction Through 3R-Based Waste Management Unit and Waste Bank in Indonesia in 2018

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Abstract

In Indonesia, waste reduction program done at the community level, through 3R-based waste management (TPS3R) unit and waste bank, has a national target of 30% in the period of 2017-2025 under Presidential Regulation No.97 Year 2017. An effective waste reduction effort can be measured by two main indicators, first is the percentage of recycled waste, and other indicator related to legal, financial, service coverage, and community participation. This study aims to explore the effectiveness of solid waste reduction through TPS3R and waste bank services in three cities, Depok, Bogor, and South Tangerang. A cross-sectional study was done collecting data from multiple sources namely municipality's record, regional policy, and official government news. The results showed that the percentage of effectiveness of waste reduction to landfill in three cities has not reached the national target, which was still below 5%. The highest effectiveness of waste reduction by TPS3R and waste bank was achieved by Depok which has 3R related local regulation. The city with largest budgeting allocation for solid waste management was Depok. YetBogor with a budget allocation of 2.2% could achieve the value of half effectiveness of Depok. South Tangerang with the best coverage of TPS3R unit services has the lowest effectiveness value despite its high Human Development Index (HDI) value. Likewise, TPS3R services had higher effectiveness for reducing waste than the waste bank.

Keywords: *Solid waste management, solid waste reduction, 3R concept, waste bank, effectiveness.*

Introduction

Solid waste generation in developing countries is increasing rapidly due to the increase of population growth, economy, urbanization, and the rising living standards in society[1]. This situation creates a gap between per capita consumption of natural resources and solid waste production with the ability of ecosystems to supply natural resources and absorb waste contrarily[2]. Currently, solid waste is a serious and urgent problem for most cities in developing countries[3]. In Indonesia, most people still throw solid waste to the rivers, ditches, gardens, vacant land, burned, or buried.Only 27.9% of households have access to solid waste transportation services by waste collection staffs[4].In addition, 57% of landfill in Indonesia still using the open dumping system in 2015[5]. However, the environmental impacts of open dumping will take a long time to disappear and potentially harmful to public health[6].

Considerably, Indonesia issued a LawNo. 18 of 2008 on Solid Waste Management containing about Reduce, Reuse, Recycle (3R) concept. Two different ministries then regulate the waste reduction management at the community level. First is 3R-based waste management unit, which is called TPS3R (*Tempat Pengolahan Sampah berbasis* 3R –Reduce, Reuse and Recycle), except in Depok City is named as UPS (*Unit Pengolahan Sampah*), under the Ministry of Public Works and Public

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Housing Decree No. 03/PRT/M/2013. Second is waste bank, regulated by the Ministry of Environment and Forestry issued Decree No.13/2012, as the community initiative waste management unit. TPS3R and waste bank have different procedure in managing the solid waste at the community level.

The waste collection staff in TPS3R will collect and transport household solid waste through door to door services. Solid waste from the community will or will not be sorted at each household before being transported—with or without waste separation—to TPS3R unit site whereas then the worker will sort the solid waste into biodegradable, non-biodegradable, and residual waste. The biodegradable solid waste will be processed into compost, non-biodegradable solid waste with economic value will be sold to private sector, and residual waste will be sent to the landfill. Meanwhile in waste bank, waste bank member will sell the non-biodegradable solid waste which have economic value then can get some money[7].

In 2016, the number of TPS3R has reached 981 locations throughout various cities in Indonesia, which 10% of it has been running well[21]. Waste bank, until 2018, is known to reached 5,244 units with a total of 174,904 customers spread across 218 districts/cities and the contribution of waste bank in solid waste reduction effort has reached 1.7%[8].

In 2015, Wilson et al. (2015) wrote an analytical framework for city's solid waste management system quite comprehensive, capturing two overlapping triangles. First is a hard factor, that is physical components comprising of collection, recycling and disposal. Second, as a soft component, it is a governance aspects, consisting of inclusively, financial sustainability, and proactive policies. Referring to those indicators, this study aims to describe the percentage of solid waste managed in TPS3R and waste bank, in addition to explore the factors related to the effectiveness of urban solid waste management.

Method

This study used cross-sectional design in three cities of West Java and Banten Provinces, namely Depok, Bogor, and South Tangerang, in 2018. The study population are all TPS3R in 3 cities with total 120 units which counted fromDepok (45 units), Bogor (26units), and South Tangerang (49 units), and all waste banks in 3 cities amounted to 608 units; Depok (428 units), Bogor (24 units), and South Tangerang(156 units).

A multiple data sources are used. The records were drawn from Environment and Sanitation Office, Central Bureau of Statistics, TPS3R unit, and waste bank. The list of TPS3R and waste banks for this study are provided by the City's Environment and Sanitation Office. The source of data on municipal solid waste generation, amount of budget, budgeting allocation, and number of an urban village and neighborhood area, are taken from online publication.

The reduction of waste generation to the landfill is measured by the effectiveness formula that has been developed[10]. Here are the measurements of the effectiveness of waste reduction:

$$Effectiveness = \frac{Wastemanagedin TPS3R + Wastemanagedbywastebank}{Wastegenerationofanentirepopulationinacertainperiod} \times 100\%$$

Research permit was obtained from the Municipality Local Government in three cities.

Results

TPS3R in Bogor and South Tangerang were managed by the local community group, while Depok were managed by the local government. The value of effectiveness of waste reduction by TPS3R unit and waste bank in three cities was still very low and has not fulfilled the national target (30%) with the effectiveness of TPS3R unit and waste bank in Depok (4%), Bogor (2.06%), and South Tangerang (1.48%). The percentage of solid waste reduction in TPS3R was higher compared to waste bank. For example, in Depok, solid waste reduction in TPS3R is 2.9% and solid waste reduction by waste bank is 0.68%, as well as in Bogor and South Tangerang (Table 1).

Table 1. Effectiveness Percentage of Waste Reduction through TPS3R and Waste Bank in Depok, Bogor and South Tangerang

Variable		Depok		Bogor			South Tangerang		
		TPS3R	Waste Bank		TPS3R	Waste Bank		TPS3R	Waste Bank
Number (and % of Active) TPS3R and Waste Bank		45 (66.7%)	428 (100%)		26 (92.3%)	75(33%)		49(71.4%)	156 (100%)
	Total solid waste in city	Processed by TPS3R**	Processed by Waste Bank	Total solid waste in city	Processed by TPS3R*	Processed by Waste Bank	Total solid waste in city	Processed by TPS3R*	Processed by Waste Bank
Municipal Solid Waste (kg/day)	1,321,000	38,663	9,100.6	648,000	13,079	263	880,000	12,150	865.5
Effectiveness of waste reduction (%/day)	4%	2.9%	0.68%	2.06%	2.01%	0.04%	1.48%	1.52%	0.108%

*TPS3R process organic and inorganic waste, **TPS3R only process organic waste

Although the three cities already have local regulations related to solid waste management, local regulations about 3R related to solid waste management were only available in Depok and South Tangerang.Regarding budget variable related to cleanliness and solid waste management in each city, Depok got the highest percentage of the budget compared to the other two cities (Table 2).

Table 2. Waste Management Governance Aspectsin Depok, Bogor and South Tangerang

	City		
	Depok	Bogor	South Tangerang
Governance Aspects			
Legal Dimension			
Availability of local/district/ city/regency regulation on waste management related to 3R	There is a 3R related waste management regulation in Local Regulation of DepokNo. 5 Year 2014 about Waste Management	There is a waste Management regulation but not 3R related waste management in Local Regulation of Bogor No. 9 Year 2012 about Waste Management	There is a 3R related waste management regulation in Local Regulation of South Tangerang No. 3 Year 2013 about Waste Management
Local regulation related to 3R waste management	There is mentioned in Local Regulation of Depok No.5 Year 2014 Article 9	Not yet mentioned about 3R	Not yet mentioned about 3R
Finance			
Amount of budget at Environment and Sanitation Office	Rp 346,8 billion or 12.9% from a total of Regional Budget	Rp 43,9 billion or 1.8% from a total of Regional Budget	Rp 96 billion or 4.08% from a total of Regional Budget
Community Aspect			
Human Development Index score	79.83	75.16	80.84

Not all TPS3R units were active in conducting 3R based waste processing activities. The most active TPS3R unit was in Bogor (92%) and the most inactive TPS3R unit was in Depok (33%).

Discussion

The effectiveness of TPS3Rand waste bank in three cities was still low, while in European Countries, the average percentage of waste reduction through recycling, composting, and bio-waste digestion has been reported 33% in 2014. Some developed countries like Germany, Austria, Netherland, Switzerland, Belgium, and Denmark has reached minimum percentage of 50% for household solid waste recycling[11]. Based on national standard in Indonesia, the solid waste reduction target of 30% had not been reached yet.

TPS3R in Depok only recorded the amount of solid waste, which can easily decay so the solid waste reduction became low. Meanwhile, the amount of solid waste that cannot easily decay and has economic value was not recorded either in TPS3R or in local government in Depok. The local government should improve reporting and recording data in TPS3R, waste bank, and the Environment and Hygiene Office.

It is interesting to note that the effectiveness of the solid waste management in these three cities may be underreported because this study does not include the solid waste recycling activities undertaken by the scavengers. Based on previous study, total solid waste taken by scavengers in Indonesia can reached 10%[12]. The local government should count the numbers of scavengers in the area actively, and record the number of non-biodegradable solid waste from them.

The effectiveness of solid waste reduction by TPS3R in three cities had higher percentage than waste bank. In general, TPS3R received all types of solid waste, while waste bank only took non-biodegradable solid waste having economic value. Meanwhile in TPS3R, household solid waste from the community was picked by waste collection staff of TPS3R. Refer to the previous study,solid waste collection coverage is included as an indicator of solid waste management performance[13].In waste bank, the member deliver their waste individually and voluntarily to waste bank. This condition requires a very high voluntary level;hence, there is no guarantee that household solid waste can be transported properly to the waste bank. The local government should encourage every household to sort solid waste. The household solid waste which has been sorted will be transported in a separate method by the waste collection staff.

The low number of solid waste reduction related with legal, institutional, and financial aspects. On legal aspect, local regulations greatly affect the community's behavior in terms of handling solid waste. Most local governments do not have local regulation of solid waste management as a derivative of Law of Republic of Indonesia No. 18 of 2008. The value of effectiveness achieved by Depok can be due to the regulations which clearly mention the obligation to sort waste in the community. Some results of previous studies based on household perceptions indicate that household participation in sorting/recycling solid waste will increase if households trust the government. Steps needed to increase trust are issuing laws, establishing detailed regulations, and enforcement of solid waste disposal/ recycling behavior[14]. Thus, each local government should have 3R solid waste management rules.

In the financial aspect, the allocation of budget for cleanliness and solid waste management in Depok was higher compared to other cities in Indonesia. The average budget allocation of solid waste management in cities around the world was between 3%-15%[15]. However, the average size of solid waste management budget in all cities in Indonesia was 2%. In Bandung, the budget allocated for Environment and Sanitation Office was 2.3% and Surabaya was 5.5% in 2012. Due to TPS3R in Depok were fully funded by the local government, the householdthen do not have to pay their service. While in Bogor, it onlyhad budget allocation for maintenance and salary of employees as much as 4 people ini every TPS3R. The employeeswere paid 65,000 Rupiah (around 4.44 USD) plus extra dairy food or snacks per day. The community contributed to fund the other operational cost of TPS3R through waste contribution payment. The household served by TPS3R had to pay their service between 3,000 until 30,000 rupiah or 0.25 until 2 USD depending on the consensus and agreement of each community.In the meantime, South Tangerang did not allocate budget for TPS3R, all the operational cost in TPS3Rwere fully funded by community.

The solid waste reduction in the city also related with the availability of the community to access TPS3R and waste bank. In this study, all of the waste banks were active. The availability of good access will encourage community behavior in managing solid waste. Access can be seen from the number of places of waste processing (availability) and distance traveled (accessibility)[16]. Based on previous study, the closer the distance to waste recycling sites, the greater the household participation in sorting and recycling waste[17]. In line with other studies which stating the households are unwilling to bring recycled waste to waste banks or recycling centers because the distances are far from home[18]. The optimal distance from the household to recycling center was 75 meters[17].

Although there is no regulation stated about the scope of waste bank, yet in practice waste bank generally build in neighborhood area level. While TPS3R has been regulated to serve more than 400 households, which larger than a neighborhood area village[19]. Thus, in this study we assumed that TPS3R served the urban village area and the waste bank served the neighborhood area.

It is likely that the availability of TPS3R and waste bank unit in three cities have not yet cover the need of the entire community in cities.

The availability of TPS3R unit can be attributed to the lack of land that can serve as TPS3R. One of the issues of national waste development is the provision on solid waste management infrastructure and facilities not yet included in the Spatial Detail Plan of local government. The determination of the landfill site is already listed in the Spatial Plan, but for TPS3R has not been listed because of the central and regional government has no integration in the perception of the importance of the national strategic for spatial planning[20]. Based on this, TPS3R location is needed to be required in the Spatial Detail Plan.

On the effectiveness of TPS3R unit managed by the local community group, Bogor showed better results compared to South Tangerang. Community access to TPS3R unit was best achieved by South Tangerang with almost 100%, but the effectiveness value achieved was not too high compared to the large access. This can be attributed to the level of community participation. The level of community participation in this study can be approximated by the Human Development Index (HDI). HDI in South Tangerang is the highest, but the participation rate is still low. The waste banks management is done by local communities with high community participation rate. However, in South Tangerang, waste bank has the lowest availability of communityaccess although the HDI was the highest among three cities[9]. This can be studies furthermore in regard to increase number of the waste bank availability.

The presence of active and non-active TPS3R in each city indicated that the related institutional aspects of maintenance have not been able to perform optimally. Inactive TPS3R may be due to unclear land ownership, destroyed buildings, difficult access to TPS3R, and functional shifting. The other thing related to the lack of maintenance in TPS3R is due to obstacles in operational and maintenance costs. The source of funds used for the implementation of TPS3R comes from the government, contributions from the public, and private[19].

Conclusions

The effectiveness of waste reduction to landfill through TPS3R and waste bank is still very low (less than 5%) and has not met the national target of waste reduction by 30%. The percentage of effectiveness achieved by TPS3R unit is higher than waste bank. The budget allocation managed by Environment and Sanitation Office is highest in Depok, but Bogor with a budget of only 2.2% can achieve half of the effectiveness of Depok. To improve TPS3Rand waste bankperformances, it is called for regular training to the personnel or the community, and monitoringto those units done by the city.

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Evaluation of Workers' Protection from Occupational Disease as a Part of the Occupational Safety and Health Program in the Ministry of Manpower Republic of Indonesia

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Abstract

Occupational diseases (OD) are a critical matter in occupational safety and health (OSH) programs. Until 2017 in Indonesia, there was very few data of OD cases (25/0.02%) when compared to data of occupational accidents (OA) cases (106,889/99.98%) annually. This study aims to garner support for an increase in workers' protection measures regarding OD as a part of the OSH program and to focus attention on the participation of stakeholders in delivering workers' OD protection on a par with OA protection. This qualitative study data were collected and analyzedwith the matrix of the Stake Countenance Evaluation Model (in congruency and contingency). The results of this study showed there are five main factors contributing to workers' lack of protection from OD, as compared to OA cases: 1) lack of stakeholder understanding, competency, commitment, and participation; 2) inadequate planning and budgeting, policies and regulations; 3) lack of law enforcement of the labor laws; 4) poor distribution and function of OSH facility services; and 5) poor OD case handling, data collection, and management.

Keywords: *Occupational accident, occupational disease, workers' protection, occupational safety, and health.*

Introduction

Workers in the socio-economically active population face the risk of not only general illness, but also specific illnesses classified as occupational diseases (OD), in addition to occupational accidents and injuries (OA/OI)[1,2]. They are likely to have limited income and resources, and without proper social protection[3-6]. The employer must protect employees from job–related risks through the Total Worker Health (TWH) program, an integration of OSH protection and health promotion to confront OI and OD, and to advance health and well-being[7-14]. Less attention has been given to the problem of OD, thus only a small number of workers have access to occupational health (OH) services[15,16].

OD is a critical problem, important aspect, and one of the main objectives of the OSH program, together with protecting workers from OA[17,18]. From the perspective of human resource management (HRM), OSH programs are part of the efforts to manage workers as human capital assets for a company or an organization, and as a fundamental concern for a productive, happy and healthy workforce, which is essential to economic development[16,19,20-22], and the minimisation of loss and other negative effects of OD and OA/OI[1,7,8]. OD and OA are increasing: cases of illness and injury causing fatalities from 2.33 million in 2014 to2.78 million people in2017. The OD mortality was 2.4 million (86.3%) of the total estimated fatalities; for OA it was 0.38 million (13.7%) annually[4,23-25].This situation is referred to as the silent epidemic of OD, in which hidden OD cases

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do not receive health services according to standards and do not have the right to workers' compensation in accordance with the regulations[26,27], causing global economic losses on average of 3.94% to 4% of a country's Gross Domestic Product (GDP) annually[4,28-30].

According to national regulations, workers with OD, just as with OA/OI, are entitled to workers' compensation benefits[10,31-35], but OD cases diagnosed and receiving workers' compensation in Indonesia until 2017 in average only 25 cases (0,02%) while for occupational accidents (OA) was 106,889 cases (99,98%) annualy. That is a very big gap when compared with ILO estimates (2008) that in the world, there are 160 million OD cases (37,2%) and OA cases of 270 million (62,8%) annually. This reflects that implementation of OSH programs still lack attention in protecting workers from OD, than protections for OA/OI. This research aims to evaluate and make recommendations on an increase in workers' protection from OD as an integral part of the OSH program, so that OD cases will receive their workers' compensation benefits according to national regulations. The recommendation is needed to promote attention and participation of stakeholders, especially policymakers, OSH officers, labour inspectors, and OH doctors, in the delivery of workers' protection from OD as well as from OA cases.

Method

The study used qualitative approachin accordance with evaluation research using the Stake Countenance Evaluation model. This evaluation model consists of three main components of evaluation: antecedents, transactions, and outcomes.

The data was grouping to three evaluation criteria consist antecedents, transactions, and outcomes. The Antecedents (input) consists: human resources, facilities, budget, strategic planning, and supporting of national policy and regulation. The transaction (processes) consist: activity according to the planning (capacity building of stakeholder, labour inspection and low enforcement), monitoring, performance appraisal, and program evaluation of OSH program/activities. The outcomes consist: the results of the OSH program related to OD protection and its follow up.

The data were obtained from various documents of policy and regulation programs, as well as the results of activities and programsin the form of meeting reports or summaries in the Indonesian Ministry of Manpower (MOM) office, for the period 2015–2017. Other data was obtained from interviews, discussions, observations, and attending activities or meetings related to the OSH program implemented by the MOM and other stakeholders, especially company doctors who are members of the Indonesia Medical Association of Occupational Health (IMAOH), and activities carried out in cooperation between the two bodies. Interviews were conducted with 30 respondentsconsist: policy makers and programs at the MOM, OSH labour inspectors, OSH analyst, and occupational health doctors. Observations were conducted in various OH and OSH–related activities, such as seminars, conferences, workshops, focus group discussions, social events, and discussions on drafting regulations, OH and OSH personnel training (OH doctors and OSH officers). Observations also took place at informal discussions or forums followed by OH professionals, including government officials, experts, academics, and practitioners.

The data were recorded and analysed using the matrix of the Stake Countenance Evaluation Model. Analysis to the component of antecedent, transactions and outcomes with congruency and contingency approach to take conclusion (judgement).

Results

It was found considerable relevant information and documents regarding the implementation of OD protection efforts for workers through the OSH program conducted by the MOM. There were only a few OSH programs that have been implemented to draw attention to the OD situation. It is in line with data from the Social Security Administration Agency (BPJS), until 2017, reported the number of OD cases that were given worker's compensation (JKK) in Indonesia in average at only 25 (0.02%), compared to OI cases that reached 106,889(99.98%)annually.

Countenance Stake Analysis Matrix revealed five main factors explaining the lack of workers' protection from the consequences of OD as contrasted with OA cases**:** 1) lack of stakeholder understanding, competency, commitment and participation; 2) inadequate planning, budgeting, policies and regulations; 3) lack of labour laws enforcement; 4) poor distribution and function of OSH facility services; and 5) poor OD case handling, data collection and management.

Table 1. Number of work compensation to occupational accident and occupational diseases

Number Work Compensation for occ. accident and occ. diseases 2015 to 2017			
Year	Number of workers compensation		
	Occ accident	Occ diseases	Total
2015	89.297	25	89.322
2016	102.916	13	102.929
2017	128.454	37	128.491
Total	320.667	75	320.742
Average	106.889	25	106.914
	(99,98 %)	(0.02)	(100%)

Source: Annual Report of BPJS Ketenagakerjaan (2018)

According to the findings of this study, these recommendations can be proposed to increase OD protection as an important part of the OSH program. This recommendation ordered following priorities from first to the last:

1. Increase the understanding, competency, commitment, and participation in OD protection on the part of key stakeholders: OSH analyst, OSH labour inspectors, and OH doctors;
2. Upgrade a reformulation of OSH policy and regulations relating to OD protection;
3. Insert OD protection aspects appropriately in planning and budgeting documents;
4. Increase distribution and function of OSH facility services: occupational health laboratory, occupational health services, and work environment laboratory;
5. Strengthen labour law enforcement by implementing OD norms and regulations;
6. Improve OD case handling, data collection and management appropriately.

Discussion

The OD issue is an important aspect of the OSH program in Indonesia. It has strategic value, because it governs the protection of productive workers in the economically active population, which accounts for 121 million people (47.4%), or almost half of the total population of 255.2 million people (BPS, 2016). On the other hand, Indonesia's population growth has led to a demographic issue, because it is dominated by young people, so the proportion of workers will be even greater in the future. Young workers (24-28 years old), are employed in all types of enterprisesformal, informal, small and medium enterprisesand in all sectors, so they are much more vulnerable to experiencing workplace harm.

Based on this study, there is the potential that the OD casesare not being detected, but workers experiencing work–related illness go to PH services and may experience several implications, among them, misdiagnosis of illnesses by doctors who do are not familiar with occupational diseases, incorrect treatment, and, of course, having no worker compensation. This last condition also indicates that the implementation of the OSH program has not been carried out comprehensively, because most of the programs are dominated by the OA aspects, and only a few pay attention to OD issues. Thus, a comprehensive evaluation is needed to determine the factors that hinder efforts to protect workers against the consequences of OD, in order to improve the quality of workers' protection through the OSH program.

Until 2017, the number of OD cases reported, handled, and provided workers' compensation in average was only0.02%, in contrast to OI cases numbering up to 99.98% annually. If this condition is compared to the ILO data survey, the proportion of OD cases is greater than 50% of the number of OI cases reported. In light of the ILO report's statistics, it can be surmised that cases of OD areindeed a silent epidemic[26]. Hence, it can be assumed that the number of hidden OD cases in Indonesia is substantial. These hidden OD cases are thought not to have been treated appropriately, and those who suffered them did not receive any workers'compensation[26,36].

The implementation of the MOM's OSH program has not been comprehensive, because it is still dominated by OI aspects and pays little attention to OD aspects. Based on these results, the OD protection program for workers must be improved, along with the protection of workers from OI, through comprehensive implementation of the OSH program[37].

Prevention of OD is very important to create awareness in the general public of the severity of this silent epidemic of occupational diseases, which is estimated to cause 86% of the deaths at work[26]. On the other hand, according to the TWH program, the OSH program should also be integrated with PH programs at work in order to protect workers from OD and OI, and to enhance the workers' health and well-being[28,38]. Giving workers protection from the consequences of OD is equally as important as giving attention to OSH comprehensive programs, and providingtheir benefitsmore expansively[39-42].

Conclusions

Although the OSH program is basically targeted towards protecting workers from bothOI/OA and OD, in terms of prevention, handling and providing workers' compensation, the OSH program by the MOM still focuses lack of attention on OD protection and prevention programs. Losses due to OD are most significant for the workers themselves, but they also have an impact on the employers and subsequently become a loss for the country. MOM must exert greater efforts urgently in increasing workers' protection from OD, in order to increase the quality of life of the workers as strategic human capital and to prevent or at least to minimise the losses for employers as well as the country.

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Effect of Maternal Iron Deficiency Anemia on Fetal Hemodynamics and Neonatal Outcome

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Abstract

A prospective comparative study on 521 pregnant women (≥32weeks) with iron deficiency anemia (IDA) between July, 2019 and September, 2019 at Kasralainy hospital in Egypt, to evaluate adaptation of the fetus to withstand maternal IDA by Doppler parameters, to know the cut-offs of maternal hemoglobin at which complications exist, and to evaluate the effect of treatment (oral iron, parenteral iron or blood transfusion) on fetal hemodynamics and neonatal outcome by birth weight and APGAR score at delivery.

Groups subjected to Doppler examination of umbilical artery, middle cerebral artery (MCA) and renal artery on admission, ten days after treatment by oral iron for mild anemia parenteral iron for moderate anemia, or blood transfusion for severe anemia, again at delivery. Results showed a significant difference regarding Doppler parameters of umbilical artery, renal artery and MCA on admission, ten days after treatment and at delivery explained by vasodilatation of the MCA (brain sparing effect) in moderate and severe anemia, a higher percentage of IUGR in group (C). Treatment corrected Doppler changes and decreased fetal and neonatal complications attributed to anemia especially in severe anemia.

Clinical Trials.gov ID registration: NCT04016922

Keywords: *Maternal anemia, Doppler, IUGR, Neonatal outcome.*

Introduction

Hemoglobin concentration diagnoses and determines severity of anemia, it's screened using WHO-defined cutoffs at lower value for pregnant women than non-pregnant (11 g/dl versus 12 g/dl). Severity determined using cutoff of hemoglobin of less than 7 g/dl[1,8]

Iron deficiency (ID) is a status with no mobilizable iron stores leading to decreased iron supply to tissues due to long-term negative iron balance. Finally, the most significant negative effect of ID is anemia[2] which is linked to unfavorable outcome of pregnancy as preterm delivery, low birth weight, neonatal ID[4,7], low Apgar scores at 5 min[5].

Also suspected to lower oxygen to the fetus, making blood centrally distributed to preserve cerebral oxy genation[6,14] and asymmetrical IUGR. With no evidence of placental insufficiency documented yet[6].

WHO report, 2001 indicated that IDA is a significant problem throughout the world averaging 56% in developing countries while 14% in industrialized countries.[3,6]

ID has a negative impact on child intelligence and behavior. It's prudent to prevent ID in fetuses by preventing ID in the pregnant woman.[11]

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IUGR is associated with increased perinatal morbidity, higher chance for neurodevelopmental impairment and increased incidence of adult diseases such as diabetes and cardiovascular disease [7]

IUGR is defined as "abdominal circumference >2SD below the mean for gestational age confirmed by serial assessment of the fetal growth parameters".[8]

Color Doppler in ultrasound machines provides a chance for noninvasive hemodynamic monitoring as it can reliably predict adverse outcomes in SGA fetuses [9], so surveillance with Doppler is done when suspecting IUGR [8]

Distribution of blood between the placental and cerebral regions determined with Cerebro-Umbilical ratio(C/U ratio) [7, 8]. Normally it's > 1.1, but decreases in case of hypoxia because of increase in placental resistance and cerebral vasodilation[9, 15]correlating closely with fetal growth, hypoxia, and behavior, prior to 34 weeks of pregnancy[2]

Perinatal morbidity of IUGR fetuses is greater than in normal ones. The umbilical artery and the MCA Doppler may be abnormal, without effect seen on growth until 26-32 weeks' gestation; mild utero-placental insufficiency [10]

Material and Method

This prospective comparative study included 521 pregnant women attended Kasralainy Maternity Hospital, from July 2019 to September 2019. Including patients aged 20-35 years with singleton living fetus ≥ 32 weeks' gestation on admission (calculated by LMP or by 1st trimester ultrasound), with hemoglobin levels below 109 g/L. Excluding patients in labor, multifetal pregnancy, medical disorder other than IDA as chronic hypertension, preeclampsia, D.M., hemoglobinopathies, or blood loss as placenta previa, congenital anomalies; after explaining the study, patients provided informed consent to participate and were subjected to:

1. **History:** Symptoms as weakness, LMP, obstetric code, mode of deliveries.
2. **Examination:** For pallor, tachycardia, fundal height, rupture membranes, cervical dilatation.
3. **Venous Samples:** CBC, serum ferritin.
4. **Ultrasonography:** For viability, placental site, estimated fetal weight (EFW), amniotic fluid index, using 3.5 MHz curvilinear transducer on (Voluson 58-GE ultrasound Seoul, South Korea) machine equipped with color-flow mapping, and a 50-Hz high-pass filter; measurements were performed in a semi recumbent position. Color-flow imaging was used to visualize the umbilical artery, renal artery and MCA. Pulsed Doppler was performed with a sample volume of 5 mm.
5. **Doppler Flowmetry:** the RI and S/D ratio of the umbilical artery, and the RI and S/D ratio of MCA, distribution of blood flow in the fetus was measured by C\U (C=MCA PI, U= Umbilical artery PI) and the RI of the renal artery were measured. For each, the mean of three measurements recorded

Venous samples and ultrasonography done on admission, repeated ten days after treatment and followed up till delivery (every 2 weeks till 36week then every week till delivery).

Group (A): mild anemia (Hemoglobin concentration: 90-109 g\L)**:** received oral ferrous fumerate therapeutic dose: 100-200 mg/d, iron was continued for 3 months to replenish stores, adequate replacement when ferritin reached 50 ng/ml, to maintain maternal stores and neonatal iron stores.

Group (B): moderate anemia (Hemoglobin concentration: 70-89 g\L): received iron sucroseparenterally**.**

The dose was calculated using the following formula according to product literature:

IV iron dose (mg) = blood volume (dl) x hemoglobin deficit x3.3

Blood volume (ml) = 65 ml x weight in kg (blood volume/kg = 65ml/kg)

Blood volume (dl) = blood volume (ml)/100 (each dl contains 100ml)

Hemoglobin deficit = difference between observed and desired hemoglobin. (desired hemoglobin 11g %)

3.3 = reflects the amount of iron (in milligrams) in each gram of hemoglobin.

Group (C): severe anemia (Hemoglobin concentration: >70 g\L): received blood transfusion in the form of packed RBC; each unit contains 200 ml RBCs, which contain 200 mg iron.

Statistical Method: An estimated minimum sample size of 521 participants was calculated using StatsDirect application Version 3.2.7 using a 95% confidence interval and a power of 80% and based on prevalence of IUGR in anemic population of about 79.2% [14]

The variables entered using Excel 2016 (Microsoft Corporation, Redmond, WA, USA) before transfer to SPSS (statistical package for the Social Sciences) version 25 (IBM Corp, Armonk, NY, USA) for Microsoft Windows (2010) where data entered for analysis. Data described in terms of range, mean □□standard deviation (□□SD) for quantitative data, number and percentages for categorical data.

Comparison between groups done using one-way analysis of variance (ANOVA) with post hoc multiple 2-group comparison test.

For comparing serial measurements within each group repeated measures ANOVA was used in normally distributed quantitative variables.

Within group; comparison of numerical variables done using paired *t* test in comparing 2 groups. *P* values less than 0.05 was statistically significant.

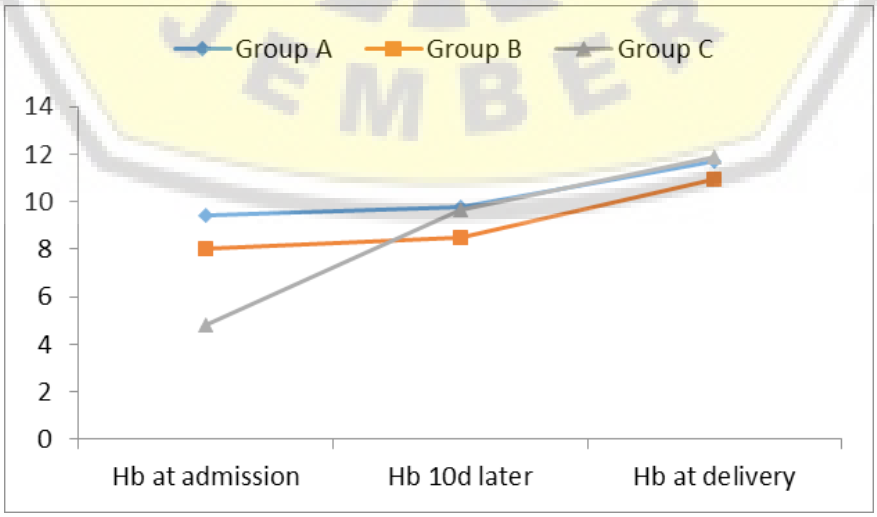
Results

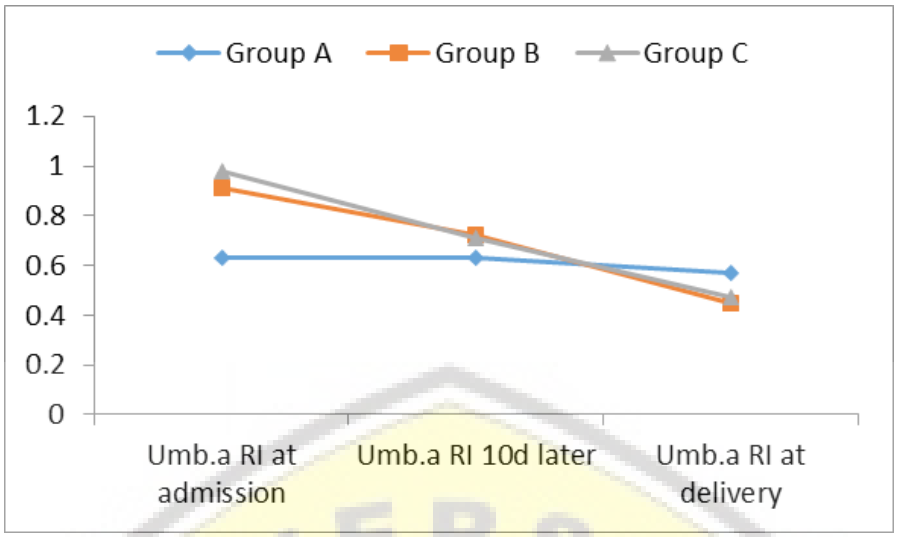
Table (1): Summary of data.

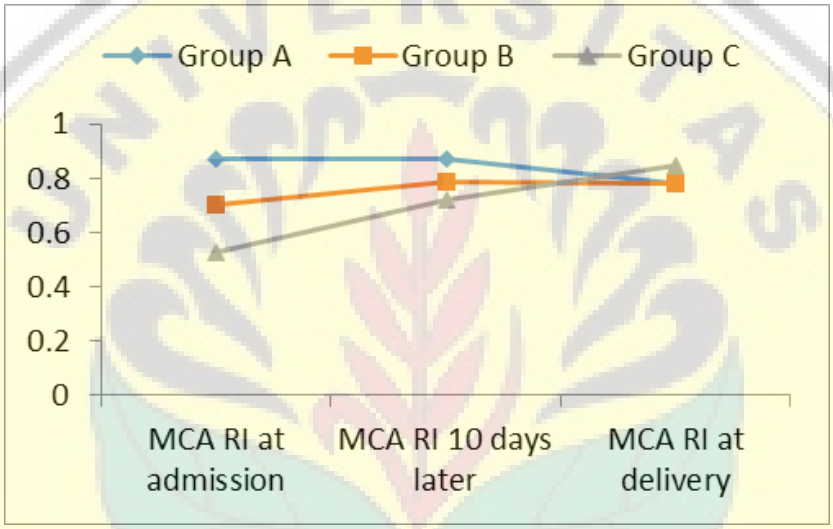
	Group (A) Mildanemia 230patients(~44.1%)	Group (B) Moderateanemia 250patients(~48%)	Group (C) Severeanemia N=41patients(~7.9%)	
Maternal Age (years)				
20 – 25 years:	161(70%)	50(20%)	2(4.87%)	
26 – 30 years:	46(20%)	125(50%)	12(29.26%)	
More than 30 years:	23(10%)	75(30%)	27(65.85%)	
Parity				
Nulliparous:	140(60.9%)	50(20%)	4(9.76%)	
Multipara:	90(39.1%)	200(80%)	37(90.24%)	
BMI (kg/m2)				
Underweight (< 18.5):	23(10%)	25(10%)	23(56.1%)	
Normal weight (18.5- 24.9):	23(10%)	50(20%)	6(14.63%)	
Overweight (25- 29.9):	88(38.3%)	100(40%)	4(9.75%)	
Obese (≥30):	96(41.7%)	75(30%)	8(19.51%)	
Previous CS in multiparous women				
No:	75(83.33%)	150(75%)	7(18.92%)	
Yes:	15(16.67%)	50(25%)	30(81.08%)	
Mean gestational age				**P value**
Mean gestational age by dates on admission (weeks)	32.99±0.82 SD	32.97±0.8 SD	32.44±0.71 SD	< 0.001
Mean gestational age by ultrasound on admission (weeks)	32.99±0.82 SD	30.15±2.64 SD	29.54±2.15 SD	
Mean gestational age by dates at delivery (weeks)	38.9±1.13 SD	38.76±1.59 SD	38.15±1.37 SD	0.006
Mean hemoglobin levels				
Mean hemoglobin (g%) on admission	9.42±0.51 SD	8.04±0.27 SD	4.84±0.94 SD	<0.001
Mean hemoglobin (g%) 10 days later	9.79±0.51 SD	8.47±0.35 SD	9.66±0.79 SD	
Mean hemoglobin (g%) at delivery	11.72±0.22 SD	10.94±0.71 SD	11.90±0.86 SD	
P value	<0.001			

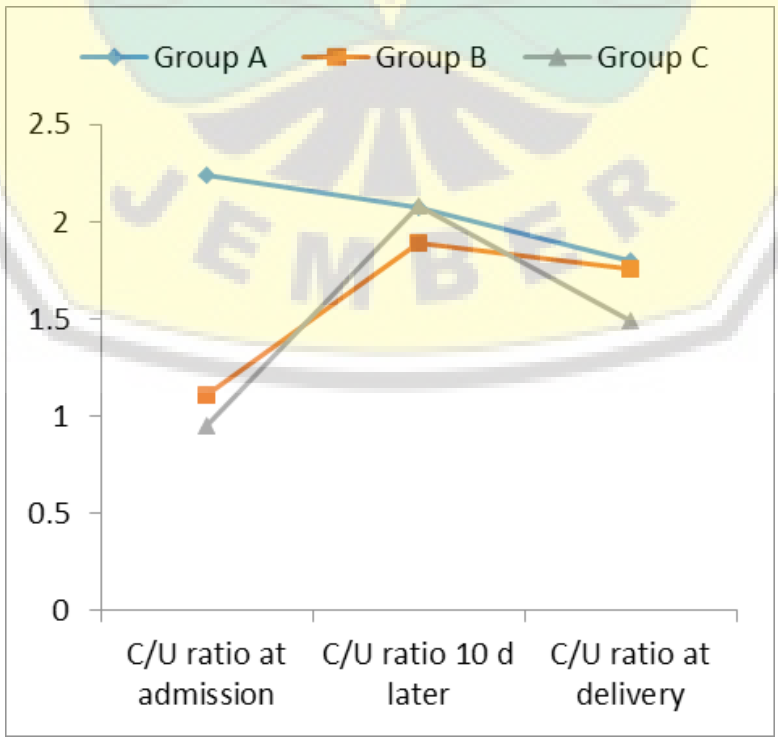
	Group (A) Mildanemia 230patients(~44.1%)	**Group (B) Moderateanemia 250patients(~48%)**	**Group (C) Severeanemia N=41patients(~7.9%)**	
Mean serum ferritin levels.				
Mean serum ferritin on admission (ng/ml)	7.61±1.60 SD	6.53±1.67 SD	4.34±1.13 SD	< 0.001
Mean serum ferritin 10 days later (ng/ml)	7.61±1.60 SD	8.68±1.54 SD	7.00±1.72 SD	
Mean serum ferritin at delivery (ng/ml)	28.99±10.06 SD	23.04±4.01 SD	13.56±3.56 SD	
P value	<0.001			
Mean EFW on admission.				
Mean EFW on admission (gm)	2032.52±103.01 SD	1496.00±456.79 SD	1285.37±320.59 SD	< 0.001 (C vs A and B)
IUGR.				Total
Number of cases	0	160	30	190
% within group	0%	64%	73.17%	36.5%
Mean umbilical artery RI.				P value
Mean umbilical artery RI on admission	0.63±0.01 SD	0.91±0.09 SD	0.98±0.03 SD	< 0.001
Mean umbilical artery RI 10 days later	0.63±0.01 SD	0.72±0.07 SD	0.71±0.10 SD	
Mean umbilical artery RI at delivery	0.57±0.01 SD	0.45±0.05 SD	0.47±0.07 SD	
P value	<0.001			
Mean umbilical artery S/D ratio.				
Mean umbilical artery S/D ratio on admission	2.59±0.16 SD	5.19±2.48 SD	4.60±0.17 SD	< 0.001
Mean umbilical artery S/D ratio 10 days later	2.59±0.17 SD	3.95±0.27 SD	2.68±0.70 SD	
Mean umbilical artery S/D ratio at delivery	2.24±0.06 SD	2.84±0.43 SD	1.76±0.25 SD	
P value	<0.001			
Mean MCA RI.				
Mean MCA RI on admission	0.87±0.01 SD	0.70±0.15 SD	0.53±0.05 SD	< 0.001
Mean MCA RI 10 days later	0.87±0.01 SD	0.79±0.07 SD	0.72±0.03 SD	
Mean MCA RI at delivery	0.78±0.02 SD	0.78±0.03 SD	0.85±0.04 SD	
P value	<0.001			
Mean MCA S/D ratio				
Mean MCA S/D ratio on admission	4.50±0.43 SD	3.23±1.26 SD	2.27±0.45 SD	< 0.001
Mean MCA S/D ratio 10 days later	4.50±0.43 SD	3.92±0.77 SD	3.80±0.39 SD	
Mean MCA S/D ratio at delivery	3.59±0.44 SD	3.99±0.77 SD	4.83±0.21 SD	
P value	<0.001			

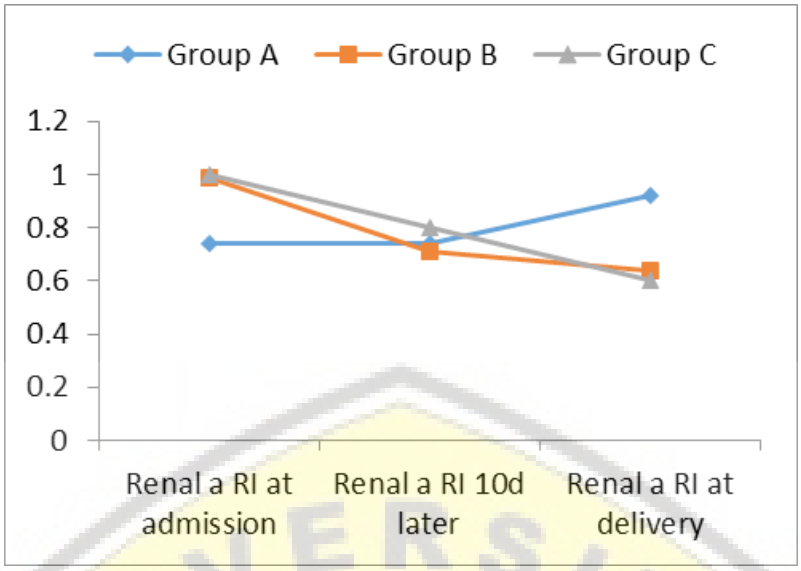
	Group (A) Mildanemia 230patients(~44.1%)	**Group (B) Moderateanemia 250patients(~48%)**	**Group (C) Severeanemia N=41patients(~7.9%)**	
Mean C/U ratio.				
Mean C/U ratio on admission	2.24±0.25 SD	1.11±0.14 SD	0.95±0.07 SD	< 0.001
Mean M/U ratio 10 days later	2.07±0.03 SD	1.89±0.38 SD	2.08±0.2 SD	
Mean C/U ratio at delivery	1.80±0.26 SD	1.76±0.29 SD	1.49±0.23 SD	
P value	<0.001			
Mean Renal artery RI.				
Mean Renal artery RI on admission	0.74±0.05 SD	0.99±0.04 SD	1.00±0.00 SD	< 0.001
Mean Renal artery RI 10 days later	0.74±0.05 SD	0.71±0.06 SD	0.80±0.00 SD	
Mean Renal artery RI at delivery	0.92±0.04 SD	0.64±0.16 SD	0.60±0.10 SD	
P value	<0.001			
Mean AFI.				
Mean AFI on admission (cm)	14.77±1.83 SD	5.80±2.52 SD	3.56±1.12 SD	< 0.001
Mean AFI 10 days later (cm)	13.81±2.30 SD	10.43±2.48 SD	6.46±0.60 SD	
	10.72±1.15 SD	10.76±1.41 SD	8.88±0.87 SD	
P value	<0.001			
Preterm labor.				**Total**
Number of cases	7	20	10	37
% within group	3.1%	8%	24.39%	7.1%
Mean Neonatal birth weight.				P value
Mean Neonatal birth weight in (Kg)	3.42±0.16 SD	3.19±1.90 SD	3.01±0.20 SD	0.068
Mean APGAR score at 5 minutes.				
Mean APGAR score at 5 minutes.	8.49±1.12 SD	9.22±0.83 SD	7.85±0.96 SD	< 0.001
NICU admission.				Total
Number of cases	0	5	4	9
% within group	0%	2%	9.8%	1.7%











Discussion

A significant difference in age, parity, mode of delivery and BMI between group (A), (B) and (C) demonstrated by the percentage of those aged ≥ 30 years in group (C) about 65.85% compared to 30% in (B) and 10% in (A) and the percentage of multiparous women was the highest in group (C) representing 90.24% also high in (B) forming 80% compared with 39.1% in (A).

Mode of delivery showed significant difference between the groups as the rate of CS among multiparous women was higher in group (C) about 81.08% versus 25% in (B) and 16.67% in (A), reflecting higher incidence of ID and IDA with increasing age and parity.

Prepregnancy or early pregnancy BMI measurement revealed higher percentage for underweight being 56.1% in group (C) versus 10% in (A) and (B).

Similar to what was stated: a significant relationship between parity and severity of anemia. Multiparas is more prone for severe anemia due to frequent pregnancies and inadequate spacing versus primigravidas.[5]

But not with the result which suggested that age and parity were independently associated with maternal anemia[13]

Regarding hemoglobin and serum ferritin, the major impact of treatment was in group (C) as the mean hemoglobin concentration was elevated by about 7 g% from admission till delivery; showing the impact of blood transfusion. Yet, hemoglobin in group (B) was elevated about 2.9 g%, while 2 g% in (A)

Ten days after treatment, they elevated and the difference was significant among all groups; a more rapid response may be to parenteral iron than oral iron.

At delivery, further elevation significant difference found between groups (A) and (B) reflecting that both oral iron and parenteral iron had almost a similar impact on hemoglobin and serum ferritin on the long run. Significant difference within the same group compared at time of admission, ten days after treatment and at delivery.

Similar to what stated: for women who required a rapid replacement of iron stores, intravenous iron sucrose is more effective than regular oral iron therapy[9]

IUGR occurred in 36.5% of the study population with the highest percentage in group (C) (73.17%) when compared with (A) and (B); a statistically significant difference between (A) versus (B) and (C) regarding mean EFW on admission and a significant difference between the groups regarding gestational age by dates and that by ultrasound on admission.

No significant effect in group (A) but a significant difference between all groups regarding AFI on admission and ten days after treatment and a potential benefit was the prevention of development of oligohydramnios as pregnancy advances especially in group (C) as there was a significant increase in AFI noticed in group (B) and (C) after treatment versus (A)

This doesn't agree with what stated: there was no significant increase in AFI after treatment [4]

Also as noted in this study that there was an increase in AFI in group (B), (C) ten days after treatment which correlated with a decrease in umbilical artery RI and renal artery RI; showing that increased perfusion in the umbilical artery and in the renal artery may be the cause.

Data regarding the umbilical artery RI and S/D ratio showed a significant difference between group (A) and the other two groups on admission, ten days after treatment with a higher RI in group (A); this might be attributed to the non-effectiveness of oral iron on short-term therapy. On the other hand, at delivery all groups showed improvement in the umbilical artery RI but still group (C) had the best chance. This result also points out to the effectiveness of blood transfusion on the long-term outcome.

Regarding renal artery RI, there was a significant difference between group (A) and other groups on admission and this may be attributed to the higher percentage of cases with IUGR in group (B) and in group (C) in whom IUGR is associated with decreased kidney size and nephron number and hence decreased urine production so decreased AFI which is similar to what has been stated by another studyas regards renal artery RI in cases of IUGR[13]

Ten days after treatment, renal artery RI decreased in all groups with a significant difference between group (A) and other groups. At delivery, the renal artery RI decreased in all groups with a significant difference between group (C) and other groups. This result also points out to the effectiveness of blood transfusion on the long-term outcome.

Similar to what stated: increased impendence to blood flow in the umbilical arteries and the fetal renal arteriesin severe IUGR associated with hypoxemia [15]

The C\U ratio, in group (B) & (C) were below the normal range, reflecting that the fetus adapted by blood flow redistribution towards the brain then corrected by the increase of both the cerebral resistance index and the C/U ratio after blood transfusion and parenteral iron evidenced by a significant difference between all groups regarding mean C/U ratio ten days after treatment.

In group (A), the C/U values were within normal reflecting that the blood flow distribution between the brain and placenta was normal despite being anemic one.

This agrees with: Distribution of fetal blood flow (between the placental and cerebral regions) is determined with C/U ratio, which is the ratio between the cerebral and umbilical pulsatility index. This parameter is always >1.1 during normal pregnancy, but decreases in the case of hypoxia because of increase in placental resistance and cerebral vasodilatation[9]

This agrees with other study which showed similar impact of blood transfusion and parenteral iron on Doppler indices [4]

A statistically significant difference between the MCA RI and MCA S/D ratio among the groups on admission. Ten days after treatment, RI increased in group (B) and group (C) with a significant difference between them and group (A). At delivery, it further increased in group (C) with a significant difference between the groups.

Specific MCA Doppler changes were evaluated specifically MCA PSV and PI in IUGR fetuses. They found that while an abnormal PI preceded an abnormal PSV, the PI demonstrated an inconsistent pattern. MCA-PSV, however, consistently showed an increase in velocity and immediately prior to demise, concluding that MCA-PSV is a better predictor of IUGR-associated perinatal mortality than any other measurement [8]

Regarding MCA PSV as suggestive of fetal anemia due to increased blood velocity; may be an area for future research in this topic to show whether maternal IDA may cause fetal ID and fetal anemia or not aided by cordocentesis to diagnose fetal anemia by hemoglobin level and hematocrit concentration in fetal blood.

Absent end-diastolic flow velocities of the renal artery should be considered suspicious for fetal hypoxia especially if oligohydramnios is documented, it was found that IUGR fetuses with oligohydramnios have a PI above the established values for the 95th percentile. The combination of IUGR, oligohydramnios and elevated PI of the fetal renal artery seems to be associated with an increase in perinatal morbidity and mortality [8, 13]

Preterm labor occurred in 7.1% of the study population being highest in group (C) (24.39%) versus group (A) and group (B) evidenced by a significant difference in gestational age at delivery among all groups.

At delivery, the highest mean neonatal birth weight was in group (A) versus group (B) and group (C) but the difference was not significant.

Neonates of group (C) showed lower mean APGAR scores at 5 min. versus group (A) and group (B) and the difference was significant with no cases needed NICU admission in group (A), while five cases (2%) in group (B) and four cases (9.8%) in group (C) admitted.

This agrees with what stated: severe iron deficiency anemia is associated with poor pregnancy outcome including increased risk of IUGR and preterm labor [12]

Ethical Clearance: by the ethical committee of Obstetrics and gynecology department, Faculty of medicine, Cairo University.

Conflict of Interest: No

Funding: Self

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Design, Synthesis of Imidazole and Study Antibacterial Molecular Docking of New Heterocyclic Derived from Furfural

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Abstract

New imidazole contains, oxazole and thioxoimidazolidin were synthesized by using simple method**.** All compounds were synthesized by using Derivatives aniline as stating material which was obtained from Furfural and Sodium nitrite with. Hydrochloric acid derivatives (S_4, S_5) was obtained from reaction (S_4, S_5) with Thiosemicarbazide while reaction of (S_{11}, S_{12}) with add chloro ethyl acetate derivatives (S_{18}, S_{19}) were obtained reaction of Benzene sulphonyl chloride was reacted with (S_{18}, S_{19}) Triethylamine were get (S_{25}, S_{26}) finally reaction of acetyl chloride was reacted with ($S_{25,}$ S_{26}) Triethylamine were get (S_{32}, S_{33}) FTIR, 1HNMR, GC MASS spectra and molecular docking were used to characterized derivatives

Several bacterial species like *S.aureus, S Epidermitis, Escherichia Coli* and *Klebsiella Sp*were used to tested antibacterial activity .

All the synthesized compounds having promising docking results with COX-2 active site as shown in Compound (, $S_{12,}$ $S_{18,}$ $S_{26,}$ $S_{19,}$ S_{32} and S_{33}) showed H-bond interactions with Arg121 and Tyr356 and these two amino acids exist in the binding with five approved NSAIDs .These compounds have H-bond with Arg121 and Tyr356 which is the binding site of diclofenac, lumiracoxib, tolfenamic acid.

Keywords: *Imidazole, Schiff base thioxoimidazolidin.*

Introduction

The most common Heterocyclic were found good biological molecules like imidazole.[1] containing heteroatoms like nitrogen (N), oxygen (O), or sulfur (S) The best known of the simple heterocyclic compounds are furan, and thiophene molecules with five and six membered rings mostly are high activity .[2-5]. All natural products with heterocyclics are important in biologically and molecular docking active system[6] and medicinal to approved drugs. imidazole derivatives in heterocyclic chemistry considered most important compounds and drugs used as antibiotics, anticancer,[7] anti-tubercular,[8] antibacterial,[9] antifungal,[10] anti-HIV,[11] anti-inflammatory,[12] antioxidant,[13] antimicrobial,[14] and anti-ulcer[15].

Method

General procedure for the synthesis of 5-Arylfuran-2-carbaldehyde (S_4, S_5): These compounds were synthesized characterization the procedure in reference [16]. 4-Substituted aniline (0.272 mole) a mixture of concentrated HCl (67.4 m L) and H_2O (45 mL). The solution to 0ºC with Sodium nitrite (19 g, 0.276 mole) dissolved in H_2O (50 ml). The solution was stirred for 20 min, refinement and then furan-2-carboxaldehyde (30.8 g, 0.32 mole) in H_2O

(100 mL) was added with a solution of Cu -Cl_2 H_2O(5g, 0.08mol) in H_2O (50 mL) at a temperature of 10–12 C. The reaction mixture was slowly warmed up to 35C recrystallized from ethanol.

Synthesis of (2-((5-Arylfuran-2-yl) methylene) hydrazine-1-carbo-thioamide)(S_{11}, S_{12}): To compound derivatives (5 Aryl furon-2-carbaldehyde) (S_4, S_5), (0.01 mole in 30ml ethanol) at room temperature, (2-3) drop from glacial acetic acid was added. The mixture was stirred for (10min) and add thiosemicarbazide (0.01mole, 0.009gm). The mixture was refluxed for (12hrs). The reaction is allowed to cool, then the mixture was poured in to crushed ice and recrystallized from ethanol or methanol to yield desired compound[17].

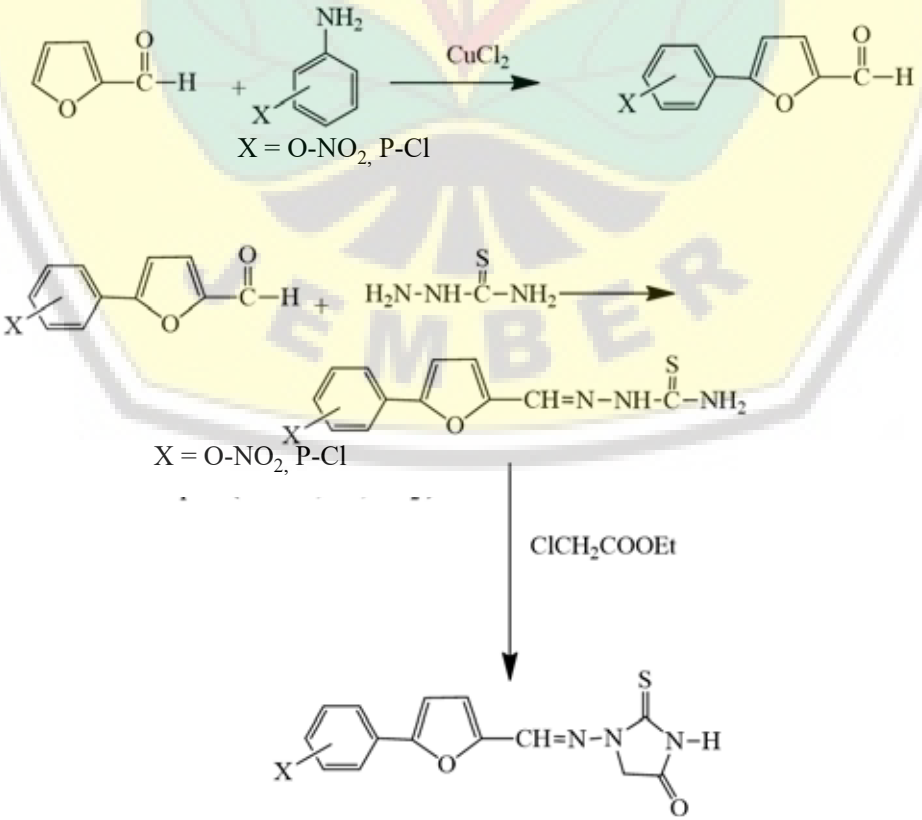
Synthesis of (1-(((5-Arylfuran-2-yl) methylene) amino)-2-thioxoimid-azolidin-4-one) (S_{18}, S_{19}): To compounds (0.02mole) (S_{11}-S_{12}) in 30ml (1,4-dioxane) at room temperature Sodium bicarbonate was added (0.02mole,0.645gm) with stirred for (30min) and added Ethyl chloro acetate (0.02mole,2.46gm). The mixture was the refluxed for (30hrs). Then powered into ice water. After that the precipitate filtered off and the solid was recrystallized by using dioxane to yield the desired compound. [18]

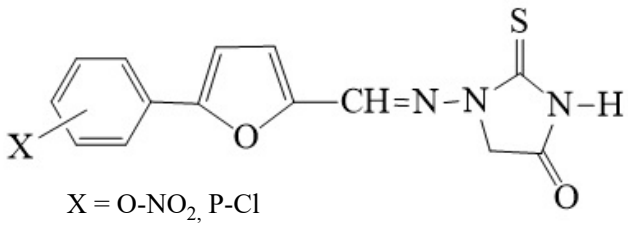
Synthesis of ((Z)-1-(((5-Arylfuran-2-yl) methylene) amino)-3-(phenylsulfonyl)-2-thioxoimidazolidin-4-one) S_{25} _ S_{26}: Compounds (S_{18} _ S_{19})(0.001mole) in 25ml of (1, 4-dioxane) stirring for (10 min). Triethylamine Et_3N was added with stirring for (1hr) in ice bath and then added benzene sulphonyl chloride (0.001mole, 0.176 gm) to a stirred solution of compound. The mixture was the refluxed for (22hrs)(at 120 ºC).

Synthesis of ((Z)-3-acetyl-1-(((5-phenylfuran-2-yl) methylene) amino)-2-thioxoimidazolidin-4-one) compounds S_{32}_ S_{33}: Compounds (S_{25} _ S_{26})(0.001mole) in 25ml of (1, 4-dioxane) stirring for (10 min). Triethylamine Et_3N was added with stirring for (1hr) in ice bath and then added acetyl chloride (0.001mole, 0.078gm) to a stirred solution of compound. The mixture was the refluxed for (10 hrs.) 110 ^{0}C

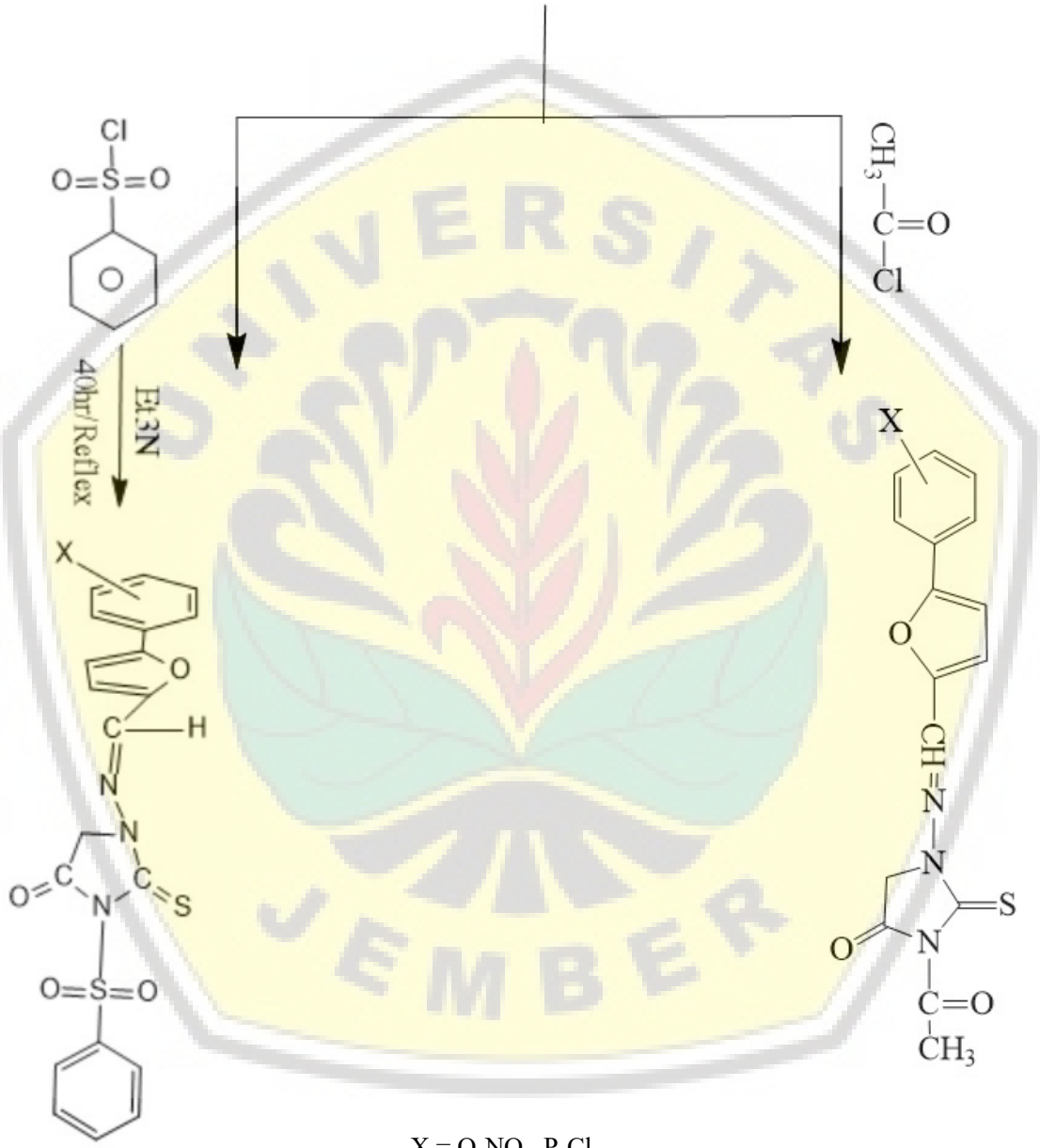
Results and Discussion

Scheme (1) shown all compounds were synthesized





X = O-NO_2, P-Cl



X = O-NO_2, P-Cl

Synthesis of target **(S_4)** was done by the reaction of 4-substituted aniline with Furan-2-carboxaldhyde through nucleophilic mechanism. (80%).m.p (90-95), color (Yellow), The FT-IR spectrum of compound (S_4), shows stretching vibration of (C=C) of Aldehyde at (1510_1600) cm^{-1} and appearance of new band at (1680) cm^{-1} for (C=O)

Compound (S_4) was treatment with aryl lead to formation of compounds (S_{11})

(S_5):yield (58%), FT-IR cm^{-1}C=O(1674), (C=C) ar. (1519,1599), (C-H)ar. (3090) Compound (S_5) was treatment with aryl lead to formation of compounds (S_{12})

(S_{11}):yield (80%), FT-IR cm^{-1}C=N(1597) (C=C) ar. (1516,1573), (C-H) ar. (3076)NO_2 (1350,1546),1H-NMR(ppm), s, (8.35) for (N=CH),s (11.59) (NH) (7.11-7.12) (m,aromatic protons) .

(S_{12}):yield (60%), FT-IR cm^{-1} C=N(1595), (C=C) ar.(1591,1510), (C-H) ar.(3066), (C-Cl) 975. 1H-NMR(ppm), s, (8.35) for (N=CH), s (11.59) for (NH) (7.32-7.77) (m,aromatic protons .

(S_{18}):yield (70%), FT-IR cm^{-1}C=N(1637), C=O(1710),(C=C)ar. (1521,1595),(C-H) ar. (3026),1H-NMR(ppm), s, (4.05) for (CH_2), s,(8.20) for (N=CH), (7.06-8.13) (m,aromatic protons)the mother ion peak at (m/z=330), as a base peak, which is corresponds to (M+). The others fragments and their relative abundances the molecular formula of the compound $C_{14}H_{10}N_4O_4S$.Treatment of (**S_{18}**) with benzene sulphonyl chloride gives (**S_{25}**)

(S_{19}):yield (77%), FT-IR cm^{-1}C=S (1074), C=N(1647), C=O(1708), (C=C)ar.(1521,1597), (C-H)ar. (3055),1H-NMR (ppm), s, (11.98) for (NH), s,(3.92) for (CH_2), (7.6-7.77) (m,aromatic protons) the mother ion peak at (m/z=319), which is related to (M+). The others fragments and their relative abundances the molecular formula of the compound $C_{14}H_{10}N_4O_4SCl$.Treatment of (**S_{19}**) with benzene sulphonyl chloride gives (**S_{26}**).

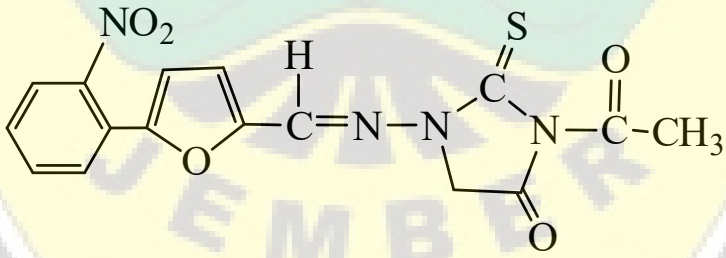
(S_{25}):yield (73%), FT-IR cm^{-1} NO_2 (1321,1572), C=N(1635), C=O(1708), (C=C) ar. (1521,1595), (C-H) ar. (3060),^{13}C-NMR (ppm), (173.55) for (C=O), (165.08) for (C =S), (150.01) (C=N) .

(S_{26}):yield (77%), FT-IR cm^{-1} NH_2 (3389,3143), C=N(1676), C=O(1716), (C=C) ar.(1521,1597),(C-H) ar. (3059), (C-Cl) 829

Treatment of (**S_{25}**) with acetyl chloride gives (**S_{32}**).

(S_{32}):yield (86%), FT-IR cm^{-1} NO_2 (1356,1554), C=N(1633), C=O(1712),(C=C) ar. (1521,1610),(C-H) ar.(3022),(C=S),(1024)., (C=O) Amid (1668), the mother ion peak at (m/z=372), which is related to (M+). The others fragments and their relative abundances the molecular formula of the compound $C_{16}H_{12}N_4O_4S$. shown in figure (3-1)

(S_{33}):yield (65%), FT-IR cm^{-1}, C=N (1651), C=O imidazole (1732), (C=C) ar. (1506,1600), (C-H) ar. (3086),(C=S), (1026).,(C=O) Amid (1654), the mother ion peak at (m/z=361), as a base peak, which is corresponds to (M+). The others fragments and their relative abundances the molecular formula of the compound $C_{16}H_{12}N_3O_3SCl$.shown in figure (3-2)



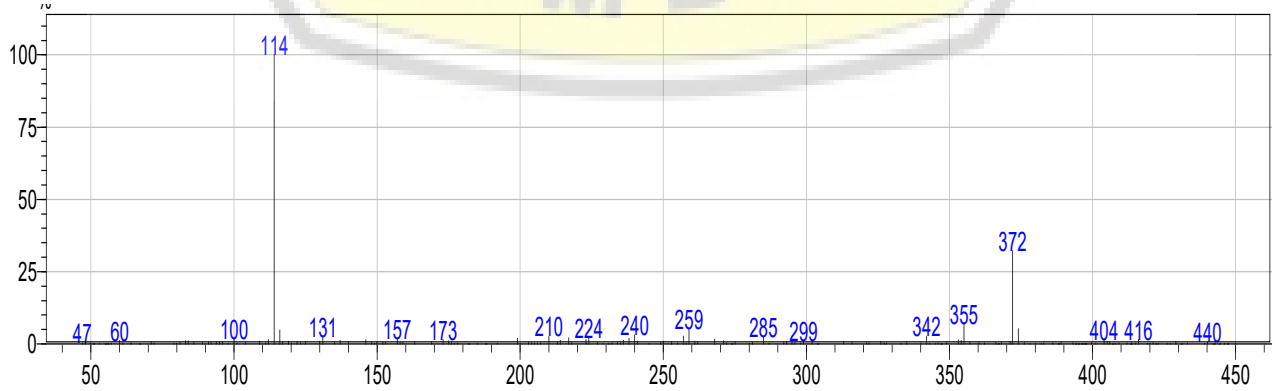
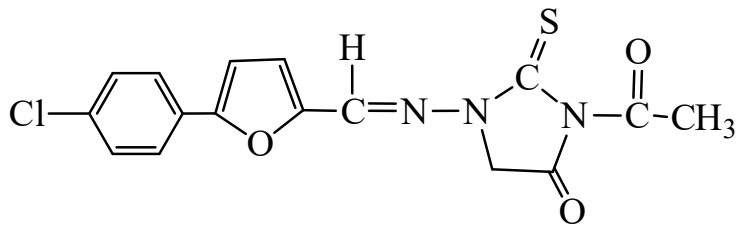


Fig. 1 The Mass spectrum of compound S_{32}



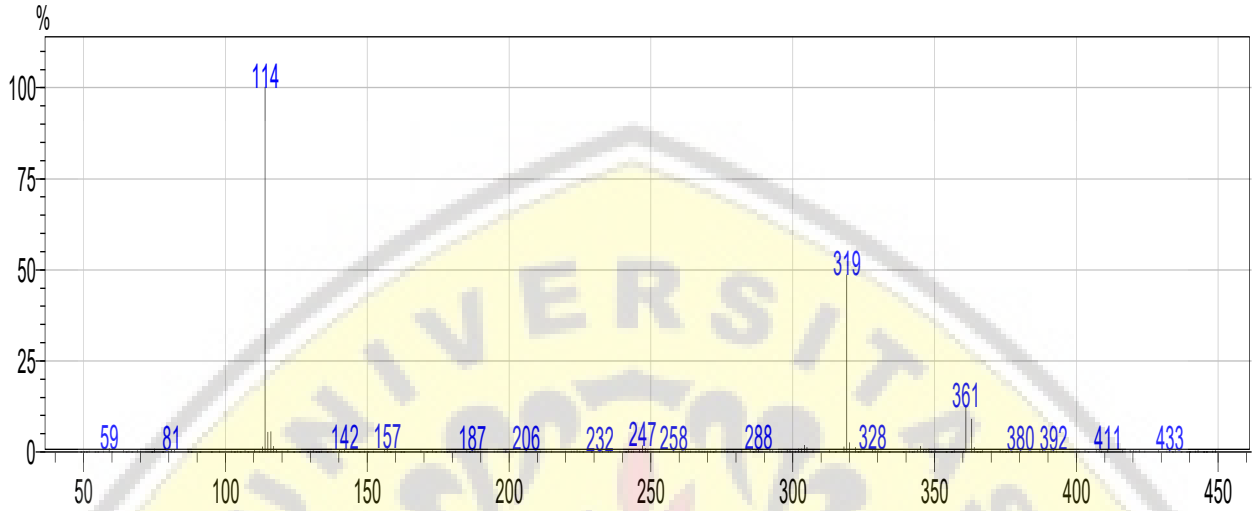


Fig. 2 The Mass spectrum of compound S_{33}

Antibacterial Activity of Derivatives: The effect of compounds **(**S11, S12, S18, S19, S25, S26, S32, S33**)** was evaluated against *Staphylococcus aureus and Staphylococcus Epidermitis* (gram positive bacteria), *Escherichia Coli* and *Klebsiella Sp* (gram negative bacteria. Most of prepared compounds revealed a good activity against *S.aureus, S Epidermitis* .It might be observed that derivatives which that tested were active but (S12, S25 and S26) have high activity toward in *S. aureus* and (S11, S12, S19 and S32) have high activity toward in *SEpidermitis* of tested bacterial and while compound (S11, S18 S19 and S33) in *S. aureus* and (S18, S25 S26 and S33) in *SEpidermitis* have weak activity toward all types of tested bacteria compound (S25) was showed high inhibition with *S. aureus*

Table 1. Antibacterial Activity of derivatives (S_{11}, S_{12}, S_{18}, S_{19}, S_{25}, S_{26}, S_{32}, S_{33})

Comp. No.	Inhibition Zone			
	S. aureus	E. Cola	SEpidermitis	K.Sp
S11	14	-	17	10
S12	18	-	19	10
S18	9	-	12	10
S19	14	10	17	-
S25	20	4	7	16
S26	19	-	14	11
S32	16	-	17	-
S33	14	-	12	12

(-) No inhibition zon

Interpretation of the results of docking study: The COX-2 inhibitory activity of the compounds (S_{26}, S_{33}, S_{32}, S_{18} and S_{12}) 6MNA, diclofenac, and naproxen were ranked based on their PLP fitness involved in the complex formation at the active sites. The PLP fitness of the docked compounds on COX-2 was found in the range of 79.73, 71.29, 68.85, 67.26, 64.29, respectively Table (1)

Table 2. The binding energies for NSAIDs docked with COX-2.

Code	Binding energy (PLP Fitness)	Amino acid included in H-bonding	No of bonding	Power of bonding
Ibuprofen	65.81	ARG121	1	2.920
		TYR356	1	2.651
S26	79.73	ARG121	1	2.888
		ARG121	1	2.875
		TYR356	1	3.043
S33	71.29	TYR356	1	3.037
S32	68.85	TYR356	2	3.033
				2.499
		SER531	1	3.024
		ARG121	2	2.998
				2.917
		ARG121	1	2.821
S18	67.26	SER120	1	2.910
		TYR356	1	2.881
S12	64.29	LEU353	1	3.057
		SER354	2	2.972
				2.597
		HIS90	1	2.972

Conclusions

The compounds were synthesized by using Derivatives aniline as starting material which was obtained from Furfural and Sodium nitrite with. Hydrochloric acid to give derivatives aldehyde the compound against different pathogenic bacteria and yeast were achieved using 125 µg/ml concentration as illustrated. The effect of compounds **(S_{11}, S_{12}, S_{18}, S_{19}, S_{25}, S_{26}, S_{32}, S_{33})** was evaluated against *Staphylococcus aureus and Staphylococcus Epidermitis Escherichia Coli* and *Klebsiella Sp*. All the synthesized compounds are promising docking results with the COX-2 active site as shown in Compound (, S_{12}, S_{18}, S_{26}, S_{19}, S_{32} and S_{33})

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Effect of Fortifying Whole Wheat Flour with Frankincense Powder as a Good Nutritional and Antioxidant Source

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Abstract

This research was to supplement the whole wheat flour with frankincense to produce a high nutritional value of biscuits at 2, 4 and 9%, respectively. The chemical composition of Boswellia frankincense and it is blends biscuits and also nutritional, physical, functional and sensory qualities of biscuits fortified product were determined.

The results showed that, Boswellia frankincense powder rich in content with essential oil. In a related the results showed that, chemical composition is higher in different biscuits blends. The sensory characteristics were non - significant decrease in total general acceptance. Similar results in the functional and physical properties were found of the resulting biscuit samples. Generally, all supplemented levels of frankincense powder showed acceptable results in the sensory, physical and functional characteristics in biscuits with a significant improvement in the nutritional qualities.

Keywords: *Boswellia frankincenser, whole wheat flour, essential oil, antioxidant.*

Introduction

Nowadays, consumers are increasingly recognizing the need to eat functional foods that contain nutrients that provide additional health benefits besides basic nutritional needs[1]. Whole meal wheat flour had contained basically rich fiber, minerals, vitamins, and natural antioxidants than white flour. Thus whole cereal wheat flour is assumed to be as an excellent source of nutritional constituents for people's health with many other benefits[2]**.** The whole meal wheat flour acceptable processing from cereal products which appearance an increased nutritional balance. Utilize the active role of cereals is hopeful for the processing of functional products whose specific advantage will have to be appearances [3].

Bakery products are the greatest public processed food in the global[4]. Among that, biscuits considered the most group of snack foods between bakery products for the reason that they are prepared from simple and easily able to be used raw materials. They are more consumed for the reason that they have a very able to be agreed with taste. Therefore, there is the most necessary to become better their nutrient value to feed poorly nourished people as well as children [5]**.**

Frankincense is a famous material that Sold and located in the stores of Arab herbs and medicinal herbs and uses Frankincense in traditional medicine to treat many diseases. Chemically, frankincense consists of colloidal acids (56-65), gum materials (20 -36%), volatile oils (4 - 8%), respectively[6]**.**

The objective of this research was to assess the influence of frankincense powder addition on whole wheat biscuit targeting good sensory acceptance with high nutritional value.

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Materials and Method

Materials: Wheat seeds were obtained from Grain Soils and Flour Mills Organization at KSA. Frankincense powder and other ingredients were purchased from the local market at Jeddah, KSA.

Method

Preparation of whole wheat flour and its blends: Wheat seeds were milling to give powder and sieving through a 60 - mesh sieve to obtain symmetric flour as recommended by **Hallab *et al.*[7]**.

Whole wheat flour was well blended with frankincense powder at levels 2, 4 and 9% to produce biscuits. The control was also prepared with 100% wheat flour. The biscuits were baked at 170-180°C for 12 min.

Chemical analysis of frankincense and biscuits: Alcohol-soluble resin, water soluble gum and essential oil fractionated using GC-MS were determined in frankincense according to **AOAC[8]**. Biscuits and its blend were chemically analyzed for moisture, ash, lipids, fiber and protein contents according to **AOAC [8]**.

Sensory evaluation of biscuit: Biscuit produced using suggested blends were evaluated for their sensory characteristics by ten panelists mentioned by **AACC [9]**.

Texture analysis of biscuits:

Hardness and Breaking strength were measured by using texture analyzer

Physical and color properties of biscuit:

Sai-Manohar and Haridas-Rao[10] was calculated the thickness (mm), spread ratio (mm), thickness (mm), weight (g), volume (cm) and specific volume (cm^3/g) was measured in different blends biscuits.

Color (L^*, a^* and b^*values) of the biscuits was determined by using hunter colorimeter

Functional properties: Bulk density was determined by **Wang and Kinsella[11],** water absorption capacity and index by **Anderson[12],** dispersibility by **Kulkarni [13]**, swelling power and solubility index by **Takashi and Seib [14]**.

Phytochemical and microbiological assay: Antioxidant activity, flavonoids, polyphenolic and tannin were determined by **AOAC[8].** Total bacteria count and yeast and mold were assayed according to**[15].**

Statistical Analysis: All the obtained data were statically analyzed by SPSS computer software**[16]**.

Results and Discussion

Chemical composition of Boswellia frankincense: The result from Table (1) showed that the frankincense resin contains 8.0% essential oil, 60.8% alcohol-soluble resin, 23.4% water soluble gum and 9% other active compounds. The GC-MS analysis of frankincense essential oils observed that the major components were methylchavicol, α-thujene and α-pinene (11.0, 10.0 and 8.2%, respectively). These results are confirmed with **[17]** found that Boswellia resin had contained about 5-9% essential oil, 65-85% alcohol-soluble resin, and the residual 21-22% is water-soluble gum. Also, they indicated that the Boswellia resin oil consists of major compounds were α-thujene, α-pinene, sabinene and methylchavicol (12.0, 8.0, 3.8 and 11.6% respectively).

Table (1): Chemical composition of Boswellia frankincense

Components		**%**
Alcohol-soluble resin		60.8
Water soluble gum		23.4
Essential oil		8.0
The major component of the essential oil	α-pinene	8.2
	α-thujene	10
	Sabinene	1.9
	β-pinene	0.8
	Myrcene	3.5
	α-phellandrene	0.8
	Limonene	2.0
	Methylchavicol	11.0
	Cembrenol	1.8
Other active compounds		9.0

Chemical composition of biscuits with frankincense: The present results from Table (2) revealed that the biscuits with frankinens recorded the highest result in ash, fiber and lipids were 1.44, 2.46 and 19.32% for 9% frankinens biscuits compared with 1.36, 2.41 and 18.68% for control samples biscuits

Meanwhile, the highest value of crude protein was recorded for control samples followed by biscuits with 2% frankinens being 11.42 and 11.30%, respectively. These results are agreement by **Al-Harrasi *et al.*[18]** found

that, the proximate analysis of Boswellia were from 6.25 to 10.65% for moisture, From 1.02 to 6.66% for ash, from 0.25 to 1.14% for protein, from 13.30 to 24.8% for carbohydrates and from 71.56 to 77.38% for lipids.

Table (2). Chemical composition of biscuits with frankincense.

Samples	Moisture	Protein	Lipids	Ash	Fiber	Carbohydrate
100% WWF Control	3.84[a] ±0.12	11.42[a] ±0.38	18.68[b] ±0.58	1.36[a] ±0.03	2.41[a] ±0.13	66.13[a] ±1.12
2% Frankincense	3.83[a] ±0.09	11.30[a] ±0.23	18.88[b] ±0.29	1.38[a] ±0.06	2.39[a] ±0.08	66.05[a] ±1.23
4% Frankincense	3.85[a] ±0.13	11:22[a] ±0.12	19.03[ab] ±0.19	1.42[a] ±0.10	2.43[a] ±0.17	65.90[a] ±1.22
9% Frankincense	3.90[a] ±0.11	10.96[ab] ±0.10	19.32[a] ±0.49	1.44[a] ±0.08	2.46[a] ±0.19	65.86[a] ±0.90

Sensory evaluation and texture analysis of biscuits with frankincense: From the results sensory evaluation in Table (3) and Photo (1), it could be seen that no significant variations ($p>0.05$) among control biscuit sample and biscuit sample contained 2% level of frankincense powder for taste. While significant differences ($p<0.05$) were recorded in the control biscuit and biscuit which prepared by using 4 and 9% frankincense powder.

The color acceptability score for control, and biscuit made from blends containing 2, 4 and 9% frankincense powder were 18.3, 18.5, 18.7 and 18.7, respectively. Changes in color and taste in biscuit may be due to aroma volatiles in frankincense powder. Biscuit color improvement with increasing frankincense powder due to the frankincense essential oil which was light yellow[19].

The biscuit hardness in the same table was increased at 2% frankincense powder levels but again a lowering was shown at 4 and 9% frankincense levels. Higher fiber content in frankincense powder than whole wheat flour perhaps refers to elevating hardness of the biscuits in proportion to 2% frankincense powder. Although, the high levels of fat content was increased in frankincense led to decreasing the hardness of biscuits made of 4 and 9% frankincense powder than control samples. These results confirmed with **Emami *et al.*[20]** who found that, the hardness of biscuits increasing as a result of fat reduction.

Photo (1): Biscuit with frankincense powder

Table (3): Sensory evaluation and texture analysis of biscuits with frankincense

Samples	Hardness (g)	Breaking strength (Load in g)	Color	Taste	Odor	Appearance	Crunchines	Total
100% WWF	2395^{b} ±4.52	360^{a} ±1.16	18.3^{b} ±0.17	19.7^{a} ±1.19	19.9^{a} ±1.00	18.5^{a} ±0.89	18.6^{a} ±1.05	95.0^{a} ±1.57
2%F	2411^{a} ±3.78	362^{a} ±2.02	18.5^{a} ±0.82	19.4^{ab} ±1.52	19.0^{b} ±0.72	18.25^{a} ±0.82	18.45 ±0.41	93.5^{a} ±3.89
4%F	2269^{c} ±6.18	322^{c} ±2.45	18.7^{a} ±0.72	18.4^{ab} ±0.72	18.7^{c} ±0.56	18.75^{a} ±0.65	18.45^{ab} ±0.99	92.8^{a} ±2.56
9% F	2201^{d} ±5.19	287^{d} ±1.96	18.7^{a} ±1.29	17.8^{b} ±0.94	18.7^{c} ±0.56	18.35^{a} ±0.32	18.3^{ab} ±0.78	91.7^{a} ±1.92

Physical and color characteristics of biscuits with frankincense: From the results in Table (4), it could be observed that, the control sample biscuits had a weight of 61.58g and volume 205 cm^3 with specific volume of 3.33 cm3/g. The replacement of whole wheat flour with different levels of frankincense powder caused gradual slightly increase in the weight of prepared biscuit parallel with increasing the level of substitution. The making greater in biscuit weight could be the reason for the whole meal wheat has contained rich amounts from fiber content which characterized by great water holding capacity[21].

Moreover, there were no significant variation ($p>0.05$) in volume and specific volume between control and biscuit sample which substituted with frankincense powder except biscuits made of 9% frankincense powder was decrease in volume. Also, the obtained results showed that the average thickness value of the control biscuit sample was 8.7 mm and it showed non-significant decrease with increasing frankincense powder levels.

The results in a Table (3) showed that the *L** degrees of biscuit samples lowering while *a** degree was elevated with increasing the ratio of frankincense powder, but *b** degrees trended non - significant decrease except biscuit with 9% frankincense powder which showed significant decrease compared with the control samples. The slightly reduction of *L** degrees and increased *a** degrees didn't affect the darkening of the biscuit. The slight improvement in color was interpreted as a color of frankincense oil (light yellow) as[19] found; it was dependant on the fortification level.

Functional properties of biscuits with frankincense: The results from Table (5) showed that the water absorption index ranged from 4.01 to 3.49 whilst the water absorption capacity ranged between 92.5 to 94.2%. The water absorption capacity of the wholemeal wheat flour was decreased than different blends, this could be confirmed that the addition of frankincense powder to wheat flour give high water binding capacity, which in turn to become better the reconstitution ability[22]. The solubility index and swelling power of the flour samples ranged from 9.92 and 10.29 to 8.88 and 9.89%, respectively. **Moorthy and Ramanujam[23]** observed that the swelling power of flour granules is a significance of the extent of associative forces within the granule. The value of dispensability was increased in blends from 74.3% in control biscuits to 75.6% in different biscuits blends. Thus, they will easily reconstitute to lead fine consistency dough through mixing [24].

The bulk density of the flour samples ranged between 0.64 and 0.71 g cm-3. The bulk density is mostly influenced by the particle size and the density of flour or flour blends and it is quite significant in determining the packaging need, raw material treatment and usage in wet processing in the food industry[22].

Phytochemical and antimicrobial activity of different biscuits: Table (6) indicated that the results phytochemical activities are shown that increase significantly with increasing addition of frankincense powder to whole wheat flour to produce of biscuits. This is due to frankincense contained a high percentage of antioxidants. **Masoud *et al.*[25]** found that frankincense had contained rich amounts from antioxidant components showed that higher activities. Thus, frankincense can also be utilized as an antioxidant complement.

Table (4): Physical and color characteristics of biscuits with frankincense

Physical Prorertie	100% WWF Control	2% Frankincense	4% Frankincense	9% Frankincense
Weight (W) (g)	61.58^{c} ±1.6	61.82^{b} ±1.02	62.11^{ab} ±2.26	62.43^{a} ±0.92
Volume (cm3)	205^{a} ±2.65	197^{a} ±2.77	193^{ab} ±3.12	187^{b} ±4.15
Specific volume (cm3/g)	3.33^{a} ±0.02	3.18^{a} ±0.07	3.11^{a} ±0.11	3.00^{ab} ±0.15
Thickness (T) (mm)	8.7^{a} ±0.82	8.5^{a} ±0.72	8.4^{a} ±0.62	8.4^{ab} ±0.48
Spread ratio W/T	5.24^{a} ±0.19	5.35^{a} ±0.20	5.41^{a} ±0.30	5.38^{a} ±0.62
Color Biscuits				
L	58.40^{a} ±1.00	57.59^{b} ±1.36	57.05^{c} ±1.19	56.99^{d} ±0.79
a	11.44^{b} ±0.58	11.59^{b} ±0.82	11.85^{a} ±0.41	11.99^{a} ±1.32
b	18.67^{a} ±1.02	18.41^{a} ±1.18	18.31^{ab} ±0.72	18.01^{b} ±0.42

Table (5): Functional properties of different biscuits blends

Sample	Water absorption index	Solubility index	Swelling power (%)	Water absorption capacity (%)	Dispersibility (%)	Bulk density (g cm^{-3})
100% WWF	4.01^{a} ±0.06	9.92^{a} ±0.42	10.29^{a} ±0.22	92.7^{c} ±1.03	74.3^{b} ±1.18	0.69^{a} ±0.05
2%F	3.94^{a} ±0.12	9.84^{a} ±0.39	10.02^{a} ±0.33	92.5^{c} ±0.99	75.6^{a} ±2.05	0.64^{a} ±0.09
4%F	3.48^{b} ±0.09	9.87^{a} ±0.57	10.19^{a} ±0.14	93.8^{b} ±0.67	75.4^{a} ±1.58	0.71^{a} ±0.03
9% F	3.49^{b} ±0.05	8.88^{b} ±0.12	9.89^{ab} ±0.19	94.2^{a} ±1.92	75.5^{a} ±0.96	0.64^{a} ±0.10

The antimicrobial activity in the same table indicated a decrease of the total count and a total colony of yeast and mold of biscuit blends with increasing frankincense powder from 2% to 9%. The biological activity of frankincense resins may be caused the volatile oil and their derivatives[26].

Conclusion

It could be concluded that the frankincense powder was added at different levels from 2 to 9% and the resulting biscuits had contained the highest amount 9% of frankincense showed that the lowest value in overall acceptability. Biscuits with 2 and 4% frankincense were without a sufficiently changed in physical and sensory characteristics. Incorporation of frankincense in formulation markedly increased the antioxidant content and antimicrobial activity.

Table (6): Phytochemical and antimicrobial activity of different biscuits

Sample	Total antioxidant activity µmol/100 g	Flavonoids mg/100 g	Tannin mg/100 g	Total polyphenolic mg/100 g	Total count of bacteria cfu/g after 5 days	Yeast and mold cfu/g after 5 days
100% WWF	245^{d} ±4.89	3.79^{d} ±0.14	N.D	78.33^{d} ±3.82	30^{a} ±3	20^{a} ±5
2%F	1972^{c} ±12.32	18.93^{c} ±1.72	N.D	104.22^{c} ±2.89	22^{b} ±2	15^{b} ±3
4%F	4796^{b} 19.79	26.34^{b} ±1.92	N.D	189.85^{b} ±4.95	21^{b} ±1	11^{c} ±2
9% F	8939^{a} ±25.65	37.22^{a} ±1.36	N.D	245.55^{a} ±4.62	16^{c} ±1	8^{d} ±1

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Conflict of Interest: No

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Effect of Different Intensities of Ultrasound on Pain and Myoelectric Activities of Upper Trapezius Myofascial Trigger Points

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Abstract

Purpose: Purpose: This study aimed to investigate the effects of high-power pain threshold ultrasound versus conventional ultrasound on upper trapezius myofascial trigger points. Method: Seventy participants with active trigger points were randomly divided into three groups, groups A, B and C. Group A (n=23) received high-power pain threshold ultrasound twice/week for two weeks. Group B (n=24) received conventional ultrasound twice/week for four weeks. Group C (n=23) (control group) received sham ultrasound twice/ week for four weeks. Visual analogue scale (VAS) scores, surface electromyography were used to evaluate participants pre and post-treatment. Results: According to the within-group analysis, there were significant differences in all variables between pre- and post-treatment in the three groups ($p<0.05$). The between-group analysis revealed a significant decrease ($p <0.001$) in the normalized resting electromyographic (EMG) activity of the left trapezius after treatment in group A compared with group C. Groups A and B had significantly greater decreases in VAS scores after treatment than group C ($P<0.005$). In addition, group A had significantly lower VAS score after treatment than group B. Conclusion: Both techniques of ultrasound are effective for the treatment of subjects with active trigger points, but high-power pain threshold ultrasound is superior.

Keywords: *High-power pain threshold ultrasound, conventional ultrasound, surface electromyography, myofascial trigger points.*

Introduction

Myofascial pain syndrome (MPS) is a type of chronic pain disorder that affects a portion of the population that is characterized by the existence of trigger points. Trigger points are hyperirritable loci inside a tight band of skeletal muscles and are commonly observed in the upper fibres of the trapezius due to overload and microtrauma.[1] Trigger points are clinically categorized as latent or activemyofascial trigger points (MTrPs), Pain and increased resting myoelectric activity are present for active MTrPs. in individuals with active trigger points, consistent with a previous neurophysiological study.[2]

The production of heat is the main and most widely recognized effect of ultrasound (US), which is considered one of the most common techniques that used for the treatment of MPS. The thermogenic effect of US leads to a transient increase in the flexibility of dense collagenous structures which subsequently reduces joint stiffness, pain and associated muscle spasms and momentarily increases circulation.[3]

Previous studies that examined the effect of US for treatment of MPS have commonly administered as

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conventional US which is between 0.8- 1.5 watt/cm², which has improved MPS.[4,5]

Some studies have also evaluated another type of US therapy, namely, high-power pain threshold ultrasound (HPPTUS), and have reported that it is effective in the treatment of MPS.[3,4,6]

To date, few studies have investigated the effect of US on EMG activity in MPS. Therefore, this study provides new insights and major contributions regarding the effect of US on EMG activity in MPS.

The current study aimed to compare the effects of HPPT and conventional US therapy on pain, myoelectric activities in individuals with upper trapezius active trigger points.

Materials and Method

This randomized clinical trial was performed at the Laboratory of Electromyography, Faculty of Physical Therapy, Cairo University. The study protocol was approved by the research ethics committee of the Faculty of Physical Therapy (NO: P. T. REC/012/001519) and registered in the Pan African Clinical Trial Registry. (Registry ID PACTR 201712002882400).

Sample Size Calculation: The minimum required sample size was calculated to be 20 patients per group. This calculation was designed to reveal an effect size of 0.5 with an alpha of 0.05 and a power of 80% considering the visual analogue scale (VAS) score as the primary outcome. Based on the sample size estimation while considering a probable dropout rate (10%) and our available resources for conducting this study, we aimed to include 70 patients. The number of patients was calculated using G*Power (version 3.1.9.2) (Franz Faul, Uni Kiel, Germany).

Participants: Seventy participants their ages ranged from 18 to 30 were provided verbal and written explanations of the purpose of the study. If the participant agreed to participate, he or she signed a consent form that was approved by the Faculty of Physical Therapy. Then, the participants were randomly allocated to the following three groups by software randomization (1:1 allocation ration) using randomly permuted block sizes created with a random number generator: Group (A) received HPPT-US on the bilateral upper trapezius in four sessions at 3-day intervals. . Group (B) and group (C) received conventional and sham US respectively on the bilateral upper trapezius for four weeks twice per week.

Inclusion and exclusion criteria:

Participants were included if they had active MTrPs in the upper trapezius muscle bilaterally and complained of pain at rest, jump sign at pressure, had a limited range of motion (ROM), or experienced referred pain.[7] Participants were excluded if they had a history of any degenerative disorders, cervical disc hernia or fibromyalgia that might cause pain or if they had MPS and had received any therapy within the previous 6 months. Heavy manual laborers and patients who regularly performed physical exercises, had any systemic diseases, had previous neck or shoulder surgery, or had any contraindication for US therapy were also excluded.[5]

Instrumentation:

Assessment Instrumentation: Pain intensity was assessed using the VAS. The scale is presented as a line: one end of the line corresponds to no pain, and the other end of the line corresponds to the worst possible pain. Use of the VAS is a valid and reliable method for assessing pain intensity. Each participant was instructed to put a point on the line to identify the pain intensity. [8]

Myoelectric signals were identified bilaterally from the upper trapezius muscle by usinga two-channel digital electromyogram device (Neuro-EMG-Micro, Neurosoft, Ivanovo, Russia).

Treatment Instrumentation: The equipment used for US for all groups was a Med Serve system (England NN114HE, Prosound/ULS-1000, S/N: U0547).

Procedures: Group (B) received a standard dose of US therapy (conventional US) in continuous mode (1 MHz, intensity of 1.0 W/cm²) during which the head of the US device was moved in a circular motion over the trigger point for 5 min.[9] Group (C) received sham US, which involved the same procedures as conventional US except that the US device was switched off. Group (A) received HPPT-US using the same device in the same mode and at the same frequency. The probe was held fixed over the trigger point, and the US dose was increased until intolerable pain was felt by the participant. The probe was held fixed for 3 s at the dose at which intolerable pain was felt, and then, the dose was decreased by half. At this dose, the probe was moved in a circular motion over the trigger point and the surrounding

area for 15 s, and then, the dose was increased a second time in a similar manner. The maximum dose that could be given to this group of patients for 3 s ranged from 1.5 to 2.5 W/cm². [3,6] The same technique was repeated three times, and the treatment session ended.

The EMG electrodes were two recording electrodes (one active and one reference) placed parallel to the upper trapezius muscle with a 2-3 cm distance between them, and the ground electrode was wrapped around the wrist joint. [10]The skin covering the area of the upper trapezius muscle and the wrist joint was carefully cleaned with alcohol. Then, the recording electrodes were positioned 2 cm lateral to the centre of a line drawn from the c7 spinous process to the posterolateral aspect of acromion bone. The test was performed with the patient seated in a chair, and the participant was asked to maintain the trapezius muscle in a resting position for six seconds followed by elevating both shoulders, retaining this position in isometric contraction for six seconds, supported by suitable verbal commands. The participants had been previously taught how to perform the required tasks. Each task was performed 3 times with one minute rest intervals, and the root mean square (RMS) value was used. [11]

Normalization of EMG activity: Normalized values were calculated as follows: Normalized RMS %=EMG amplitude during resting/(average of EMGMAX for the 3 trials)×100. [12]

Statistical Analysis: Data analysis was performed using the SPSS 23.0 for Windows statistical software. In the beginning, the normality of data distribution was tested through the Shapiro-Wilk test. Descriptive data for participants, characteristics and dependent variables was calculated as mean ± SD. Because of skewed distributions, the EMG parameters were square root-transformed before analysis. 2x3 mixed model MANOVA was carried out to compare the three groups (between-subject effect) at each of the before and after test time periods and between the before and after test time periods (within-subject effect) for each group for the outcome variables. Furthermore, testing for the interaction effects between both independent variables was conducted. The alpha level of significance was adopted at P< 0.05.

Results

The demographic characteristics of the participants are shown in table (1), There was no significant difference in the mean age, weight, height and BMI between the three groups (p > 0.05). Also, there was no significant difference in sex distribution between groups (p = 0.25). Compared group C, mixed-model MANOVA revealed a significant decrease in the mean value for normalized resting EMG after treatment in Group A (HPPTUS) (P =0.017, CI: -0.96 - -0.073). Regarding pain, the decrease in the mean values for VAS score was significant in Group A and B after treatment as compared to group C (Group A VAS: P<0.001, CI: -3.66 - -1.98; Group B VAS: P<0.001, CI: -2.26 - -.60), as shown in table (2). In addition, the results showed significant decrease in the mean values for VAS in Group A as compared to Group B after treatment (VAS: P<0.001, CI: -2.22- -.56 and NDI: P=.011, CI: -5.47 - -.65), as shown in table (2). Moreover, the mean values for VAS score, normalized resting EMG activity of the right and left trapezius muscle decreased after treatment compared with before in the three groups, as shown in table (2).

Table 1. Demographic characteristics of participants in the three groups

		HPP US	Conventional US	Sham US	p-value
		Mean ± SD	Mean ± SD	Mean ± SD	
Age (years)		21.65 ± 3.61	21.41 ± 2.43	21.65 ± 2.72	0.95
Weight (kg)		67.08 ± 7.65	68.04 ± 6.92	68.26 ± 7.4	0.84
Height (cm)		162.65 ± 5.19	162.91 ± 6.65	163.34 ± 5.66	0.92
BMI (kg/m²)		25.37 ± 2.84	25.62 ± 2	25.62 ± 2.88	0.93
Sex	Males	4 (17.4%)	8 (34.8%)	8 (34.8%)	0.25
	Females	19 (82.6%)	15 (65.2%)	15 (65.2%)	

SD, Standard deviation; p-value, Level of significance

Table (2): Comparison of Mean± SD Normalized resting EMG activity of right and left trapezius and VAS of the three groups at pre and post treatment times

Outcomes	Group Time	HPP-US (group A) mean±SD (n=23)	Conventional US (group B) mean±SD (n=24)	Sham US (group C) mean±SD (n=23)
Normalized resting EMG of right trapezius	Pre	2.15±.97	2.29±1	2.1±1.1
	Post	1.15±.44	1.59±.77	1.55±.76
	P value (95%CI)	<0.001 (.55-1.4)	.002 (.26-1.12)	.015 (.11-.99)
Normalized resting EMG of left trapezius	Pre	2.78±.73	2.92±1.14	2.88±1.80
	Post	1.43±.37*	1.67±.55	1.95±.82
	P value (95%CI)	<0.001(.78-1.91)	<0.001(.70-1.80)	.002(.37-1.50)
VAS	Pre	7.69±.63	7.62±.76	7.34±1.02
	Post	1.56±.84* **	2.95±1.12*	4.39±1.43
	P value (95%CI)	<0.001(5.52-6.73)	<0.001(4.07-5.25)	<0.001(2.35-3.56)

SD: Standard Deviation; US: Ultrasound; VAS: Visual Analogue Scale *Significant (P<0.05) compared to Control
** Significant (P<0.05) compared to Group B (Conventional US)

Discussion

This study aimed to compare the effect of HPPT-US with that of conventional US in participants with upper trapezius active MTrPs. The present study showed significant improvements in all three groups, but the superiority for the HPPT US group.

Our results are in agreement with those reported by Majlesi and Unalan (2004)[6] who found that HPPTUS is more effective than conventional US for the treatment of MPS according to VAS score and neck active lateral bending ROM. Koca et al. (2014)[4]alsocompared the effects of US treatment applied at low-, medium, and high-power doses on trigger points and found that, in general, HPPT-US therapy was more effective than other techniques.

In contrast, Esenyel et al. (2007) [13] found no significant difference between HPPTUS and conventional US in the treatment of trigger points with respect to VAS score, as Kim et al., 2014 [9]also reported no significant difference in VAS score between HPPTUS and conventional groups of elderly patients with latent MTrPs. This discrepancy from the results of the current study may be due to different ages and types of MTrPs.

The current study showed decreased normalized resting EMG activity of the muscle in all groups. Few studies have reported decreased basal electrical activity and fewer local twitch responses of the trapezius muscle after treatment with US.[14,15]The results of these previous studies are in agreement with those of the current study, as we found significantly decreased normalized resting EMG activity after treatment in both treatment groups. In contrast,another study found no effect of static US on EMG activity in the treatment of individuals with chronic neck pain. [16]

The current study showed significant improvements in normalized resting EMG activity of the left side in the HPPT-US compared with control group, on my point of view, the improvements were significant in the left side as most participants were right handed so, the muscle on the left side was more relaxed than right side.

Interestingly, the improvement observed in the HPPT and conventional US groups may be due to the thermogenic effect of US.[3]The effects of HPPTUS may be also due to the high intensity of US stimulation, which has been reported to decrease evoked action potential amplitude and exert an accompanying thermal effect. [17]The improvement observed in the control group may be due to the compression and massaging effect of the US probe. [18]

In the current study, all of the measures that were evaluated showed a significant improvement, while greater improvement was found in the HPPT-US group.

Therefore, HPPTUS is more economical treatment than conventional US treatment due to the reduced number of required treatment sessions.

Limitations: This study was limited by the short treatment time, and there was no follow-up evaluation.

Conclusion

Both conventional and HPPT-US techniques are effective for treating subjects with active trigger points of the upper trapezius muscle, while HPPT-US is more effective.

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Conflict of Interest: None.

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Deltoid Splitting Approach for the Treatment of Proximal Humeral Fractures

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Abstract

Purpose: We evaluated the assessment of clinical, functional and radiological outcomes of the patients using deltoid splitting approach in fixation of proximal humeral fractures.

Method: Prospective study during the period March 2015 –January 2018 in level 1trauma center, Twenty three (23) patients underwent treatment of proximal humeral fractures using deltoid splitting approach. Out of these three (3) cases were excluded from the study as they had shoulder hemiarthroplasty (2 cases and one side of bilateral fractured patient), in one of the cases there was intraoperative humeral head split which was not diagnosed preoperatively and so, it was excluded from the study. This study group comprised 11 men and 9 women, with a mean age of 49 years (range 20–77). Patients were followed up for a minimum of one year (12-15 months).

Results: We measured the humeral shaft angle (HSA) and the humeral head height (HHH) to assess theradiological outcome the results were: 17 patients had adequate HSA in postoperative x-rays and 3 patients had inadequate HSA, 12 patients had adequate HHH and 8 patients had inadequate HHH. We used The Constant shoulder score to evaluate the functional outcome. The twenty cases which are included in the study the results were: 10 patients were excellent, 8 were good and 2 had fair constant score.

Conclusion: Deltoid splitting approach is a successful method for treating proximal humeral fractures regarding to clinical and radiological outcome. Anatomical reduction of the fracture and rigid fixation is important to save satisfactory functional outcome.

Keywords: *proximal humeral fracture, deltoid splitting approach.*

Introduction

Proximal humeral fractures are the second most common fractures in the upper extremity and the third overall most common fracture, after hip fractures and distal radial fractures, in patients older than sixty-five years of age[1].

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Although the majority of proximal humeral fractures are either non displaced or minimally displaced and can be treated with sling immobilization and physical therapy, approximately about 20% of displaced proximal humeral fractures may benefit from operative treatment.

Many techniques have been described in surgical treatment of these fractures, but no single approach is considered to be the standard of care. Surgeons involved in treating proximal humeral fractures should be able to identify the fracture pattern and select an appropriate management of this pattern regarding bone quality.

Orthopaedic surgeons should have experience with many techniques, including transosseous suture fixation, closed reduction and percutaneous fixation,

open reduction and internal fixation with conventional or locked-plate fixation, and hemiarthroplasty.

In the future, locked-plates in combination with the use of osteobiologics may play an important role in the treatment of displaced proximal humeral fractures, facilitating preservation of the humeral head in appropriately selected patients[2].

Material and Method

Prospective study during the period March 2015–January 2018 in level 1 trauma center, Twenty three (23) patients underwent treatment of proximal humeral fractures using deltoid splitting approach. Out of these three (3) cases were excluded from the study as they had shoulder hemiarthroplasty (2 cases and one side of bilateral fractured patient), in one of the cases there was intraoperative humeral head split which was not diagnosed preoperatively and so, it was excluded from the study. The study group comprised 11 men and 9 women, with a mean age of 49 years (range 20–77). Patients were followed up for a minimum of one year (12-15 months).

Four cases were pedestrian of road traffic accidents, ten cases were involved in motor car accidents, six cases were due to a fall on the ground. We classify our proximal humeral fractures according to Neer's classification. Out our cases, 9 cases had associated osseous injuries, one patient had lung contusion. All patients who were involved in traffic accidents received a full survey at the time of emergency admission and other associated osseous lesions were managed accordingly.

The surgery was performed after a mean time of 3 days (range 1–5 days). Radiological investigations consisted of AP and axial views performed during the immediate postoperative period and an AP view at follow-up visits. Residual post-operative displacement and late displacement of the fracture were measured by an independent observer. Failure was defined as at least 10 degrees of decrease in humeral shaft angle or by a decrease of humeral head height by > 5 mm compared with immediate post-operative X-ray.

Inclusion Criteria:

1. Age: adults from 20 – 80 years old.
2. Closed fractures.
3. Fractures Neer type II, III and IV.
4. Fracture dislocations.

Exclusion Criteria:

1. Neurovascular affection or diseases.
2. Previous surgery in the affected shoulder.
3. Non fit patients for surgery.
4. Head split fractures (comminuted humeral head fractures).
5. Patients who needed shoulder hemiarthroplasty.

Operative Procedure:

Anaesthesia: General anesthesia was used for all the patients and was combined with scalene block anesthesia in some of the cases for postoperative pain control. Prophylactic broad-spectrum antibiotic, 3rd generation cephalosporin, was given preoperatively within an hour and in all cases.

Patient Positioning: Patient in semi-sitting position. For all of them we should ensure radiolucent area under the shoulder allowing for intra-operative fluoroscopic AP, external rotation and internal rotation views.

Operative Technique: The incision is made from a point between the anterior third and the posterior two thirds of the lateral border of the acromion and can be extended downwards and be completed as the anterolateral approach of the humerus. Marking 5cm below the lateral border of the acromion is made as a landmark which helps for easier identification of axillary nerve intraoperatively, after incising the skin and the subcutaneous tissues with adequate hemostasis the fascia over the deltoid muscle is now visible.

The fascia is now dissected and the anterior raphe of the deltoid muscle is identified as a white raphe between the anterior and middle fibers of the deltoid.

After blunt splitting of the raphe without cutting through any muscle fibers, identification of the axillary nerve is done at about 5-7 cm from the lateral border of the acromion, the nerve is found inside the muscle and sometimes it is more than one branch (leach of nerves) close to each other. Anterior and posterior gentle release of the nerve to free it and gently elevating it, the subdeltoid bursa now is identified and the fracture is reached.

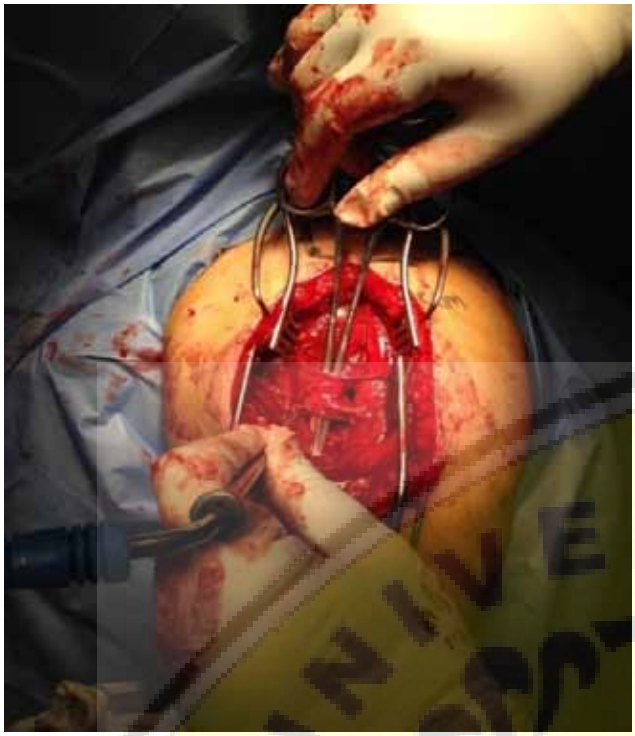

Fig. (1): The axillary nerve and it is seen as a leach of nerves.

The fracture now is identified and reduced either by direct reduction or by indirect reduction by putting conventional screw in the oval hole of the plate after application of the plate under the nerve. In comminuted fractures sutures can be taken in the greater tuberosity or/and the lesser tuberosity and then can be passed through the plate holes after putting the head screws in order not to cut the suture by the progressing screws, Another method of reduction involve preliminary K wires fixation of the fracture through small holes in the philos plate .

Confirm Reduction: Confirm the reduction by image intensification; attention should be paid on the correct alignment of the proximal humerus in all planes. Particularly varusmal position has to be corrected. The medial "calcar" region should be well opposed.

Results

Post-operatively our patients were checked for the condition of the wound, neurology, and distal pulses. Distal pulses were felt in all patients; there were no intraoperative iatrogenic neurologic injuries. Closed suction drains were removed after 2 days in all of our patients; and patients were mobilized from the arm sling as soon as possible most of them on the 3rd postoperative day. Our cases were followed up for a minimum 12 months (range from12 – 15 months), three cases were lost in follow up visits .We used The Constant shoulder score [3]**(Constant and Murley, 1987)**to evaluate the functional outcome and the humeral shaft angle ***(HSA)*** and humeral head height ***(HHH)***to assess theradiological outcome.

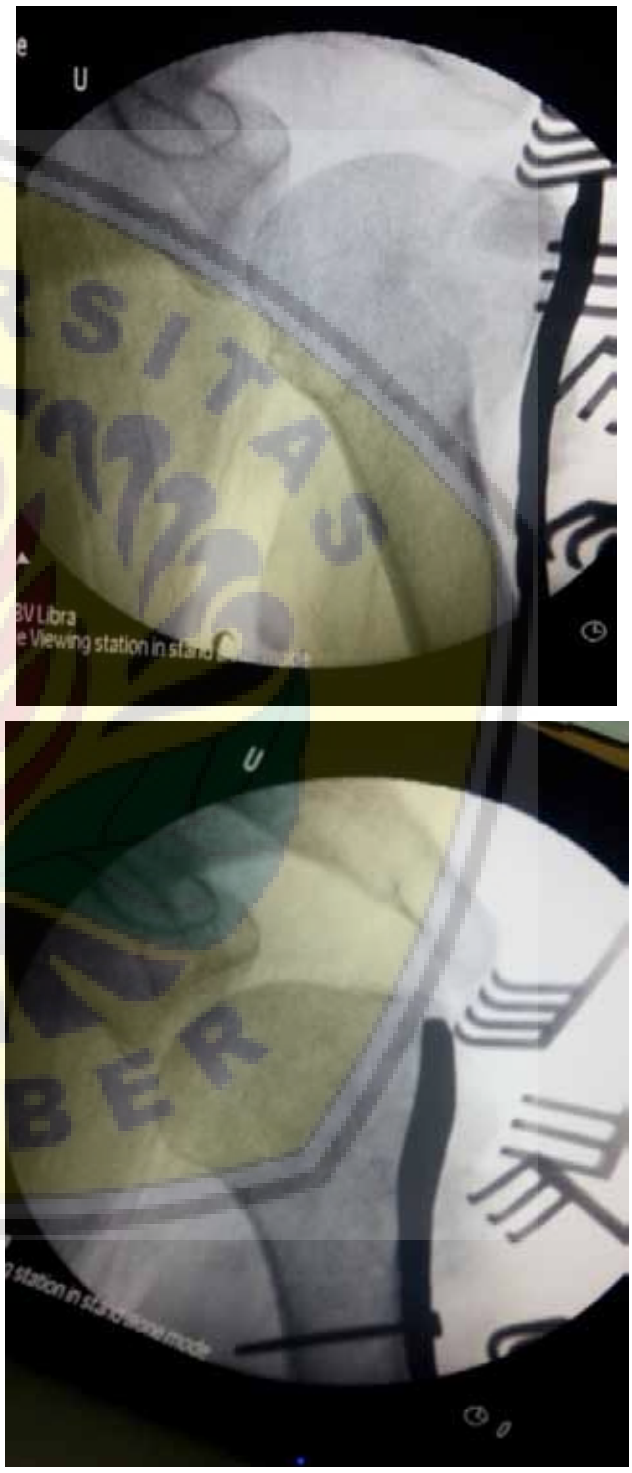

Fig. (2): Indirect reduction after application of the plate by conventional screw in the oval hole of the plate.

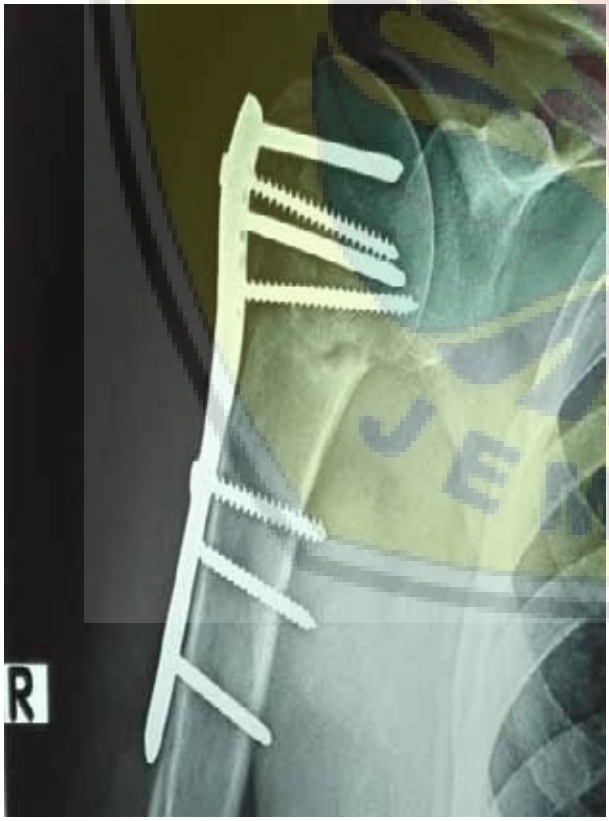

Fig. (3): pictures of two patients in the study after completing fixation by philos plate with the axillary nerve is seen in the first image and accepted position of the plate in the second image.

Scoring of the Results: The Constant shoulder score[3]**(Constant and Murley, 1987)** was used to evaluate the functional outcome of our patients, four factors were assessed and scored; Pain reported by the patient (15 points); Activities of Daily Living (ADL) reported by the patient (20 points); Range of Movement - assessed by the examiner (40 points) and strength - assessed by the examiner (25 points), the greater number of points up to a maximum of 100 points indicates better function of the shoulders.

Complications:

A. **Infection:** Wound problem recorded in 3 patients; all of them had superficial wound infection with serous discharge. This infection was managed by repeated dressing and antibiotic treatment and all of them went to uneventful recovery.

B. **Malreduction and malunion:** In all the cases it was aimed at anatomical reduction, the results of the series showed, each one of them has got good and anatomical reduction but four of them have got poor reduction.

C. **Shoulder stiffness:** In the study 2 cases had shoulder stiffness one month postoperative but there was marked improvement after physiotherapy with no functional impairment.

D. **Neurological complications:** None of the patients in our study had signs of postoperative axillary nerve injury in the form of permanent deltoid wasting or parasthesia at the badge area. Only one case had an axillary nerve partial axonal neuropathy and it improved after seven months.

E. **Cosmetically Bad Scar:** None of the patients in our study complained of scar problems due to the relatively small sized incision which was stitched in all patients either by subcuticular stitching or by staples, although the scar is not parallel to skin Langer's lines.

Discussion

Most authors advocate a deltopectoral approach for the treatment of unstable 3- and 4-part fractures of the proximal humerus; this approach is extensile and allows for easy intraoperative conversion to hemiarthroplasty. However, visualization of the fractured greater tuberosity, which is usually externally rotated by the cuff muscles is difficult and often requires extensive soft-tissue retraction and dissection. Often, the deltoid origin

or insertion and/or the pectoralis major insertion must be at least partially detached to access this fragment. Significant functional impairment of the anterior deltoid can occur with release of >20% of the deltoid insertion.

Florian Fankhauseret al.[4] had a series of 28 patients who had open reduction and internal fixation of proximal humeral fractures by locked plate and screws using the deltopectoral approach. He stated that the overall clinical results, with a mean Constant and Murley score of 74.6 points in patients with an average age of 64.2 years.

Robert A. Gallo et al.[5] had a series of 10 patients who had open reduction and internal fixation by locked plate and screws for fixing proximal humerus fractures using 2 incision technique, the first is a standard deltopectoral incision for placing the shaft screws, the second is a 4-cm lateral incision is marked from the edge of the mid portion of the lateral acromion and extended longitudinally to the posterior aspect of the humeral head for mobilizing a retracted greater tubrosity. The main complication of this 2-incision technique is postoperative stiffness, which affects the treatment of proximal humerus fractures in general.

Gardner et al.[6] reported that no iatrogenic axillary nerve injuries had occurred in 70 cases performed using deltoid splitting approach, and in several cases, the nerve was found to be incarcerated in the fracture and freed before fracture reduction. He found that when splitting the anterior deltoid raphe distally from the acromion, the axillary nerve was found in a predictable location.

LaFlammeet al.[7] used a proximal deltoid split approach for locked plating of 30 proximal humerus fractures, and they noted that the axillary nerve was easily palpated and protected in all cases. Similarly**, Lill et al**. [8] used a deltoid splitting approach, paying close attention to the location and protection of the axillary nerve, and placed locked screws distally. These authors reported no complications related to this approach.

Egolet al.[9] concluded that the relatively low incidence of avascular necrosis may be due to the use of surgical techniques involving less soft-tissue dissection and preservation of vascularity. Care should be taken to avoid the complications of humeral head avascular necrosis while using the deltopectoral approach for treating proximal humeral fractures with a short calcar segment. Less soft-tissue dissection and preservation of vascularity may help to decrease the incidence of avascular necrosis.

In our study we had 20 patients with less than 5 day-old fractures were fixed surgically by locked proximal humeral plate and screws and followed up for a minimum of one year (average, 1.3 years).

It was noted that the axillary nerve was easily palpated and protected in all cases, using a deltoid splitting approach and paying close attention to the location and protection of the axillary nerve then placing locked screws distally gave good results.

There were no adverse effects from exposing the axillary nerve and placing a plate beneath it. However there was one case of partial axillary nerve affection which was fully recovered after seven months with no permanent deltoid atrophy.

The distance between the axillary nerve and the lateral border of the acromion was measured in every case in the study and the average distance was 5.7 cm (from 5.3 cm to 7.2 cm). There were no non unions, no cases of deep infection which required implant removal and no reoperations were done.

There was mal-reduction in 4 cases in this study in the form of head shaft angle (HSA) of <125◦and humeral head height (HHH) < 5 mm varus displacement.

The preoperative delay before surgery and associated fractures in the same limb had poorer results especially in old patients. In our study there was better positioning of the plate and this led to better placement of the head screws and avoidance of impingement with.

The patients with the best results were the patients who had low energy trauma, good bone quality, and intact posteromedial cortex. Even with highly comminuted fractures, this approach is considered an effective alternative to deltopectoral approach. The average time for return to work in isolated proximal humerus fractures in the series was six weeks.

Conclusion

Deltoid splitting approach is a reliable technique for treating acute displaced proximal humeral fractures, which enables patients to use their hands earlier with high satisfaction and minimum complications. Surgery with minimal surgical trauma to soft tissue is considered to be the key to a successful outcome.

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Ethical Clearance: Cleared by the ethical committee of Orthopaedic Department, Al Kasr Al Ainy Hospital, Cairo University, Cairo, Egypt

Conflict of Interest: No

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Endoscopic Third Ventriculostomy: Outcome Analysis. A Prospective Cohort Study

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Abstract

Introduction: Endoscopic third ventriculostomy (ETV) is gaining popularity as the modality of choice in patients with hydrocephalus of different etiologies. The aim of this study was to review the clinical and radiological outcome of patients with hydrocephalus due to aqueductal stenosis who were operated upon ETV or ventriculoperitoneal (VP) shunting.

Method: A prospective cohort study that included70 patients with AS of different etiologies were studied. Cases were divided into two groups, Group A included patients that were operated upon by ETV and Group B included cases that were operated upon by VP shunt. The selection of procedure was decided based on availability of endoscopic set and surgeon preference.

Results: Our study included 70patients; Group A included 44 cases (62.8%) while Group B included 26 cases (37.2%). Most of cases were presenting with headache, vomiting and papilledema. Imaging showed triventricular hydrocephalus due to aqueductal stenosis. ETV succeeded in 37 (84%) of cases. 26% of Group A patients presented with early complications with 14% failed ETV that required VP shunt. Compared to ETV, Group B had almost no perioperative complications, while late complications as shunt obstruction and/or infection were significant in 34.5% of cases.

Conclusions: In adults with aqueductal stenosis the success rate of ETV may exceed 80%. The delayed complications of shunt system render ETV the modality of choice in aqueductal stenosis. Radiological improvement has no clinical impact in successful ETV cases.

Keywords: *Aqueductal stenosis, Hydrocephalus, Endoscopic third ventriculostomy, Ventriculoperitoneal shunts.*

Introduction

Aqueduct stenosis (AS) is either primary when isolated or secondary to compression by pineal region tumors[1]. Primary AS has no identifiable cause in the majority of cases and known as idiopathic.[2,3,4,5] A study done by Hirsch et al. Included 114 patients were 74% considered idiopathic[6].

Primary AS can take one of different histological types including; atresia, forking, septum or gliosis. [7, 8] Endoscopic third ventriculostomy ETV and shunt surgery are the most commonly used modalities for treatment of AS. While shunt surgery is successful in more than 80% of patients, shunt related complications made recent studies focusing more on ETV.[2, 3, 5, 9].

As regards the perioperative morbidities and mortalities, mortality rate is close to zero in modern studies on shunt surgery. Morbidities are usually due

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to long term side effects as infection and mechanical dysfunction.[10, 11] The complication rate in 5 year follow up can reach up to 50%.[12] As the shunt is a lifelong treatment modality, the risk of complications is cumulative with younger patients have higher risk due to longer life expectancy.[13]

ETV success rate is higher in adult population approaching 80%. Limited follow up after ETV can make the evaluation of long-term efficacy difficult.[6, 14, 15]Ventriculostomy occlusion could represent a fatal complication in some cases.[16]While shunt complications are usually delayed, ETV complications are usually early after surgery and usually transient.[4] Still shunt is recommended by most authors as an alternative to failed ETV operations.[6]

Method

A prospective cohort study in which seventy patients with aqueductal stenosis of different etiologies were studied. Cases were divided into two groups. **Group A** included patients that were operated upon by ETV and **Group B** included cases that were operated upon by VP shunt. These cases were brought to clinical attention in Cairo University, Beni Suef University hospitals, over two years starting from October 2015 through October 2017.

Patients included were of adult age group, with different underlying etiology of aqueductal stenosis including pineal region lesions and tectal gliomas, while Patients with history of previous CSF shunt insertion, or CSF infection were excluded from our study.

Preoperatively evaluation was submitted for each patient including a full history, full clinical examination, routine laboratory investigations, CT scan and/or MRI were done. Preoperative ETV success score[17] was recorded for every case. Patients were submitted to either ETV or VP shunt. The selection of procedure was based on availability of the procedure, surgeon preference. In the early postoperative period, the patients were monitored for improvement of the clinical manifestations using Glasgow coma scale (GCS)[18] to assess the conscious level, and visual analogue scale (VAS)[19] to evaluate headache improvement. Patients were followed for 1 month postoperatively to monitor possible early or delayed postoperative complications.

All patients were subjected to control *CT scan* of the brain on the first postoperative day, 1 week postoperative and 1 month postoperative to evaluate the size of ventricles, periventricular CSF permeation, and cortical effacement. Postoperative MRI brain T2 sagittal sequence was done for all Group A patients to detect a patent ostium 1 week after the procedure.

Statistical Method: Data of the seventy patients was coded and entered using the statistical package SPSS (Statistical Package for the Social Sciences) version 25. Data was summarized using mean, standard deviation, median, minimum and maximum for quantitative data, and using frequency (count) and relative frequency (percentage) for categorical data. Comparison between quantitative variables was done using the nonparametric Mann-Whitney test.For comparing categorical data, Chi square test was per-formed. Exact test was used instead when the expected frequency was less than five. P-value < 0.05 was considered as statistically significant.

Results

The data collected from 70 adult cases with Aqueductal stenosis were analyzed prospectively. **Group A** included 44 cases (62.8%) while **Group B** included 26 cases (37.2%).

The distribution of demographic, clinical data and etiology are shown in tables 1, 2.

Table 1: Patients' demographic and clinical data

		Group A	Group B	p value	Significance
Age (Years)		57.48 ± 10.14	58.12 ± 8.52	0.669	NS
Gender	Male	27 (61.4%)	17 (65.4%)	0.737	NS
	Female	17 (38.6%)	9 (34.6%)		
Headache	VAS more than 5	36 (81.8%)	24 (92.3%)	0.303	NS
	VAS less than 5	8 (18.2%)	2 (7.7%)		

		Group A	Group B	p value	Significance
Vomiting	Yes	26 (59.1%)	10 (38.5%)	0.095	NS
	No	18 (40.9%)	16 (61.5%)		
Papilledema	Yes	16 (36.4%)	7 (26.9%)	0.416	NS
	No	28 (63.6%)	19 (73.1%)		
Abducens palsy	Yes	4 (9%)	5 (19.2%)	0.783	NS
	No	40 (91%)	21 (80.8%)		
Gait Disturbances	Yes	3 (6.8%)	2 (7.6%)	0.541	NS
	No	41 (93.2%)	24 (92.4%)		
Disturbed conscious level (GCS)	Yes	15 (34.1%)	11 (42.3%)	0.492	NS
	No	29 (65.9%)	15 (57.7%)		

NS (non-significant), GCS (Glasgow Coma Scale), VAS (Visual Analogue Scale)

Table 2: Etiology of Aqueductal stenosis

	Group A	Group B	p value	Significance
Pineal Region lesion (2ry)	20 (45.5%)	11 (42.3%)	0.480	NS
Idiopathic (1ry)	24 (54.4%)	15 (57.7%)		

NS (non-significant).

Clinical Outcome: Regarding the clinical outcome in both groups, conscious level assessment by Glasgow coma scale (GCS) showed improvement in both groups with no statistically significant difference (p value 0.645).Postoperative assessment of headache severityusing VAS on day 1 postoperative showed no statistically significant difference between the 2 groups (p value 0.516).

Utilizing the ETV success score, all the cases included in Group A have scored 90 points. The ETV success rate was 84% (37 cases), while 16% (7 cases) had persistent symptoms in the early postoperative period and required VP shunt.

Postoperative complications were monitored in the early postoperative period (1 week) and the late postoperative period (1 month) as in table 3 and 4 respectively.

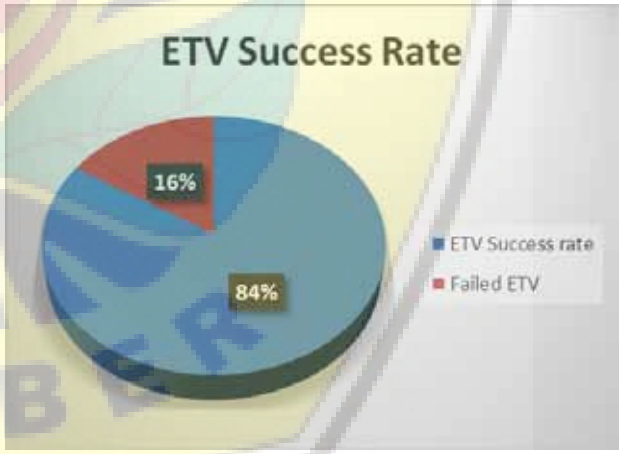

Figure (1): ETV Success rate.

Table 3: Early Postoperative complications

Complications	Group A (%)	Group B (%)	P value	Significance
Failure	7 (16)	0 (0.0)	0.001	S
Fever	12 (27)	3 (11.5)	0.001	S
Vomiting	3 (6.8)	2 (7.6)	0.654	NS
CSF leak	2 (4.5)	0 (0.0)	0.145	NS
Fits	2 (4.5)	0 (0.0)	0.145	NS

S (significant), NS (Non-significant).

Table 4: Delayed Postoperative complications:

Complications	Group A (%)	Group B (%)	P value	Significance
Failure	0 (0.0)	9 (34.5)	0.001	S
CSF Infection	0 (0.0)	3 (11.5)	0.001	S
Dysfunction	0 (0.0)	6 (23)	0.001	S

S (significant), NS (Non-significant).

The radiological outcome was evaluated on basis of reduction of the ventricular size and/or periventricular CSF permeation in CT scan done on day one (early) and 1 month(late) postoperative as in table 5. Early radiological improvement was found in almost all cases of group B, while in group A delayed or no radiological improvement after 1 month which had no clinical correlation.

Table 5: Radiological outcome

	Duration	Group A(%)	Group B(%)	p value	Significance
Lateral Ventricle size	Early	2 (4.5)	26 (100)	0.001	S
	Late	12 (27.3)	0 (0.0)		
3rd Ventricle size	Early	8 (18.2)	24 (92.3)	0.001	S
	Late	30 (68.2)	2 (7.6)		
CSF permeation	Early	34 (77.3)	24 (92.3)	0.564	NS
	Late	8 (18.2)	2 (7.6)		

S (significant), NS (non-significant)

Discussion

The population selected for our study were 70 patients with age ranged from 16-55 and mean age of 31 years. Few other studies were concerned with adult age group with aqueductal stenosis as **Grand** study of 250 adult patients, age ranged from 17 to 88 years with mean age 51 years.[20]. **Tiesell** has reported age ranging from 16-75 with mean age of 30 years.[21]

In our study, aqueductal stenosis was 1ry in 39 (55.7%) of cases and 2ry to pineal or tectal tumors in 31 (44.3%) of cases. In the literature, most of the studies were concerned with 1ry aqueductal stenosis in adult age group. Our results denoted that tumoral stenosis is a common etiology in contrast to results of **Hirsch et al** Study of 113 patients with aqueductal stenosis; tumoral stenosis was detected only in 24% of patients.[6]

Other studies were concerned with tumoral obstructive hydrocephalus as that of **Anthony et al**, in thier study of 117 patients with hydrocephalus due to infratentorial tumors revealed that 40% of patients had aqueductal stenosis due to tumoral obstruction. [22]

In our study, the most common clinical findings were headache (85.7%), vomiting (51.4%), papilledema in (32.8%). Less frequent symptoms as urinary incontinence, gait disturbances and cranial nerve affection were also reported. **Tiesell** has publishedthe analysis of data collected from nine studies concerned with aqueductal stenosis in adult group. Headache was the most common symptom as in our study, with median frequency of 70%. Vomiting and papilledema were the 2nd common with median frequency of 40% and Papilledema 30%.[21]

In our study, analysis of the preoperative radiological findings for all cases was done. Results revealed that all caseshad clear triventricular hydrocephalus with cortical effacement. Our result were corresponding to

the results that **Stoquart**has reported in his 17 cases study concerned with diagnosis of aqueductal stenosis by means of MRI, that all cases had triventricular hydrocephalus with small 4th ventricle.[23] Results were also close to results of **Tushar and Falconer** study of 10 cases in which all cases had the same radiological features, but moreover they reported that only half of the cases had funneling of the aqueduct.[24]

There are 2 major alternatives for treatment of cases with aqueductal stenosis, ETV and shunting. In our study, 44 cases (62.8%) were submitted to ETV while 26 cases (37.2%) were submitted to V/P shunts. Almost all modern studies on aqueductal stenosis are more focused on ETV than shunting.

In our study, all cases have scored 90 in Drake ETV success score. The success rate of ETV cases was 84%, while the success rate of V/P shunting was 100%. **Grand** has reported a success rate of 76% in his 250 adult patients submitted to ETV.[20] **Labidi** study of 59 adult patients with aqueductal stenosis submitted to ETV revealed that success rate was 82%, which is close to our results.[25]

In our study, variable intervals follow up CT scans were made for each case revealing early reduction in size of third ventricle within the 1st month post-operative, while lateral ventricle size reduction started with variable degrees within 6 months postoperatively. Delayed reduction in the ventricular size in ETV had no clinical significance in all cases, as it didn't change the outcome .Other studies have reported the change in ventricular size in variable postoperative intervals following ETV.

Romeo et al have reported in their study that Persistent ventriculomegaly has been noted even in the absence of clinical symptoms of hydrocephalus, prominent reduction in size of ventricles in the 1st month postoperative but he didn't report any cases of normalized ventricular size, as in our study.[26]**Tiesell.** had a different conclusion that reduction in the size of ventricles is a sign of ETV success and is directly related to clinical improvement.[21]

Perioperative complications are more common with ETV than shunting. **In our study**, no intraoperative complications were reported. While in the early post-operative period Fever was reported in 12 cases (27%), fits in two case (4.5%), and CSF leak in two cases (4.5%). Late complications were more common with V/P shunts as shunt obstruction or shunt infection. **Labidi** study, they reported fits in 10% of cases, CSF leak in 10% of cases,motor deficit was reported in 2% of cases, and significant ICH in 2% of cases.[25]

Conclusion

In adults with aqueductal stenosis the success rate of ETV may exceed 80%. The delayed complications of shunt system render ETV the modality of choice in adult patients with aqueductal stenosis. Delayed radiological improvement in successful ETV cases has no clinical impact.

Funding: Self-funding

Ethical Clearance: Cleared by the ethical committee of Neurosurgery Department, Faculty of Medicine, Cairo University, Egypt

Conflict of Interest: No

Abbreviation:

AS: Aqueductal Stenosis.

CSF: cerebrospinal fluid.

CT: computed tomography.

ETV: Endoscopic third ventriculostomy.

GCS: Glasgow coma scale.

MRI: Magnetic Resonance imaging.

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Factors Affecting Prevention of Joint Contracture Regarding Patients with Burn

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Abstract

The prime objective of this study was to assess the factors affecting prevention of joint contracture in Egyptian burn patients. About 30% of patients under study were females; males respectively; 61.8% of them were married. Also 80% of studied patients are living in rural areas. The studied patients had unsatisfactory levels of both knowledge and practice regarding prevention of joint contracture. It was showed herein that Physical factors as complications at site of burn as infection, minimal physical exercise, minimal joint support, minimal skin graft, and no regular physiotherapy, Psychological factors as Fear from pain associated with physiotherapy, Fear from occurrence of deformity, and feeling by depression from shape of burn are the important factors needed to decrease burns among Egyptian patients. There was a statistical significant relation between unsatisfactory level of patient knowledge and age (p=0.008), level of education (p=0.022) and occupation (p=0.016). A statistical significant relation between unsatisfactory knowledge and satisfactory level of practice regarding when someone exposed to burn (p=0.016). Also, there was a statistical significant relation between unsatisfactory level of practice and knowledge regarding Skin layers (p=0.024), Outer layers of skin (p=0.006) and Inner layer of skin (p=0.006) and sign of infection (p=0.026).

Keywords: *Joint Contracture, Physiotherapy, Burn, Factors.*

Introduction

Removing deep partial or full-thickness burns without care can develop severe deformity and scar contracture in the joint with significant reduction in patient activities and acute bacterial infection[1,2]. Burns Treatment strategy is prevention of contractures rather than their management. Despite the advances in burn management protocols, there are many data supporting high incidence of joints contractures[3].

The management of joint contractures provides a great challenge both for the orthopaedic and the plastic surgeons[4]. The treatment of joint contractures needs Splinting, movement, physiotherapy, and various surgical method; including scar release, tendon lengthening and osteotomies with skin graft, with almost protracted morbidity in most of the cases[5].

Early excision and grafting of deep second degree and full-thickness burns greatly decrease severity of contractures and hypertrophic scarring. The performed anti-deformity positioning also assist's to avert the risk of contracture formation[6]. All these factors lead to otherwise avoidable contractures. It is currently showed that a burn victim who receives the best initial treatment can expect to heal without any contracture[7].

Stretching, active movement, or passive movement therapy, have historically been an integral part of the physiotherapy management of patients with joint contractures. Both stretches and passive movement therapy recently are the main physiotherapeutic interventions to treat contracture. These interventions can assist in the management of pain and improve burn treatment[8,9]. The general guide- line is that these interventions should start as early as possible to prevent joint contracture.[10]

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Research Questions: Assess patients' knowledge regarding prevention of joint contracture. Determined practice regarding prevention of joint contracture. Determined factors affecting prevention of joint contracture regarding patients with burn.

Design: A descriptive design was utilized to achieve the aim of this study and to answer the research question.

Sample: The study sample included purposive sample of patients with 2nd or 3th degree of joint burn in departments of specialized central hospital in Hehya. Total number of sample was 55 patients. Patients with severe co-morbidity diseases as Rheumatoid arthritis were excluded.

Tools:

1. Assessment of patient's knowledge and practice.
2. Factors affecting prevention of joint contracture questionnaire: it includes factors related to burn, physiological factors, psychological factors and social factors.
   - Validity of the tool was done by five expertise and reliability byCronbach's Alpha test and retest was 0.801.
   - Pilot study was done on six patients.

Results

The demographic characteristics of patients under study were recorded. Results are given in Table 1. According to age rang, about 14.8%; 58.2% of patients were ≤30 years; >30 years respectively. Regarding gender about 70.9%; 29.1% of patients were male; females respectively. For the marital status, 38.2%; 61.8% of patients were singles; married respectively. About 74.5%; 25.5% of patients were educated; non-educated respectively. For the occupation, 52.7%; 47.3% of patients were working; not working respectively. In regard to patient residency, about 80%; 20% were rural; urban respectively.

Table 2: Illustrated that the studied patients had satisfactory level of self report practice regarding eating high protein diet, hemoglobin analysis, liver and kidney function**,** regular dressing of burn, maintain fluid and electrolyte equilibrium and decrease pain and edema (81.8%, 81.8%, 78.2%, 76.4%, 65.5%).

The frequency of physiological factors related to site, causes and place of burn were studied. Results are given in Table 3. For site burn, cervical joint was showed by 29.1%, but both lower limbs and limbs were showed by 1.8% for each. Percentage of burns in other sites varied. The causes of burns were flame (49.1%), boiled water (43.6%) and electrical current (7.3%). about (80%) of burns were happened at home, but others at either work (10.9%) or street (9.1%).

As given in Table 4: about 100% of studied patients had joint burn; 58.2% of them had Complications at site of burn, 65.5% of them moving burned area, 78.2% were with regular dressing of burn, 81.8 Eat high protein diet, 81.8% of studied patients moving affected joint incomplete range of motion.

As given in Table 4: about 16.4% of studied patients followed physiotherapy, 14.5% of them followed Physiotherapy in tabulated session. Also, it was found that.

Table (1): Demographic Characteristics of studied patients (n=55)

Demographic Characteristics	Frequency	Percent (%)
Age (Years):		
≤30	23	41.8
>30	32	58.2
Range	16-55	
Mean± SD	32.9±9.4	
Median	33	
Gender		
• Male	39	70.9
• Female	16	29.1
Marital status:		
• Single	21	38.2
• Married	34	61.8
Education:		
• Educated	41	74.5
• Not educated	14	25.5
Occupation:		
• Working	29	52.7
• Not working	26	47.3
Residence:		
• Rural	44	80.0
• Urban	11	20.0

98.2% of studied patients were Fear from deformity, 83.6% of studied patients Fear from not healing of wound and 81.8% of them feel depressed from shape of burn. Also it was illustrated that Social factors affecting burn were as follows: 67.3% of the studied patients Feel isolation due to burn.

As given in Table 6: it was showed that there was a statistical significant relation between total knowledge, and psychological factors of studied patient regarding Fear from pain associated with physiotherapy (p=0.02) and Fear from unhealing of wound (p=0.007).

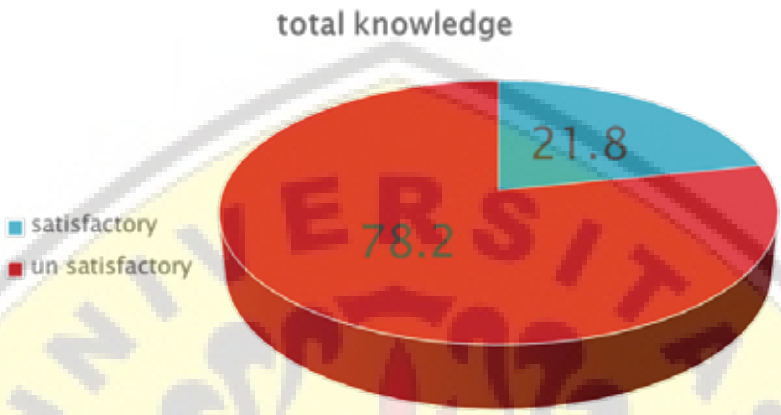

Figure 1: Frequency distribution and percentage of correct patient's knowledge about burn

Table 2: Patient's self report practice regarding prevention of joint contracture

Patient's self report practice regarding prevention of joint contracture	Patient practice	
	Done	%
Regular dressing of burn	43	78.2
Complication at site of burn	32	58.2
Eat high protein diet	45	81.8
Continuous movement of joint	17	30.9
Improve muscles strength	0	0
Preventing adhesions by using splints	19	34.5
Decrease pain and edema	36	65.5
Preventing scars	19	34.5
Maintain fluid and electrolyte equilibrium	42	76.4
Hemoglobin analysis, liver and kidney function	45	81.8
Total satisfactory self report practice ≥60%	17	30.9

Table 3: Revealed that 85.5% of studied patients affected with immediate first aid management after the incident and 80%of studied patients with Second degree of burn. Also Percent of burned are aranged from (7-40%) with Mean± SD(18.6±6.1).

Physiological factors	Frequency	Percent
Immediate first aid management		
Not affected	12	14.5
Affected	35	85.5
Degree of burn		
Second	44	80.0

Physiological factors	Frequency	Percent
Second and third	11	20.0
Percent of burned area (%)		
Range	7-40	
Mean± SD	18.6±6.1	
Median	18	

Table 4: Frequency of physiological factors related to site, causes, and place of burn.

Physiological Factors	Frequency	Percent (%)
Site of burn:		
Wrist joint	6	10.9
Knee joint	13	23.6
Elbow joint	12	21.8
Cervical joint	16	29.1
Lower limbs	1	1.8
Face	1	1.8
Upper limbs	2	3.6
Shoulder joint	4	7.3
Causes of burn:		
Flame	27	49.1
Boiled water	24	43.6
Electrical current	4	7.3
Place of burn:		
At home	44	80.0
At work	6	10.9
At street	5	9.1

Table (5): Frequency of physiological factors (n=55)

Physiological factors	Frequency	Percent (%)
Site of burn affecting joint:	55	100.0
Burn affect all layers of skin	24	43.6
Complications at site of burn (infection)	32	58.2
Duration of burn (days)		
• Range	5-180	
• Mean± SD	60.2±30.7	
• Median	60	
Joint exercise	21	38.2
Eat high protein diet	45	81.8
Regular dressing of burn	43	78.2
Applying joint support	19	34.5
Applying joint support:		
If yes		
• Slab	3	5.4
• Dressing	16	29.1
Cosmetic operation (skin graft)	14	25.5
Length of stay in hospital (days)		
• Range	7-180	

Physiological factors	Frequency	Percent (%)
• Mean± SD	41.5±31.7	
• Median	30	
Affected joint movement (incomplete range of motion)	45	81.8
Continuous movement of joint	17	30.9
If exercise done during hospitalization	25	45.5
If exercise done without help during hospitalization	22	40.0
If anti contracture was applied to affected joint	17	30.9
Doing physiotherapy	9	16.4
If yes when start (days)		
• Range	2-50	
• Mean± SD	22.1±17.3	
• Median	20	
Physiotherapy done in tabulated session	8	14.5
Daily session	1	1.8
continous session	6	10.9

Table (6): Frequency of Psychological and social factors (n=55).

Psychological factors	Frequency	Percent (%)
• Fear from pain associated with physiotherapy	38	69.1
• Fear from occurrence of deformity	54	98.2
• Fear from not healing of wound	46	83.6
• Feel depressed from shape of burn	45	81.8
Social factors		
• Physiotherapy expensive	22	40.0
• Feel isolation due to burn	37	67.3

Table (7): Relation between total knowledge, and physiological factors regarding physiotherapy, psychological and social factors of studied patient (no=55).

Factors	Unsatisfactory (No.=43)		Satisfactory (No.=12)		X2	p. value
	No.	%	No.	%		
Physiological factors Doing physiotherapy	8	18.6	1	8.3	0.723	0.395
Physiotherapy done in tabulated session	7	16.3	1	8.3	0.477	0.49
Every two day session	6	14.0	0	0.0	1.879	0.17
Follow Regular physiotherapy	10	23.3	2	16.7	0.239	0.625
Psychological factors						
Fear from pain associated with physiotherapy	33	76.7	5	41.7	5.406	0.02*
Fear from occurrence of deformity	42	97.7	12	100.0	0.284	0.594
Feel depressed from shape of burn	34	79.1	11	91.7	1.001	0.317
Social factors						
Physiotherapy expensive	18	41.9	4	33.3	0.284	0.594
Feel isolation due to burn	29	67.4	8	66.7	0.003	0.95

X^2 = Chi-square test *=Significant p.value ≤0.05

Discussion

The study population included 55 patients with joint burn in inpatient in specialized central hospital in Hehya Sharkia governorate, Egypt, Nearly more than two thirds of studied patients were male and their age ranged from 18-55 with mean 32.9±9.4. This result may be explained from the researcher point of view by the fact that males are generally active and, therefore, they are exposed to hazardous situations at both home and work. These results supported latter published results in this respect with[11], the ages of patients ranged from 7 to 46 years. In the same line with latter findings[12].

The present study revealed that nearly the majority of patients had unsatisfactory level of knowledge regarding prevention of joint contracture**.** This may be due to lack of community based education related to burn injury. This is coupled with[13] who stated that first aid knowledge for burns is rather limited especially developing and underdeveloped countries. In the same line with[14] who indicated that previous background knowledge on burn first aid was present in more than one third in respondents.

In the study employed herein, nearly more than two third of the studied patients had unsatisfactory level of practice regarding prevention of joint contracture. This could be due to less encouragement of students to conduct health education for burn prevention and first aid management. Also media not develop programs for burn awareness to increase the people knowledge regarding the importance of physical exercise, range of motion and healthy diet. This is in conform with[15] who reported that only one third of total participants were aware of first aid procedures for burns injury management.

Concerning the type of burn injury, the findings of the present study showed that the common causes of burn about half of studied patients is flame followed by boiled water. From the researcher point of view this may be explained that kerosene and gas are the most frequent fuels in houses and work places and carless handling of gas pipes without safety features and accidental hand grenades and firing. This is in agreement with[16].

The present study stated that about one third of studied patients had cervical joint burn followed by knee joint, elbow joint, and wrist joint. This agrees with[12,17]who clarified that among the body areas affected, the commonest contracture was of the neck, followed by axilla, fingers/hand, elbow, knee and ankle/foot, and more than one third of studied patients had more than one contracture.

It was showed in this study that more than half of the burn patients were suffering from mainly infection, which are local and systemic signs as fever, purulent exudates and bad odor. This could be explained by auto infection and from environment contamination which include linen, bed, other patients or visitors and also may be from hospital staff during dealing with patients and open wounds, could not use aseptic techniques observed by researcher during collection of the data.[18,19] within 24h, burned patients can start suffering from opportunistic bacterial attacks that can vary from simple infections, such as those easily treatable by antibiotics to more complicated bacteria, which may have natural or acquired resistance to drugs. Infection by multiple drug resistant bacteria could create additional complexity to the problem.

The most of studied patients were fear from deformity, nearly the majority of them were fear from not healed wound, and about two third of them fear from pain associated with physiotherapy. This could be due to that all patient admitted to burn unit complaining of severe procedural pain after wound dressing and physiotherapy. As most of the patients have no pain killers before procedures (no regularly scheduled analgesics).

Smeltzer et al.[20]. These authors identified that regular pain relief is essential, in particular prior to all interventions such as change of dressing and exercise; this needs to be given in adequate time to take effect before commencing the procedure.

The current study revealed that more than three quarters of the study patients feel depressed from shape of burn. The results were in agreement with[21] who informed that most of burn patients have experienced a very frightening event leading to their burn injury and that the hospital experience itself can be frightening. Patients and his family may be experiencing feelings of anger, guilt and despair; they may also be having nightmares and flashbacks of the event.

It could be recommended that educational programs should be launched to create mass awareness about prevention of joint contracture regarding patients with burn; Providing a number of trainers to manage nursing care for burn patients during critical cases or rehabilitation after treatment is necessary. Also

the educational programs for patients about first aid management of all types of burns.

Conclusion

It was concluded that the studied patients had both unsatisfactory level of knowledge and practice regarding preventing of joint contracture. The most common factors that affecting burn contracture were physical factors, Psychological factors, social factors.

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Conflict of Interest: None.

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Percutaneous Medial Collateral Ligament Release in Arthroscopic Medial Menisectomy in Knees with Tight Medial Compartment

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Abstract

Background and objective: We hypothesized that pie-crusting technique does not affect the long term results after arthroscopic partial medial menisectomy.

Method: the study included 30 patients with tight medial compartment who were undergoing arthroscopic partial medial menisectomy.

Results: The follow up period was 3 months. The median Lysholm score had increased at the end of the follow up period to 93 (86-98) with P value < 0.001 which was statistically significant.

Conclusion: The Pie-crusting technique is safe and efficient for visualization of the posterior horn of the medial meniscus. It allows the avoidance of causing iatrogenic chondral damage or fracture of the medial femoral condyle.

Keywords: *Tight, pie-crusting, MCL, medial.*

Introduction

Posterior horn of medial meniscus is commonly a site of meniscal tears. Unrestricted arthroscopic visualization of the posterior horn of medial meniscus is crucial to perform adequate menisectomy. In patients with tight knees, the medial femoral condyle makes the visualization of the posterior horn of the medial meniscus and usage of instruments is very difficult.[1,2].

Vigorous manipulations with the instruments in cases with tight knees may cause iatrogenic chondral damage which may contribute to degeneration of the articular cartilage and osteoarthritis[3,4]. Also this inadequate visualization may lead to insufficient menisectomy[5,)]. Meniscal pathologies may be missed as a result of this inadequate visualization. Moreover this vigorous manipulation to open the medial compartment, could lead to rupture of medial collateral ligament (MCL) or even fracture of femur[7,8].

Agneskirchner and Lobenhoffer[3,9], Bosch[10], Park et al[(11)] and later Fakioglu et al[(12)] revealed a less invasive technique for openining medial compartment by puncturing thpostero-medial capsulo-ligamentous structures percutaneously with the use of a needle.

In the current study, the technique of Fakiogluet al[12] for enlargement of medial joint space in tight knees was used using needles. Also we were concerned about studying the possible complications especially residual medial laxity.

Patients and Method

From February 2014 to October 2015, a prospective

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randomized analytical clinical study was done to evaluate percutaneous release effects of superficial medial collateral ligament (pie-crusting technique) with tight medial compartment of the knee undergoing partial menisectomy for torn posterior horn of the medial meniscus.

The material of this study included thirty (30) patients with torn posterior horn of medial meniscus with tight medial compartment of the knee. All patients were selected according the following criteria:-

- Age: skeletally mature patients.
- Both sexes were included.
- Torn posterior horn.
- Athletes and non- athletes.
- No malalignment that needs corrective osteotomy.
- No other ligamentous injuries.
- No osteoarthritis.
- No any other articular lesions.

Patients were subjected to the following:

(A) Preoperative evaluation

1. Careful history taking: Gender, affected side and cause of injury.
2. Analysis of patient's complaint: Analysis of patient's complaint was carried according to Lysholm score evaluation.
3. Clinical examination: Full clinical examination of the affected knee and the contra-lateral knee was done.
4. Radiographic evaluation:
   - **A. Standard standing X- rays of both knee (AP, lateral views):** To exclude osteoarthritis or malalingment.
   - **B. MRI of the affected knee:** To detect the site & type of the meniscal tear and to detect any other ligamentous injuries or patellar instability.

(B) Operative meniscal procedure after pie-crusting technique: Patients who were planned to undergo partial menisectomy of the posterior horn of the medial meniscus, if they were found to have tight medial compartment, then percutaneous release of the medial collateral ligament was done.

Technique of surgery:

1. **Position of the patient:** The patient was laid supine. A tourniquet over soft cotton is applied and elevated to 300 mm Hg after administration of the anesthesia.
2. **Anesthesia:** 22 patients received spinal anesthesia, while the other 8 patients received general anesthesia. Antibiotic was given with induction of anesthesia.
3. **Routine knee arthroscopy:**
   - Standard antero-lateral and low antero-medial portals were used with a 30° viewing scope.
   - A fluid pump was used for inflow through arthroscopic sheath.
   - Next a quick diagnostic knee examination was done starting with supra-patellar pouch, lateral gutter, patello-femoral joint and medial gutter.
   - Next, a probe was inserted through the antero-medial working portal into the medial compartment.
   - With the knee in extension to 30º flexion, valgus and external rotation were applied by an assistant to give best visualization of PHMM.
   - If visualization or instrumentation were difficult, the pie-crusting technique was done (Figure 1).

Figure 1: Tight medial compartment of the knee

4. **Pie-crusting technique:** When visualization or instrumentation of postero-medial meniscus under valgus stress was inadequate, controlled release for postero-medial capsulo-ligamentous structures with the metal inner shaft of the 16 gauge (G) syringe needle was performed.

- The release was done by targeting the posterior third of superficial MCL proximal to medial meniscus.
- Puncture at this site produces a cracking sensation with a resultant opening in the medial compartment of the knee seen on the arthroscopy screen.
- If the opening in the medial compartment was sufficient on the monitor, then the release was aborted .
- If the realese was not sufficient, postero-medial capsulo-ligamentous structures were punctured without removing needle from skin. A more horizontal planewas used, while endeavoring to limit the punctures to the posterior part of the MCL, and the process was continued until the desired amount of opening of the medial compartment of the knee was reached (Figure 2).

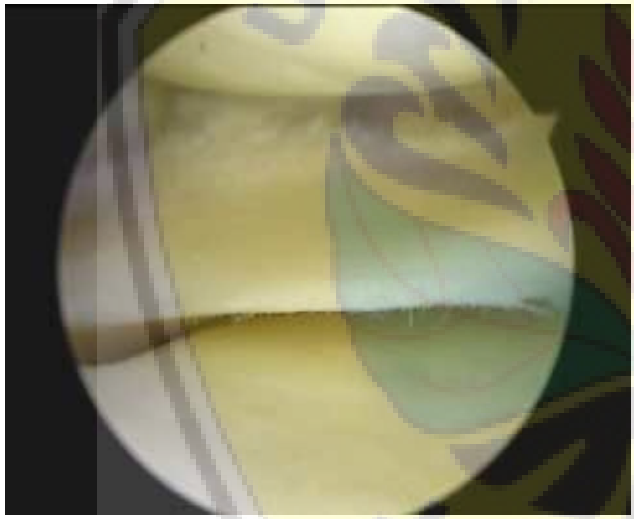

Figure 2: Opening of the medial compartment after pie-Crusting technique.

C. Postoperative care

- The patient was advised to use ice.
- No brace was used.
- Analgesics: Pethidine 50-100 mg ampoule intramuscular was given when required for 2-3 days, Diclofenac sodium 50 mg. tablets twice daily for one week starting from the second day.
- Prophylactic antibiotics: Ceftriaxone 1 gm IV. 12 hourly for 2-3 days.
- Weight bearing was encouraged from the second day post-operative whether with or without crutches as tolerated by the patient.
- Discharging the patient was after 24 hours post-operative.

(C) Rehabilitation program

For the first 6 weeks:

- Active range of motion as tolerated.
- Weight bearing was allowed as tolerated.
- Isometric quadriceps contraction exercises.
- No squatting.
- No pivoting.

After that:

- Squatting is allowed gradually.
- Pivoting is allowed gradually.

(D) Follow up evaluation: All patients were evaluated after surgery every two weeks up to the second postoperative month, then after one month.

In this study the follow up period was 3 months.

After assessment of the patients clinically and radiographically, the postoperative rating scales were recorded and all data were documented 3 months post-operatively.

1. **Clinical Evaluation:** Postoperative clinical evaluation was similar to the preoperative evaluation. In addition the site of pie-crusting was examined for tenderness, swelling or ecchymosis.
2. **Radiological evaluation:** Stress valgus x-rays were done in full extension and 30° flexion after 3 months and the difference with the contralateral normal limb was documented.

These X-rays were examined for: The amount of opening in theMedial joint space (Figure 3-A, 3-B).

3. **Postoperative rating scale:** After clinical and radiographic assessment, the postoperative rating scale was calculated. The Lysholm knee score was used for this purpose.

Statistical Analysis: Comparison of quantitative variables using Wilcoxon signed ranks test was performed for paired samples. . All statistical calculations were done using SPSS version 21. $P< 0.05$

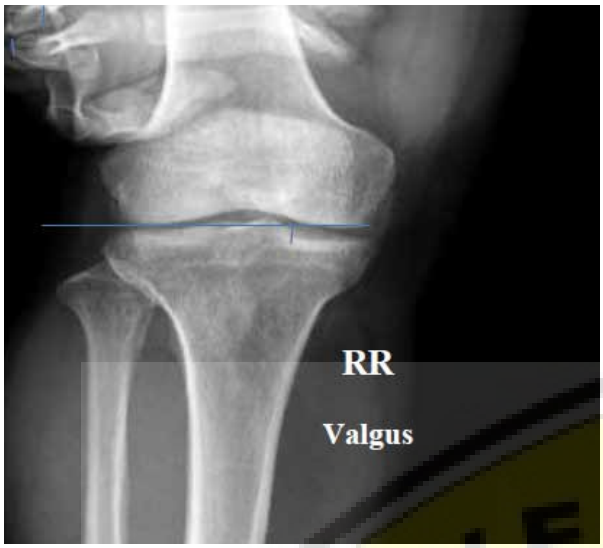

Figure 3A: Stress valgus x-ray in extension.

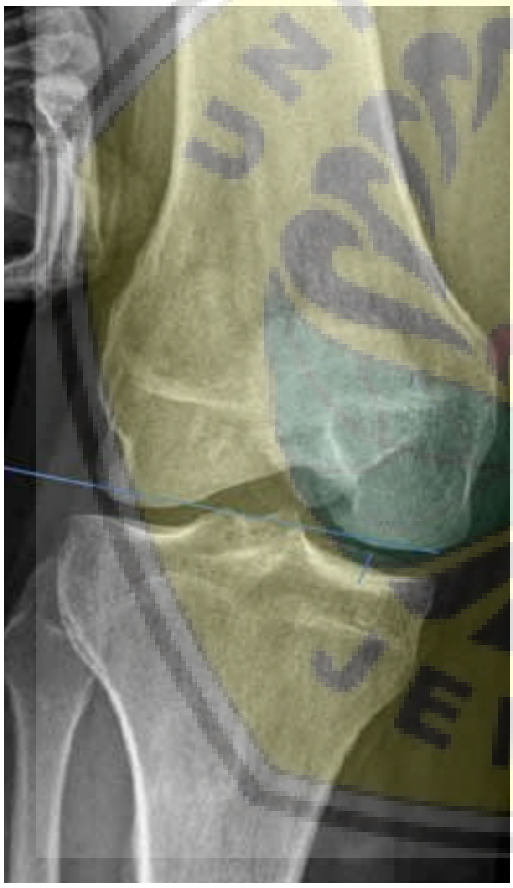

Figure 3B: Stress valgus x-ray in 30º flexion.

Complications:

1. **Medial sided knee pain:** All of the patients complained of pain at the site of release after the operation that lasted for 1-2 weeks post-operatively and resolved spontaneously.
2. **Residual medial laxity:** No cases complained of post-operative residual medial laxity at the end of follow up period.
3. **Superficial ecchymosis:** 10 patients complained of post-operative ecchymosis that resolved spontaneously

Results

Thirty patients underwent pie crusting technique, while they were having partial menisectomy for torn posterior horn of the medial meniscus. The results of the study at the end of the follow-up period were assessed both clinically and radiologically.

Lysholm Score: Evaluation of patients was done through Lysholm score. In our study the median Lysholm score was about 49 (35-65) in the preoperative period. The median Lysholm score had increased at the end of the follow up period to 93 (86-98) with P value < 0.001 which was statistically significant (Tab. I).

Stress Valgus Test: Regarding the stress valgus test, there was no difference between the normal side and diseased side in extension and in 30º flexion at the end of the follow up period.

Stress valgus x-ray: Regarding the stress valgus x-ray in extension, the mean medial joint space opening was 2.27 mm in the normal side, while it was 2.30 mm in the affected side at the end of the follow up period. The P value is 0.317, which does not represent a statistical significance between the 2 sides.

Regarding the stress valgus x-ray in 30º flexion, the mean medial joint space opening was 3.27 mm in the normal side and in the affected side as well at the end of the follow up period. The P value is 1 which does not represent a statistical significance between the 2 sides.

Tab. I: Compaing between pre/post-operative Lysholm scores

	Mean	Standard Deviation	Median	Minimum	Maximum	P value
Pre-op lysholm score	50.03	8.09	49.00	35.00	65.00	<0.001
Post-op lysholm score	92.47	3.88	93.00	86.00	98.00	

Discussion

The posterior horn of the medial meniscus is still the single greatest source of errors in knee arthroscopy, despite the great advancement in arthroscopic techniques and instruments[1,2].

The superficial MCL is a primary stabilizer of medial side of knee. Biggest strains in the MCL were detected in its posterior region proximal to the joint line according to biomechanical studies[13]

In the current study, pie-crusting was done by puncturing the posterior third of the superficial MCL superior to the meniscus using 16 gauge needle which was moved out-in.

In Fakiogluet al[12] the targeted point for release was also the posterior third of the superficial MCL proximal to the medial meniscus. This was done by the mean of a 16 gauge needle which was out-in. However, they performed postoperative sagittal MRI sections in 14 patients, and they found that the needle punctures were located within the posterior and middle thirds of the MCL, but in four patients, the injury was restricted to the middle third. In all patients, the localization of the injury was proximal to the medial meniscus in coronal sections[12].

Park et al[11] and Atoun E et al[14] performed modified MCL pie-crusting technique and were targeting the posterior part of the MCL just above the joint line by the mean of 18 gauge needle which was moved in-out technique.

In our study, we used manual valgus stress, while Fakiogluet al[12] used an automated device to produce a certain amount of valgus stress force. When visualization or instrumentation of the postero-medial meniscus under this certain amount of valgus stress was inadequate, controlled release of the postero-medial capsulo-ligamentous structures was performed.

In our study, we used Lysholm score as a scoring system. The median Lysholm score preoperatively was 49 (35-65). The median Lysholm score had increased at the end of the follow up period to 93 (86-98) with P value < 0.001 which was statistically significant.

In Fakiogluet al[12], Lysholm score was also used as a scoring system and in our study, we did not encounter any intra-operative complications such as MCL rupture or fracture of the MFC. Although all the patients have post-operative pain (grade I MCL sprain) that lasted for 1-2 weeks, they were capable of weight bearing either alone or assisted by crutches. No brace was used.

Fakioglu et al[12] found no intraoperative complications and during postoperative period, noted mild pain at medial needle tract lasting for 15 days and also no pain on palpation. A short-hinged knee brace worn postoperatively for 4 weeks without restriction in joint motion and with full weight-bearing.

Table (II) shows a comparison between this study and other authors who performed MCL pie-crusting.

Table (II): Comparison between this study results and results of other authors addressing the same problem of tight knees

	The present study	**Park et al [11]**	**Fakioglu et al [12]**	**Bosch [10]**	**Atoun et al[14]**
Operation	Medial meniscectomy	Meniscal suturing	Medial meniscectomy	Medial Meniscectomy	Medial meniscectomy
Needle used	16 gauge syringe needle	18 gauge needle	16 gauge venous cannula	16 gauge venous cannula	18 gauge needle
Target area	Posterior part of superficial MCL above level of MM	Posterior part of *deep MCL* above level of MM	Posterior part of superficial MCL above level of MM	Posteromedial capsulo-ligamentous structures above level of MM at the junction between posterior horn and body of MM	Deep MCL above MM
Needle movement	Out-in	In-out	Out-in	Out-in	In-out
Post-operative radiological follow up	Stress valgus x-ray	No	Stress valgus x-ray and MRI	No	No

Conclusion

Adequate visualization of the posterior horn of the medial meniscus is crucial for the performance of proper menisectomy.

In cases with tight knees, the Pie-crusting technique is safe and efficient for visualization of the posterior horn of the medial meniscus. It allows the avoidance of causing iatrogenic chondral damage or fracture of the medial femoral condyle.

The medial collateral ligament heals eventually in all patients after the Pie-crusting technique without causing any subjective instability.

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Ethical Clearance: Cleared by the ethical committee of Department of Orthopedic Surgery, Faculty of Medicine, Cairo University, Cairo, Egypt

Conflict of Interest: No

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Incidence of Postoperative Neurological Complications after Off-Pump versus On-Pump Coronary Artery Bypass Surgery in the Early Postoperative Period

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Abstract

Background: Stroke is a devastating complication of coronary artery bypass grafting (CABG). In our study, postoperative neurological complications were assessed after on pump CABG versus off pump CABG.

Methodology: This prospective retrospective comparative study included 200 patients who had CABG divided equally into two groups: group A (on pump) CABG and group B (off pump CABG). Preoperative, operative and postoperative data are analyzed to compare neurological outcomes of the two groups.

Results: Incidence of early postoperative neurological complications after on pump CABG is higher that after off pump CABG but without statistically significant difference. However, operative time, incidence of AF and ICU stay are significantly more after on pump CABG. While, EF is increased significantly after off pump CABG.

Conclusion: Postoperative neurological insults especially stroke are more after on pump than off pump CABG but that failed to reach statistically significant difference.

Keywords: *Stroke, CABG, On-pump, Off-pump, A.F, ICU.*

Introduction

Neurological injury is an important complication after CABG. It comprises two types. Type-1 includes stroke, transient ischemic attack (TIA) and coma (incidence 3 to 6%). Type-2 is more subtle and includes cognitive impairment. These are defects associated with attention, concentration, memory, motor function and mental responses.

Cardiopulmonary bypass is associated with an intense inflammatory response. This response produces an acute, massive defense reaction, induces mild-to-huge interstitial fluid shifts; generates a host of micro emboli (<500ĕm); and causes temporary dysfunction of nearly every organ.[1]

Method:

Patients: This is prospective retrospective comparative study which includes 200 patients underwent isolated first time CABG, 100 patients by on-pump technique (Group A) and the other 100 patients by off pump technique (Group B) in Cairo University hospitals. Patients were excluded for:

- Combined cardiac surgery.
- Emergency surgery.
- Cardiogenic shock.
- Preoperative intra-aortic balloon pump.

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- History of supra-ventricular tachyarrhythmias.
- Renal or respiratory impairment.
- Previous stroke, transient ischemic attack.
- Significant carotid artery lesion.
- Intracardiac masses or thrombi.
- Ascending aortic calcification
- Conversion from off-pump to on-pump technique

Peri-operative data were collected for each patient in both groups.

Postoperative Neurological examination: The first post-operative neurological examination was performed in ICU 12 hours after admission. Functions were checked and compared with preoperative status. Pupillary reflex, orientation, speech, memory, motor and sensory function. The major outcome variable was stroke which is defined as visible/evident temporary or permanent new neurological defect during the same hospital stay. The neurological deficit was confirmed clinically by a senior neurologist unaware of the study status and CT brain scan in case of positive examination.

Results

Table (1) illustrates proper matching between both groups.

Table (1): Demographic characters in study groups

Variables	On pump CABG (n=100)		Off pump CABG (n=100)		p-value	Sig.
Age (Years)						
Mean/SD	56.1	8.1	56.9	8.6	0.5	NS
Sex						
Male	85	85%	70	70%	0.02	NS
Female	15	15%	30	30%		

Table (2) illustrates that there is no statistically significant difference between two study groups as regards medical history. On the other hand, there is statistically significant difference with p-value <0.05 as regards smoking history with **higher** percentage of smokers were found among group on pump CABG.

Table (2): Comparisons of medical history in different study groups

Variables	On pump CABG (n=100)		Off pump CABG (n=100)		p-value	Sig.
	No.	%	No.	%		
Diabetes mediates						
No	44	44%	42	42%	0.9	NS
Yes	56	56%	58	58%		
Hypertension						
No	39	39%	44	44%	0.6	NS
Yes	61	61%	56	56%		
Dyslipidemia						
No	36	36%	34	34%	0.9	NS
Yes	64	64%	66	66%		
Past history of stroke and TIAS						
Negative	100	100%	100	100%	0.5	NS
Positive	0	0%	0	0%		
Smoking						
No	44	44%	61	61%	0.02	S
Yes	56	%56	39	39%		

Table (3) illustrates that there is no statistically significant difference between two study groups as regards pre-operative assessment

Table (4) illustrates that there is no statistically significant difference between two study groups as regards intraoperative assessment. Nevertheless, there is statistically significant difference with p-value <0.05 as regards operation duration with **shorter** duration in group off pump CABG.

Table (3): Comparisons of pre-operative patients' assessment in different study groups

Variables	On pump CABG (n=100)		Off pump CABG (n=100)		p-value	Sig.
	No.	%	No.	%		
Neurogenic examination						
Negative	100	100%	100	100%	-----	-----
Positive	0	0%	0	0%		
Carotid duplex						
Not significant lesion	100	100%	100	100%	-----	-----
Significant lesion	0	0%	0	0%		
ECG finding						
NSR	100	100%	100	100%	-----	-----
AF	0	0%	0	0%		
Echo finding (Mean/SD)						
EF	57.02	9.2	57.7	8.3	0.6	NS
LVEDD	5.28	0.59	5.16	0.50	0.1	NS
LVESD	3.71	0.69	3.57	0.52	0.1	NS

Table (4): Comparisons of intra-operative patients' assessment in different study groups

Variables	On pump CABG (n=100)		Off pump CABG (n=100)		p-value	Sig.
	No.	%	No.	%		
Gross assessment of the ascending Aorta						
Absent	100	100%	100	100%	---	----
Present	0	0%	0	0%		
Other intra-operative assessment						
Operation duration (min)	220.9	25.8	211.9	24.7	0.01	S
No of proximal anastomosis	1.9	0.8	1.8	0.8	0.3	NS

In Group A (on pump CABG) the mean cross clamp time was (52.02 ±13.5) minutes ranged between (20 and 82) minutes, as regards CPB time the mean was (66.8± 14.6) minutes ranged between (39 and 98) minutes in on pump CABG group.

Table (5) illustrates that there is no statistically significant difference between two study groups as regards post-operative assessment including post-operative neurological examination. On the other hand, there is statistically significant **decrease** in ICU duration, and **increase** in EF with p-value <0.05 among group **off pump** CABG. Also there is a significant difference in post-operative ECG finding with high percentage of AF among on pump CABG group.

Table (5): Comparisons of Post-operative patients' assessment in different study groups

Variables	On pump CABG (n=100)		Off pump CABG (n=100)		p-value	Sig.
	No.	%	No.	%		
Post-operative re-exploration						
Negative	93	93%	97	97%	0.3	NS
Positive	7	7%	3	3%		
Post-operative inotropic support						
Need	21	21%	15	15%	0.2	NS
Not need	79	79%	85	85%		
Post-operative ECG						
NSR	81	81%	92	92%	0.03	S
AF	19	19%	8	8%		
Post-operative (Mean/SD)						
ICU course	2.5	1.1	2.2	0.5	0.005	HS
EF	52.05	8.8	59.1	5.9	<0.001	HS
Post-operative neurological-examination						
Negative	95	95 %	98	98%	0.2	NS
Positive	5	5%	2	2%		

Table (6): Illustrates age, sex, preoperative risk factors, number of distal and proximal anastomoses, ICU stay of patients with positive postoperative neurological examination.

	Age	Sex	Risk factors	No of distal anastomoses	No of proximal anastomoses	Postoperative neurological examination	Psot operative CT Brain	ICU stay/ day	Mortality
Group A									
1st patient	67	Female	Diabetic, HTN, Dyslipidemia	2	1	Prolonged DCL	Brain edema	3	-ve
2nd patient	61	Male	Diabetic, HTN, Dyslipidemia	4	3	Lt sided stroke	Rt parietal infarction	4	-ve
3rd patient	68	Male	Diabetic, HTN, Dyslipidemia, smoker	3	2	Coma (GCS 4T)	Multiple bilateral lacunar infarcts	11	Died due to sepsis
4th patient	71	Male	Dyslipidemia, smoker	2	1	Lt side monoparesis	Rt watershed infarction	3	-ve
5th patient	64	Female	Diabetic, Dyslipidemia	3	2	Rt sided TIA	free	3	-ve
Group B									
1st patient	68	Female	Diabetic, HTN	3	2	Lt sided TIA	free	3	-ve
2ndpastient	7o	Female	Diabetic, HTN, Dyslipidemia	2	1	Lt sided stroke	Rt parietal infarction	5	-ve

Discussion

Neurological injury resulting from cardiac surgery has a range of manifestations from focal neurological deficit to encephalopathy or coma[2]

In our study, we tried to answer this question "Is incidence of stroke and other neurological complications reduced after off-pump CABG versus conventional on-pump CABG or not?" By analyzing our experience with both techniques.

Analysis of the preoperative patients' criteria showed that the mean age in group A was 56.1 year and in Group B was 56.9 with no significant difference between both groups. This was found to be generally younger than CABG population in western cultures. **In 2007, Biancari** and others reported that the mean age was 66.2 ± 9.1 year in CCAB group and 65.9 ± 8.8 in OPCAB group. [3]

We also found that males represent 85% and females 15% in group A while in group B, males represent 70% and females make 30% of the whole group with no significant difference between the two groups. In **2010**, **Maas AH and Appelman YE** explained that CAD is less common in females as Cardiovascular disease develops 7 to 10 years later in women than in men and they assumed that exposure to endogenous oestrogens during the fertile period of life delays the manifestation of atherosclerotic disease in women.[4]

According to Hogue et al, in 1999, History of stroke is the strongest independent predictor of perioperative stroke. As a result, we excluded any patient with history of any neurological deficits.[5]

We also excluded any patient with carotid artery lesions in both groups by performing routine preoperative bilateral carotid artery duplex.In **Da Costa'sseries in 2015**, there was a 10% rate of ischemic stroke in patients with carotid stenosis ≥50%, and in carotid stenosis ≥ 70% this index reaches about 16.6 %.[6]

Palmerini and othersin2014, stated that chronic AF is a risk factor for cerebral embolism, and in patients undergoing CABG the peri-operative period may be at increased risk of stroke due to the necessity to modulate anticoagulant therapy. That's why we excluded patients with AF from to avoid misleading results.[7]

In our study, the mean preoperative EF in group A was 57.02 while it was 57.7 in group B with no significant difference between both groups. Patients with poor contractility are excluded from this study as according to **D'Ancona et al**, depressed LVEF% (<30%) is a stronge preoperative determinant for Cerebrovascular accidents. [8]

Severe atherosclerosis of the ascending aorta is often an unexpected intra-operative finding during CABG **(Palmerini)**. So intraoperative gross assessment of the ascending aorta for aortic wall astherosclerosis and calcifications was performed routinely for all patients in this study to exclude patients with aortic asthersclerosis.[7]

Regarding the average number of proximal anastomoses to the ascending aorta, the mean number in group A was 1.9 while it was 1.8 in group B with no significant difference between both groups. This means that manipulations of the ascending aorta in both techniques were comparable. Unlike this study, **Biancari's study in 2007** stated that he number of proximal aortic anastomoses in OPCAB group was 1.6 ± 0.7 significantly less than 2.1 ± 0.6 in the CCAB group which may be explained by decreased number of distal anastomoses in **Biancari's study** which is not the case in our study.[9]

In this study, the mean cross clamp time in group A was 52.02 min and the mean CPB time was 66.8 min. In **2003, Ancona's analysis** concluded that even myocardial ischemic time longer than 90 min and CPB longer than 120 min did not have a significant impact on CVA rate **(10).Ancona's** results are in contrast with the findings of **Bucerius *et al.* in 2003** where CPB time had a strong independent relationship with CVA occurrence.[11]

Analysis of the postoperative results in this study shows that more patients in group A (7 patients) had re-exploration for bleeding than group B (3 patients) but with no significant difference. **Frojd and Jeppsson in 2016** stated that re-exploration for bleeding was a significant predictor of perioperative stroke.[12]

In our study, incidence of postoperative AF was 19% in group A higher than that of group B 8% and it was statistically significant. On the same way, **Moller's met-analysis in 2008** showed a significantly reduced risk of AF in OPCAB group as compared with CCABG group [13]. However **Ercan's study** stated that there is no difference in the incidence of post-CABG AF between OPCAB and CCAB groups[14]. **Palmerini and others in 2014** suggested that new onset AF is also a risk factor for post-CABG stroke.[7]

Postoperative neurological examination in our study showed that incidence of postoperative major neurological complications in group A was 5% higher than that in group B (2%) but without significant difference. In group A "on pump CABG", 5 patients had cerebrovascular accidents in the early postoperative period with one mortality and 2 patients in group B with no mortality as detailed before in table[7].

In **Biancari's study in 2007**, Off-pump CABG was

performed in 557 patients, and conventional CABG was performed in 445 patients. Off-pump CABG was associated with a lower but not significant rate of postoperative stroke i (1.8% vs 2.5%, P = .45). **Biancari** concluded that the neuroprotective efficacy of OPCAB is marginal compared with that of CCABG[9]. Moreover, **Ascione's study in 2002** which included more than 4000 patient who had isolated CABG, 22% of them had off-pump technique demonstrated that off-pump surgery was associated with a substantial, but not significant, protective effect against stroke [15].

On the other hand, a Meta-Analysis of Systematically Reviewed Trials (3996 patients enrolled in 41 RCTs) made by **Sedrakyan and colleagues in 2006** illustrated that Off-pump CABG was associated with a 50% reduction in the relative risk of stroke, 30% reduction in AF and 48% reduction in wound infection. Stroke was reported in 27 trials and evaluated in 3062 patients. Off-pump use was associated with fewer strokes in most of individual trials. They explained that by one of the most important predictors of stroke after cardiac surgery is manipulation of the atherosclerotic ascending aorta. Off-pump surgery has a potential to reduce the need for aortic manipulation and there is evidence that off-pump CABG is associated with substantially reduced levels of S-100 protein (indicative of minor or major brain injury) and reduced microembolic release as compared with on-pump CABG. They found also substantial reduction in AF associated with off-pump. AF is associated with a higher risk of cerebrovascular accidents, and preventing it was found to reduce postoperative stroke occurrence [16]. Similarly, **Ercan and others in 2014** (a retrospective analysis of 478 consecutive low risk patients undergoing coronary bypass surgery between January 2002 and December 2007) was performed. of these patients, 83 cases had on-pump and 395 cases had off-pump CABG) detected significantly more neurological complications in the on-pump group (1.1% vs. 6% p=0.01). Accordingly even in low-risk patients CPB causes more neurological complications than OPCAB.[14]

Our study has some limitations: limited number of patients in both groups with its disadvantages regarding statistical significance. Also, short follow-up duration is a limiting factor. Other studies with larger number of patients and longer follow-up period may give more conclusive results.

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Biochemical and Physiological Study of the Effect of Sesame Seeds on Quail Males Exposed to Thermal Stress

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Abstract

The research was undertaken to investigate the effect of sesame seeds on quail birds exposed to heat stress through some haematological and biochemical parameters. The results indicate that heat stress caused a significant decrease in haematological parameters. A significant increase in cholesterol, triglycerides, HDL, VLDL, LDH, ALP, AST, ALT, protein, albumin and a significant decrease in LDL in serum. A significant increase in cholesterol, triglyceride, LDH, ALT and albumin in liver. A significant increase in cholesterol, triglycerides, LDH, and AST in heart.

Whereas sesame given a protective effect against the negative impact of heatby raising the level of blood variables tolevel close to what they are in the control group. Sesame also gave a significantly positive effect by reducing some variables such as cholesterol, triglycerides, LDL, VLDL as well as LDH, ALP, AST and ALT enzymesin addition to lowering total protein, albumin and raising the HDL in serum compared with the heat stress group. Sesame also decreased some biochemical parameters in both the liver and heart tissues.

Keyword: *Quail, sesame, heat stress.*

Introduction

Sesame have been widely employed in culinary as well as in traditional medicines for their nutritive, preventive and curative properties. Sesame is a primary source of phytonutrients such as omega-6 fatty acids, flavonoid phenolic anti-oxidants, vitamins, and dietary fiber with potential anti-cancer as well as health promoting properties. Sesame contain up to 55% oil and 20% protein, sesame proteins consisted of lysine, tryptophan and methionine while sesame oil is rich in linoleic and oleic acids[1].

In addition, it content tocopherol and fat-soluble lignans have identified as the major antioxidants of sesame seeds and oil[2].

Heat stress is one of the major causes that results in production losses in terms of decreases in weight gain, feed intake, feed efficiency, and increased mortality. Heat stress considered as a major distress in poultry especially in the hot regions of the world. This may be associated with biochemical and pathological consequences, which can potentially promote the process of oxidative stress[3].

Oxidative stress is one of the consequences of heat stress resulting in increased reactive oxygen species production (ROS), decrease serum and tissue levels of antioxidant vitamins in birds that play a role in the antioxidants defense system, oxidative stress occurs from excess ROS production, antioxidant depletion or both [4].

Breeding of quail has rapidly increased in the last years, quails enter a competition with the broilers as a source of meat as the demand for animal protein has increased therefore the heat stress considered as a major factor of problems for these birds and is enough to cause increased body temperature also change circulating leucocyte components [5].

This study aimed to evaluate the effect of heat stress on quails then observe the effect of administration of sesame on hematological parameters and some biochemical variables especially those related to liver and heart functions.

Materials and Method

Plant: The plant used is sesame seeds (*Sesamumindicum*) placed in empty capsules where each one contain 200 mg (1g/kg body weight).

Animals: Twenty healthy quail males aged (30-35) days and weighted (190-200) g was used. The birds kept in well-ventilated room at controlled temperature (24 ± 2) and eaten standard provender.

Thermal Stress: The thermal stress was done by placing the birds in the room (2x2) m^2 width and 2 m high with upper air vent. Electric heater used as a heat source, the temperature was set at 40 C° and measured by mercury thermometer.

Experimental Design: The birds divided into four groups (5 quail each). The treatment continued daily for 30 days period. The first group (control) given empty capsules (placebo). The second given orally, Sesame capsules daily for 30 days. The third group exposed to thermal stress for 8 hours daily for 30 days. The fourth group exposed to thermal stress for 8 hours and given directly oral seeds capsules daily for 30 days.

Blood Collection: Blood samples were collected from the bird wing vein at the end of the experiment then divided into two parts, one of them with (EDTA) used forcomplete blood count (CBC) and the other part was used for further biochemical analysis.

Hematological Parameters: Packed cell volume (PCV), hemoglobin (Hb), red blood cell count (RBCs), mean cell volume (MCV), mean cell hemoglobin (MCH), mean cell hemoglobin concentration (MCHC), total leucocyte count (TLC) and differential leukocyte count were assessed.

Blood Biochemical Parameters: Serum samples were analyzed for enzymatic activities of aspartate amino transferase (AST), alanine transaminase (ALT), alkaline phosphatase (ALP), lactate dehydrogenase (LDH), total cholesterol (TC), triglycerides (TG), total proteins (TP), albumin (Alb) and globulin (Glob).

Tissues Collection: Cardiac and liver tissues obtained after dissection of the bird, washed and placed in normal saline.

Cell Extract Preparation: Cardiac and liver samples were extracted by weight 0.5 g of the tissue and add 5 ml of Tris-HCl, grinder with mortar then grinding process completed with homogenizer and cell destroyed by ultrasound. Cooled centrifugation at 10000 rpm used to obtain the cell extract.

Tissues Biochemical Parameters: Biochemical analysis same as blood.

Statistical Analysis: The program (SPSS) version (21) was used to analyze the data [6].

Results

Table (1) shows that there was no significant differences in RBCs, Hb, PCV, MCV, MCH and MCHC between sesame and control group. The result also indicate a significant decrease in variables exposed to heat stress and a clear significant differences between heat-prone group and the group exposed to heat added sesame.

Table (1): Effect of sesame seeds and heat stressed on hematological parameters in quails

Groups / Parameters	Control	Sesame seeds	Heat	Heat + Sesame seeds
	Mean ± SE	Mean ± SE	Mean ± SE	M1ean ± SE
RBC (×10⁶/µl)	3.07 ± 0.00 ^{b}	3.00 ± 0.00 ^{b}	2.67 ± 0.05 ^{a}	3.26 ± 0.01 ^{c}
Hb (g/dl)	16.7 ± 0.05 ^{b}	16.1 ± 0.11 ^{b}	14.5 ± 0.40 ^{a}	18.1 ± 0.34 ^{c}
PCV (%)	51.5 ± 0.46 ^{b}	50.2 ± 0.11 ^{b}	44.9 ± 0.68 ^{a}	55.7 ± 0.63 ^{c}
MCV (fl)	167.4 ± 1.67 ^{b}	168.2 ± 1.07 ^{b}	156.0 ± 2.30 ^{a}	172.0 ± 0.57 ^{b}
MCH (pg)	54.3 ± 0.11 ^{b}	54.8 ± 0.76 ^{b}	49.9 ± 0.54 ^{a}	56.5 ± 0.28 ^{c}
MCHC (g/L)	325.0 ± 2.30 ^{ab}	329.0 ± 1.73 ^{b}	321.0 ± 0.57 ^{a}	330.0 ± 0.57 ^{b}
WBC (×10³/µl)	142.3 ± 1.84 ^{b}	148.5 ± 0.63 ^{c}	131.5 ± 3.21 ^{a}	160.8 ± 0.40 ^{d}
Lymph (×10³/µl)	120.0 ± 1.15 ^{b}	118.8 ± 1.29 ^{b}	113.3 ± 0.05 ^{a}	130.1 ± 1.86 ^{c}
Mono (×10³/µl)	19.0 ± 0.51 ^{b}	23.9 ± 0.11 ^{c}	15.5 ± 0.40 ^{a}	26.6 ± 0.05 ^{d}
GRA (×10³/µl)	3.30 ± 0.17 ^{ab}	5.8 ± 0.52 ^{c}	2.7 ± 0.51 ^{a}	4.1 ± 0.05 ^{b}

*The replicates were used for each treatment.
** Based on Duncan-test, different letter refers to a significant difference between treatments at P ≤ 0.05.

The results of table (2) demonstrated that there was a significant increase in total cholesterol, triglycerides, high-density lipoprotein (HDL), very low-density lipoprotein (VLDL), LDH, ALP, AST, ALT, total protein and albumin. Also showed a significant decrease in low-density lipoprotein (LDL). Whereas the group exposed to heat stress in the presence of sesame seeds gave a significant decrease in total cholesterol, triglycerides, HDL, LDL, VLDL, LDH, ALP, AST, ALT, total protein and albumin similar approximately to that in the control group in compared with the heat group alone.Also the results indicate that there were no significantchanges between sesame group and control group except a significant increase in HDL value and a significant decrease in LDL value.

Table (2): Effect of sesame seeds and heat stressed on serum biochemical parameters in quails

Groups / Parameters	Control	Sesame seeds	Heat	Heat + Sesame seeds
	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Cholesterol (mg/dl)	232.0 ± 2.00 ^{a}	244.0 ± 1.00 ^{a}	284.0 ± 6.00 ^{c}	258.0 ± 0.00 ^{b}
Triglyceride (mg/dl)	80.0 ± 1.00 ^{a}	87.0 ± 0.00 ^{a}	195.0 ± 0.00 ^{e}	130.0 ± 10.00 ^{b}
HDL (mg/dl)	120.0 ± 1.00 ^{a}	143.0 ± 1.00 ^{b}	162.0 ± 1.00 ^{c}	189.0 ± 2.00 ^{d}
LDL (mg/dl)	96.0 ± 1.00 ^{c}	83.6 ± 0.00 ^{b}	83.0 ± 5.00 ^{b}	41.6 ± 3.00 ^{a}
VLDL (mg/dl)	16.0 ± 1.00 ^{a}	17.4 ± 0.00 ^{a}	39.0 ± 0.00 ^{c}	27.4 ± 1.00 ^{b}
LDH (U/L)	1271 ± 3.00 ^{b}	1123 ± 17.00 ^{a}	1312 ± 4.00 ^{c}	1277 ± 7.00 ^{bc}
ALP (U/L)	697.0 ± 1.50 ^{a}	704.0 ± 25.00 ^{a}	946.0 ± 8.00 ^{b}	710.0 ± 6.00 ^{a}
AST (U/L)	50.0 ± 1.00 ^{a}	59.0 ± 2.00 ^{a}	94.0 ± 1.00 ^{d}	73.0 ± 1.00 ^{c}
ALT (U/L)	50.0 ± 3.00 ^{ab}	40.0 ± 0.00 ^{a}	75.0 ± 5.00 ^{b}	45.0 ± 5.00 ^{ab}
T. Protein (g/dl)	2.90 ± 0.05 ^{a}	2.90 ± 0.10 ^{a}	3.30 ± 0.05 ^{b}	3.15 ± 0.05 ^{ab}
Albumin (g/dl)	1.80 ± 0.00 ^{a}	1.75 ± 0.05 ^{a}	2.00 ± 0.00 ^{c}	1.90 ± 0.00 ^{b}
Globulin (g/dl)	1.10 ± 0.10 ^{a}	1.15 ± 0.05 ^{a}	1.30 ± 0.10 ^{a}	1.25 ± 0.15 ^{a}

*The replicates were used for each treatment.
** Based on Duncan-test, different letter refers to a significant difference between treatments at $P \leq 0.05$.

Table (3) indicates that there were a significant increase in liver tissue cholesterol, triglyceride, LDH, ALT and albumin in the heat-prone group, while sesame reduced this increase in the sesame-prone group. Whereas there was no effect on AST, proteins and globulins. As well, the results showed that there were no significant changes between sesame and control group.

Table (3): Effect of sesame seeds and heat stressed on liver biochemical parameters in quails

Groups / Parameters	Control	Sesame seeds	Heat	Heat + Sesame seeds
	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Cholesterol (mg/dl)	35.5 ± 3.00 ^{a}	33.0 ± 1.00 ^{a}	76.5 ± 10.50 ^{b}	48.0 ± 0.00 ^{a}
Triglyceride (mg/dl)	66.5 ± 10.50 ^{a}	50.0 ± 6.00 ^{a}	149 ± 6.00 ^{c}	119.0 ± 3.50 ^{b}
LDH (U/L)	3587 ± 38.5 ^{a}	3554 ± 61.0 ^{a}	6278 ± 60.0 ^{c}	3944 ± 47.0 ^{b}
AST (U/L)	14.0 ± 1.00 ^{a}	14.0 ± 2.00 ^{a}	18.5 ± 2.50 ^{a}	14.0 ± 0.00 ^{a}
ALT (U/L)	63.5 ± 4.5 ^{a}	64.5 ± 2.5 ^{a}	128.0 ± 1.00 ^{c}	101.0 ± 3.00 ^{b}
T. Protein (g/dl)	1.50 ± 0.20 ^{a}	1.50 ± 0.10 ^{a}	1.95 ± 0.05 ^{a}	1.55 ± 0.05 ^{a}
Albumin (g/dl)	1.20 ± 0.00 ^{a}	1.30 ± 0.10 ^{a}	1.70 ± 0.10 ^{b}	1.35 ± 0.10 ^{a}
Globulin (g/dl)	0.30 ± 0.00 ^{a}	0.20 ± 0.10 ^{a}	0.25 ± 0.15 ^{a}	0.20 ± 0.05 ^{a}

*The replicates were used for each treatment.
** Based on Duncan-test, different letter refers to a significant difference between treatments at $P \leq 0.05$.

The result of table (4) showed a significant increase in cholesterol, triglycerides, LDH, and AST in heart tissue in birds exposed to heat stress. Sesame reduced the level of these variables in stress group in the presence of sesame. There were no significant differences between the sesame and control groups. ALT, protein, albumin and globulin not affected by heat stress.

Table (4): Effect of sesame seeds and heat stressed on heart biochemical parameters in quails

Groups / Parameters	Control	Sesame seeds	Heat	Heat + Sesame seeds
	Mean ± SE	Mean ± SE	Mean ± SE	Mean ± SE
Cholesterol (mg/dl)	18.5 ± 0.50 ^{a}	19.0 ± 1.00 ^{ab}	21.5 ± 0.50 ^{b}	20.5 ± 0.50 ^{ab}
Triglyceride (mg/dl)	19.0 ± 0.50 ^{a}	17.0 ± 1.00 ^{a}	30.0 ± 0.50 ^{b}	26.0 ± 0.50 ^{b}
LDH (U/L)	5631 ± 139 ^{a}	6762 ± 96.5 ^{b}	8102 ± 80 ^{d}	7560 ± 202 ^{c}
AST (U/L)	20.0 ± 0.00 ^{a}	30.0 ± 2.00 ^{a}	45.0 ± 5.00 ^{b}	25.0 ± 5.00 ^{a}
ALT (U/L)	17.5 ± 1.5 ^{a}	15.5 ± 2.5 ^{a}	19.0 ± 2.00 ^{a}	15.0 ± 1.00 ^{a}
T. Protein (g/dl)	1.25 ± 0.05 ^{a}	1.35 ± 0.05 ^{a}	1.40 ± 1.00 ^{a}	1.30 ± 0.00 ^{a}
Albumin (g/dl)	1.15 ± 0.05 ^{a}	1.25 ± 0.05 ^{a}	1.25 ± 0.05 ^{a}	1.20 ± 0.00 ^{a}
Globulin (g/dl)	0.10 ± 0.00 ^{a}	0.10 ± 0.00 ^{a}	0.15 ± 0.05 ^{a}	0.10 ± 0.00 ^{a}

*The replicates were used for each treatment.
** Based on Duncan-test, different letter refers to a significant difference between treatments at $P \leq 0.05$

Discussion

In the present study, the administration of sesame had an effective effect in reducing oxidative stress in quail males. On the light of the presented in table (1) the results which is agreement with[7] they found that exposure of broiler chicken to thermal stress significantly reduces the level of hemoglobin and hematocrit values. Also[8] which indicated that heat stress significantly alter erythrogram by decreasing RBCs, PCV and Hb concentration producing anemia of macrocytic hypochromic nature. Macrocytic hypochromic anemia developed during the period of stress due to red cell destruction or hemorrhagic anemia induced by (ROS) production and decreased antioxidant levels resulting in various deleterious effects such as enhanced membrane rigidity, osmotic fragility, membrane fluidity, reduced erythrocyte survival, and structural damage to RBC membranes, ultimately resulting in hemolytic anemia.

In addition, [5] cleared that heat stress decrease RBCs, Hb, PCV, MCH and MCHC in exposed quail to 40C° in comparison with that exposed to 22C°. The reason due to that actual body temperature of poultry may fall as much as 20C° below the normal range. Poultry are not well adapted and disposed to high ambient air temperatures. They lack sweat glands in the skin and are therefore unable to gain much from natural evaporative cooling [9].

On the other hand, the results of table (1) indicate a decrease in WBCs, lymphocytes, monocytes and granules in the heat stress group in compared with control. As well, the sesame showed a significantly increased in monocytes and granulocytes numbers.

The results, which is agreement with [8], they pointed that a significant reduction in lymphocyte and eosinophil numbers in heat stress group compared with control quail group. Also the results agreement with [7] they reported that thermal stress causes reduction in number of lymphocyte by reduction in size of lymphatic organs like spleen, thymus and bursa. In addition, significant reduction of monocyte was observed.

[10]They showed that employing sesame in broiler diet at 250 and 500 mg/kg for 4 weeks, which enhances the blood picture represented by the increase in RBC, Hb, PCV and total leucocytes count as compared with the control.

Regarding to the heat stress group given sesame, it was evident the protective effect of sesame against the negative impact of heat, through the maintaining of blood variables in this type of birds. The reason due to the high nutritional sesame content of proteins, vitamins

and minerals as well an antioxidants that plays a major role in preventing oxidative stress caused by heat. Alsoplay an important role in its oxidative stability and anti-oxidative activity [11] and [12,13] talk that sesame meal is a good source of protein and usually used as animal feed.

As for the effect of sesame on the birds exposed to stress in the table (2) its results which is agreement with [14,15] they indicated that 5% of sesame oil work significant decrease in serum triglyceride, cholesterol, LDLc, VLDLc and significant increase in HDLc in rats and lambs. In addition, they explained that the reason might be due to presence of sesamin, which is a major lignan in sesame that have lipid lowering effect as these lignans inhibits the absorption of cholesterol from the intestine.

The results also agreement with [16] they mentioned that rabbits supplemented with sesame oil 5% were found to have lower LDLc.

Others [17,18] indicated that temperature between 41-42 °C is increase in the concentration LDH in the serum of layer hence at 22 weeks old. Also [19] showed that In Vitro exposure of bone cells to hyperthermia leads to increase of vitamin D3 and ALP compared with control group. As a result, to destroy of the cells in organs, lead to release of ALP into the blood and raises it.

In addition, [20] confirmed that the chronic heat stress significantly increased AST compared to the other groups in broiler. As well, [21] demonstrate that the increasing of total proteins may due to heat shock proteins rapidly synthesized and protect the poultry under some extent of heat stress.[22] Showed that plasma cholesterol, ALT, and AST levels were higher under heat stress and decreased due to addition of 10 g/kg grape seedsin quail.

Finally,[23] demonstrate that the diet contain cooked or peeled of sesame seeds into broiler chicks leads to a significant increase in weights and indicate that seed serve as a very good source of plant protein for livestock feed.

The results of the table (3) agreement with [24] they confirmed that heat stress increases synthesis of adrenocortical hormones that will be followed by blood glucose level and body fat. Therefore, they found that peppermint extract reduces cholesterol and triglycerides in broilers.

In addition, the results agree with[25] he indicated that Sesame oil have effective hepato-protective action against lead acetate induced hepatotoxicity in mice. Also showed that levels of ALT and AST increased with co-exposure to lead and lipopolysaccharide induced liver injury but were lower with sesamin treatment.

It is worthy to mention that heat stress have significant effect on serum biochemical and electrolyte parameters of broiler chickens, which assist preliminary evaluation of the damage degree of corresponding organs [26].

Finally, regarding to the outcome of table (4) the researchers[27,28]indicated that consumption of sesame or sesamol can reduce cardiovascular by reducing cholesterol and triglyceride in rats.

The results agreement with [29] they observed significant in cardiac muscle LDH in rats exposed to diazinon toxicity and the treatment with sesame oil caused significant declines in enzyme by 80%. Also the treatment with sesame oil alone or synergistic with alph-lipoic acid showed protective effect against oxidative stress induced bydiazinon.

Conclusion

On the light of the previously results indices, it appears that the heat stress have a negative effect on haematological and biochemical parameters whether in serum or tissues. The addition of sesame caused significant positive effects on parameters thus we can use sesame as a protective agent against oxidative stress such as heat stress in quails.

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Universal Exercise Unit versus Functional Resisted Training Effect on Muscle Strength in Spastic Diaplegia

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Abstract

Background and Objective: Strength training is one of the most important techniques in pediatric rehabilitation especially in children with CP that has no adverse effects on spasticity or R.O.M.

Aim: Comparing between effect of Universal Exercise Unit and Functional resisted exercises on the strength of lower limb muscles in children with spastic diaplegia.

Methodology: Forty spastic diaplegic children of both sexes (20 boys and 20 girls), their ages between 3 to 6 years and divided to 2 groups, (A) had Functional resisted training exercises three exercises (squatting, sit to stand, forward step up) for both lower limbs in addition to specially designed physical therapy program. (B) had Universal Exercise Unit strengthening exercise for lower limb muscles (Pushing movement) in addition to specially designed physical therapy program .peak force, Total work, Maximum work repetition, Average power, Agonist to antagonist ratio were assessed by using Biodex Isokinetic Dynamometer.

Results: Significantly improvement in pre and post treatment for study child (More improvement in B than study group A) in all measured variables.

Conclusion: It can be concluded that Universal Exercise Unit might be effective way for improving lower limb strength more than Functional resisted training exercises in spastic diaplegic cerebral palsy children.

Keywords: *Cerebral palsy, Diaplegia, Average Peak Force, Total Work, Maximum work repetition, Average power, Agonist to antagonist ratio, Universal Exercise Unit, Functional resisted training*

Introduction

Cerebral palsy is occurs in early stages and correlated with a motor impairment affecting motion and posture[1]

Spastic Diplegia is the common term applied to difference of spastic quadriparesis in which the lower limbs spasticity is more than upper limbs and detected during crawling phase. Growth of lower limbs suffer s upper torso grows normally[2]

Weakness was recorded as clinical status in spastic cerebral palsy and implied by names assigned to CP types. No evidence for support clinical bias against testing and training for individuals with CP[3]

Strength-training was encourag results with CP, partial in addressing muscle weakness and refining capabilities[4]

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Muscle weakness is main factor in dysfunctional movement in those with CP[5] and related to muscle short

Ening[6] Alterations affect force-generating in muscle[7]

Universal exercise unit, therapy sessions extended are from three to four hours Children and adults have neurological conditions can used. Spider cage is made of metal could be depending on population pediatric or adults. Elastic resistance of cords used to increase strengthen of muscles[8]

Universal exercise unit (UEU) therapy is one of the treatment method that can be used other than traditional physical therapy exercises for CP children [9]

Functional strength training with anti-gravity muscles and aiming at maximal carry and could given by using resistance and gravity, weight, resistance bands and weights.[10]

Biodex Isokinetic Dynamometer provides a reliable method of testing and training of muscle performance [11]

So the purpose of this study is to compare between Universal exercise unit and functional resisted training effect on muscle strength in spastic diaplegia.

Materials and Method

Study Design: This study was a randomized controlled clinical trial. The evaluation process was conducted in the Biodex isokinetic lab at the Faculty of Physical Therapy and the intervention process were conducted in the outpatient clinic of the Faculty of Physical therapy from April 2018 till July 2018.

Subjects: Forty children with spastic diplegia, aged between 3-6 years, selected from both sexes from the outpatient clinic of the Faculty of Physical Therapy, Cairo university participated in this study, they were selected according to the following inclusion criteria:- (1) Diagnosed as C.P of spastic diaplegia (2) Degree of spasticity was 1 according to Modified Ashwarth's scale (3) Able to understand orders given to them. Exclusive criteria: (1)No fixed deformities (2)Neither visual nor auditory problems (3)Neither perceptual nor cognitive problems.

Procedures: The study was conducted after the approval of the ethical committee of the Faculty of Physical therapy, Cairo University.All participants (Child's parents) gave their informed consent for participation. The test procedures were explained to each participant. All participants' rights to privacy were protected. All participants were protected from harms.

Evaluation process:

Measuring lower limbs muscle strength: Peak force, maximum work repetition, totalwork, average power, Agonist to antagonist ratio was detected by using Biodex Isokinetic Dynamometer.

1. **Collection of personal data:** Included name, age, weight, addresses and telephone number.
2. **Testing Session:** Children were educated and were informed of the purpose and intention of the test.
   (a) **Starting position:** 45 degree flexion for both hips and knees.
   (b) **Range of motion:** From 45 degree flexion to 0 degree extension.
   (c) **Pushing velocity:** 9.17 m/sec.
   (d) **Movement repetitions:** 5 repetitions.

The Child was in semi reclined position and the trunk fixed by straps and the child was asked to move or push the handle[12]

Treatment intervention:

For Study group A: Children of this group received Functional resisted training exercises including three exercises (squatting, sit to stand, forward step up) for both lower limbs in addition to specially designed physical therapy program to manage the other problems.

1. **Squatting:** The squat begins in upright with knees and hips fully extended and squats down in a continuous motion till desired squat depth in continuous motion ascends return to upright position[13]
2. **Sit to Stand:** Performing the Exercise (A)The child Sit on a stool)B)The child Slide forward as far as possible)C)The child Moves his feet back so his heels are lined up with the front edge of the chair)D) The child Uses his butt and legs to stand up[14]
3. **Forward step up:** Child placed entire right foot onto t chair. Press right heel onto bench, bring his left foot to meet his left so he was stand on bench[15]

For Study group B: Children of this group received

Universal Exercise Unit strengthening exercise for lower limb muscles (Pushing movement) addition to specially designed physical therapy program.

Universal exercise unit

Child Position: Supine lying position on the table inside the spider cage, child fixed with straps on the chest, pelvic, and on the non-involved limb while the other lower limb is free to perform exercise.

Child is asked to push his\her lower limb against weight. The child performed this movement 10 repetitions at first then increase every session with the estimated weight till 10 sets then increase weight and decrease sets to one set. we can calculate weight by using Fixed Percentage of a Person's Body Weight Method[16] and repetitions by using one Maximum Repetition, training start with dynamic warm-up, initially 1 or 2 sets of 8–15 repetitions with a light to moderate load (about 30–60% 1 RM) [17]

Results

In the present study, the therapeutic efficacy of the universal exercise unit versus functional resisted training effect on muscle strength in spastic diaplegia was investigated, peak force, maximum work repetition, total work, average (AVG) power and agonist/antagonist (AGON/ANTAG) ratio were be assessed before treatment (pre-treatment) and after three successive months of treatment (post) for each patient in both groups (A and B).

Regarding the age in both groups (A and B), the results of the present study revealed a statistically insignificant deference between the two groups as the mean values of the age were 55 ± 10.6 years and 53.7 ± 10.7 years, respectively with p>0.05 **(Table 1).**

Table (1): Mean values of age (months) within studied groups.

Variable		Mean±SD	Range	t-value	p-value
Age (Months)	Group (A)	55±10.6	36 – 72	0.51	0.615 NS
	Group (B)	53.7±10.7			

SD: Standard Deviation. NS: Non-Significant.

A statistically insignificant deference (p>0.05) was recorded as mean values of groups (A and B) pretreatment were 87.16 ± 6.52 and 86.38 ± 7.39 for peak force, 182.42 ± 16.27 and 178.37 ± 13.38 for total work, 35.44 ± 4.85 and 37.3 ± 6.32 for average (AVG) power, 60.02 ± 9.98 and 59.11 ± 9.6 for agonist/antagonist ratio respectively **(Table 2)** and 2 and 2.5 for maximum work repetition **(Table 3).**

Comparing mean values after treatment application between groups (A and B) showed a statistically significant deference as mean values were 101.07 ± 8.98 and 108.35 ± 9.57 for peak force, 203.51 ± 14.93 and 223.13 ± 20.82 for total work, 44.02 ± 5.46 and 49.43 ± 7.39 for average (AVG) power, 67.52 ± 10.06 and 80.37 ± 7.7 for agonist/antagonist ratio respectively **(Table 2)** and 3 and 4 for maximum work repetition **(Table 3).**

Table (2): Mean ± SD pre and post treatment mean values of studied groups.

Variable	Time of Treatment	Group (A)	Group (B)	t-value	p-value
Peak force	Pre	87.16 ± 6.52	86.38 ± 7.39	0.35	0.727
	Post	101.07 ± 8.98	108.35 ± 9.57	2.48	0.018
Total work	Pre	182.42 ± 16.27	178.37 ± 13.38	0.86	0.395
	Post	203.51 ± 14.93	223.13 ± 20.82	3.42	0.001
Average (AVG) power	Pre	35.44 ± 4.85	37.3 ± 6.32	1.04	0.305
	Post	44.02 ± 5.46	49.43 ± 7.39	2.64	0.013
Agonist/antagonist ratio	Pre	60.02 ± 9.98	59.11 ± 9.6	0.29	0.771
	Post	67.52 ± 10.06	80.37 ± 7.7	4.54	0.000

Table (3): Median pre and post treatment mean values of studied groups.

Variable	Time of Treatment	Group (A)	Group (B)	u-value	p-value
Maximum work repetition	Pre	2	2.5	434.5	0.306
	Post	3	4	314.5	0.005

Discussion

The selection of muscle strength to be evaluated in the present study also come in agreement with **Diamond and Armento**[18] who stated that all CP give relative atrophy of pelvis and lower limb muscles and secondary short stature.

Choosing Biodex Isokinetic Dynamometer for muscle strengthening evaluation was accepted by pervious studies such as **ALangari, and AL-Hazzaa**[19] reported that, Isokinetic illustrated highly reproducible and extensively used to evaluation of muscle strength.

Present study focused on the following parameters of the child's muscle strength; peak force, Total work, Maximum work repetition, Average power, Agonist to antagonist ratio which are evaluated by Biodex Isokinetic Dynamometer.

The previous data were collected to compare between pre-treatment differences of the two groups (2 study groups), pre and post treatment differences of the same groups and post treatment differences of the two groups.

Results were revealed no significant differences in variables; this confirms method that used in the two groups. Significant differences were observed when comparing before and after treatment mean values of measuring variables and supported by using physical therapy modalities in improving lower limb muscle strength (average peak force, total work, Maximum work repetition, Average power, Agonist to antagonist ratio).

Progressive loss of muscle strength with spasticity, interferes affected with motor rehabilitation **Scholteset** CP has to generate strength is rarely evaluated and quantified, and consequently prioritized to the goals of a treatment[20]

Taylor et al[21] found increase capacity to generate strength carrying CP one could cite progressive resistance exercises and gait established functional parameters, motor dexterity and conditioning

Damianoet al[22] concluded that children with normal motor development, as well as carrying spasticsdiplegia increase their capacity to generate strength when submitted to a resistive training. **Thompson et al** reported less ability to generate strength in muscle of lower limbs, except for hip extensors outcome of strengthening on CP patients. Isotonic, isometric, and isokinetic exercises using as faster increase muscle strength [23]

Increase average peak force, total work, Maximum work repetition, Average power, Agonist to antagonist ratio. These results could be attributed to strengthening of lower extremity muscles that might have caused of sufficient force. Muscle strengthening found in such children is necessary to produce joint stability and adequate equilibrium reactions agreement results with **Karimi et al [24].**

Concerning the pre -treatment data and post treatment results of the measured variables (average peak force, total work, Maximum work repetition, Average power, Agonist to antagonist ratio)of mild spastic diplegic children of both groups by using Biodex Isokinetic Dynamometer, the results revealed significant improvement in both groups ($p< 0.05$).

The significant improvement in the post treatment mean values of both groups might be attributed to the effect of selected physical therapy program, directly toward inhibiting abnormal muscle tone, abnormal postural reflexes, facilitating normal patterns of postural control and developing differ in normal movement trunk and decrease extremities.

Improving in study group A might be attributed to improvement of muscle strength (average peak force, total work, Maximum work repetition, Average power, Agonist to antagonist ratio) due to the effect of functional resisted training; this is supported by **Shepherd and Adams**[25] task specific training yields long lasting

cortical re organization and is specific to the areas of brain being used with a task. **Blundell and Shepherd**[26] found, non-weight bearing exercises may have limited transfer ability to actions that are weight-bearing and involve different and more complex patterns of muscle activation.

Higher improvement in the study group B (average peak force, total work, Maximum work repetition, Average power, Agonist to antagonist ratio) might be due to the effect of UEU; this is supported by **Koscielny**[27] UEU is a large, metal, three dimensional cages that houses a system of pulleys and bungees. Particular muscle group to work without compensations in order to enhance a specific movement necessary to achieve a functional skill.

Also this is supported by **Richard Koscielny**[28]who stated that the UEU is a versatile tool consisting of a system of pulleys, straps, and splints using during all stages of therapy. Pulley system enables one to isolate the desired muscle group work on specific movement or function. System of exercises performed range of motion, both active and passive, and improved muscle flexibility and tone.

Conclusion

Universal Exercise Unit and Functional resisted training is useful therapeutic modality increase lower limb muscle strength in spastic diplegic cerebral palsied children.

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Ethical Clearance: Cleared by the ethical committee of Department of Physical Therapy For Pediatrics, Banha Teaching Hospital, Banha, Egypt

Conflict of Interest: No

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Effect of Cinnamon and Sodium Selenite on the Concentrationof Ceruloplasmin and Leptin Hormone in Plasma of Healthy Rabbits with Experimental Diabetes Mellitus

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Abstract

Diabetes is a chronic disorder associated with abnormally high levels of the sugar glucose in the blood. Research has continued to study medicinal plants extracts for reducing blood sugar.

The present study aimed to evaluate the effect of using Cinnamon extract, at a dose of 2000 mg/kgB.W, and Sodium Selenite at a dose of 0.05 mg/kg diet, on Ceruloplasmin and Leptin hormone concentrations ond rabbits to overcome the toxic effects of Alloxan as well as to renovate and repair the damage in tissue caused at a dose of 400 mg/kg B.W by intraperitoneal injection.

The results of the study showed that the experimental diabetes by Alloxan at a dose of 400 mg/kg B.W resulted in a significant decrease ($P \leq 0.05$) in the concentration of Ceruloplasmin and Leptin hormone in the plasma of males and femalesrabbits., whereas treatment with Cinnamon and Sodium Selenite increased Ceruloplasmin and Leptin hormone in rabbits blood plasma.

Keyword: *Cinnamon, Leptin, plasma, Ceruloplasmin.*

Introduction

Many researchers in the field of public health dealt with Diabetes; its causes, complications and the required procedures to avoid developing this disease or mitigating its influences. Diabetes Mellitus is known as a condition caused by high blood sugar levels, which is caused by insulin imbalance, by reduction of its level in blood or increment in the factors inhibiting its influence. This disturbance leads to abnormalities in the metabolism of the body's basic substances (carbohydrates, lipids, and proteins) and disturbs the distribution of water and electrolytes. Diabetes comes in the forefront of diseases resulting from glands malfunctioning [1]. International and local research has continued to study medicinal plants for reducing blood sugar, one of these plants used to reduce the level of blood sugar is *Cinnamomum zylanicum*.

Selenium, on the other hand, is an essential component of the diet of humans and most animals, and it has a major role in metabolic processes. It is an antioxidant that the body needs in small amounts and is an essential component of the enzyme (GSH-px). Soil and water are the main source of Selenium in plants and animals. Selenium is in an inorganic form that can turn into different oxidation states under certain conditions.

Leptin is a hormone that regulates B.W and it consists of 167 amino acids, and is excreted from adipose

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tissue, and some of it is excreted from the hypothalamus, stomach, placenta, skeletal muscles.[2]. Leptin was discovered by the researcher Zhang and his group in 1994[3], after isolating the obesity gene responsible for hormone formation by recombinant technology DNA on chromosome 6 when they found that mutations in these genes cause obesity in mice. Leptin is found in adipose tissues, especially subcutaneous adipose tissue where its level is 106 times higher than in the brain [4].

The aim of this study was to investigate the effect of Cinnamon and Sodium Selenite on Ceruloplasmin and Leptin in bloodplasmaof healthy rabbits with experimental diabetes.

Materials and Method:

Materials: Alloxan and Sodium Selenite were obtained from a bureau of medical supplies in Nineveh, In this study, 54 male and 54 female rabbits, ages of 9-12 months and weights ranging from 1250 to 1500g,; confirmed free of disease via periodic inspection by veterinarians from the Faculty of Veterinary Medicine. They were placed in specially made metal cages, under suitable conditions of temperature, 25 °- 28°C, and a period of lighting of 14 hours a day with good ventilation presented using aluminum containers in equal quantities and in a fixed sequence for all treatmentsWater was given to rabbits by containers attached to the cage from outside to prevent spilling.

A standard dietfor rabbits with a protein content of 16.5% was used in this study. This ratio was determined by the N.RC[5].Components used were the same adopted by [6].

The calculated energy in the diet was 2213 kilocalorie/kg diet according to the recommendations adopted by the N.R.C[5].

In this study we used the bark of cinnamon tree, and its classification was verified depending on [7]. The scientific name of the plant is (*Cinnamomum Zeylanicum*).

Preparation of cinnamon extract: For an easy and inexpensive method of preparation; cinnamon bark was cut into small pieces, then boiled water was added to 20 g of chopped cinnamon, left to boil for 30 minutes and then filtered to obtain watercinnamon extract [8] at a concentration of 2000 mg/ml of the extract after filtration,

Induction of Experimental Diabetes: Fodder was discontinued from rabbits for 24 hours before being injected with Alloxan at a concentration of 400 mg/ kg of B.W[9]. Alloxan was dissolved inphysiological solution immediately before use in a single dose under the intraperitoneal membrane [10].

Rabbits were fed and drinking water was replaced with 10% glucose solution after injection, for 24 hours, to reduce Hypoglycemia shock due to Aloxan treatment[11]. Treated rabbits' blood samples were taken to measure glucose level every two days during the first week of injection to ascertain the incidence, and to observe signs of extreme fatigue and frequent urination [12]. After confirming the development of diabetes, the rabbits were left for 40 days under observation for the purpose of adapting to the disease and producing complications on the body.

After randomly dividing the rabbits into six groups for each sex, the rabbits of each group were weighed after keeping off the fodder for 12 hours; the average primary weights were calculated and recorded for each group as a primary weight. Final weight was calculated after eight weeks of starting the treatment.

Blood samples were obtained by cardiac punctureto obtain plasma for the measurement of Ceruloplasmin and leptin hormone.

Rabbits were randomly divided into six groups (9 rabbits/group) for each sex. After the preliminary period, the treatment of rabbits started to be daily for 8 weeks.

Method: Ceruloplasmin concentration in plasma was estimatedusing the modified method of [14].

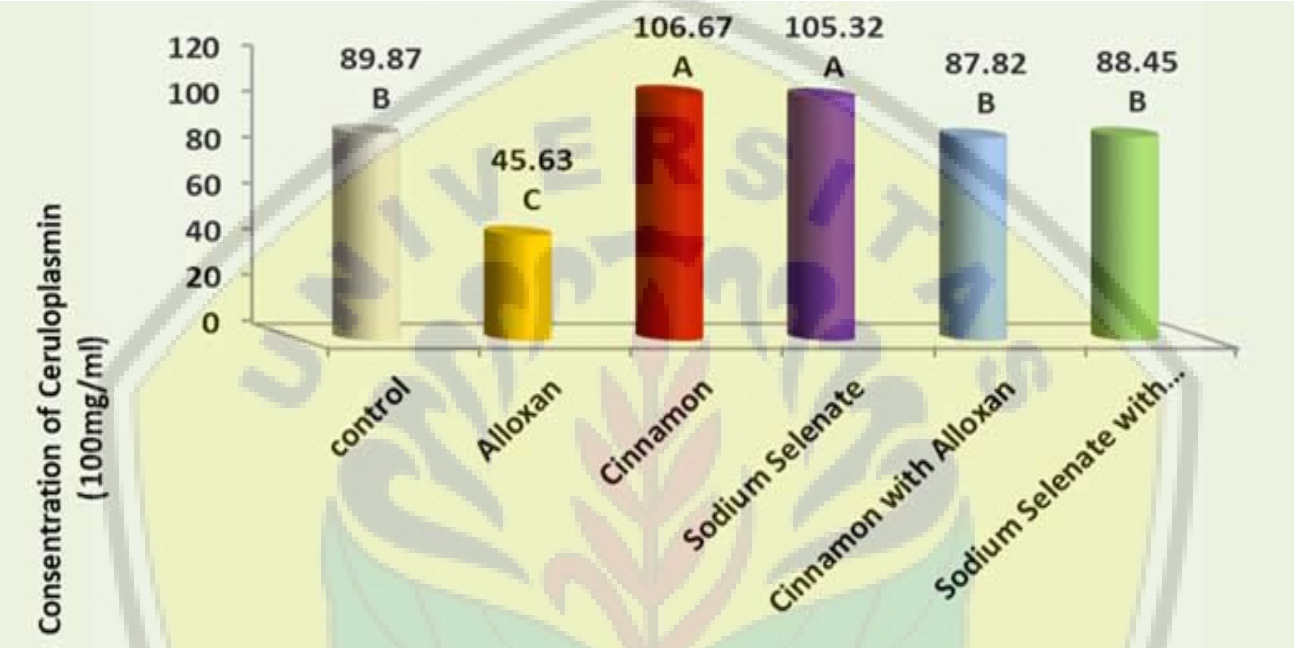
The concentration of Leptin in plasma of malerabbits was estimated using the analysis kit and then estimated at 450 nm wavelength.

Statistical analysis was performed using one way analysis of variance (C.R.D). Differences among the groups were determined using the Duncan's Multiple Range Test for all measurements in the study and the level of statistical discrimination was ($P \leq 0.05$)[15], usingSAS (2001).

Results and Discussion

In Figure (1), a significant increase was observed in Ceruloplasmin concentration in the plasma of male rabbits of Cinnamon group and Sodium Selenite group

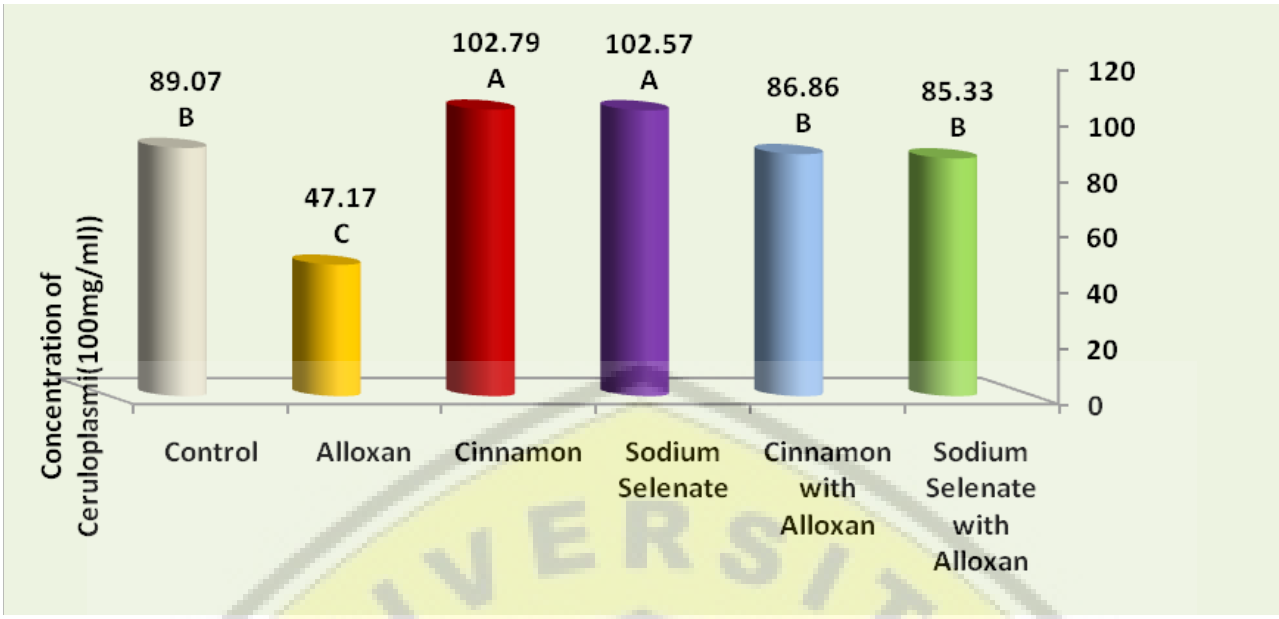
compared to other treatments, where the arithmetic mean of cinnamon group was 106.67mg/100 ml and for the Sodium Selenite group 105.32mg/100 ml, whereas the Alloxan group showed a significant decrease in Ceruloplasmin concentration in the plasma of malerabbits compared to other treatments, with an arithmetic mean of 45.63mg/100 ml. The group of Cinnamon with Alloxan and the group of Sodium Selenite with Alloxan improved the concentration of Ceruloplasminto reach the control level, where the arithmetic mean of the group of Cinnamon with Alloxan was 87.82mg/100 ml and for the group of Sodium Selenite with Alloxan was 88.45mg/100 ml. The control had a mean of 89.87mg/100 ml.



Values are expressed in arithmetic mean (±) standard deviation and the number of rabbits/group = 9
Figures associated with different letters indicate a significant difference at a probability level ($p \leq 0.05$)

Figure 1: Effect of treatment with cinnamon extract and of Sodium Selenite on Ceruloplasmin concentration (mg/100m) in plasma of healthy male rabbits having experimental diabetes.

Figure (2)shows a significant increase) in Ceruloplasmin concentration in the plasma of female rabbits of the Cinnamon group and the of Sodium Selenite group compared to other treatments, where the arithmetic mean of Cinnamon group was 102.79mg/100 ml and for the Sodium Selenite group 102.57. Whereas the Alloxan group showed a significant decrease in Ceruloplasmine concentration in the plasma of female rabbits compared to other treatments, where its arithmetic mean was 47.17mg/100 ml. The group of Cinnamon with Alloxan and the group of Sodium Selenite with Alloxan improved the Ceruloplasmin concentration to reach the control level. The arithmetic mean of the group of Cinnamon with Alloxan was 86.86mg/100 ml and the group of Sodium Selenite with Aloxan was 85.33mg/100 ml, whereas the control had a mean of 89.07mg/100 ml.



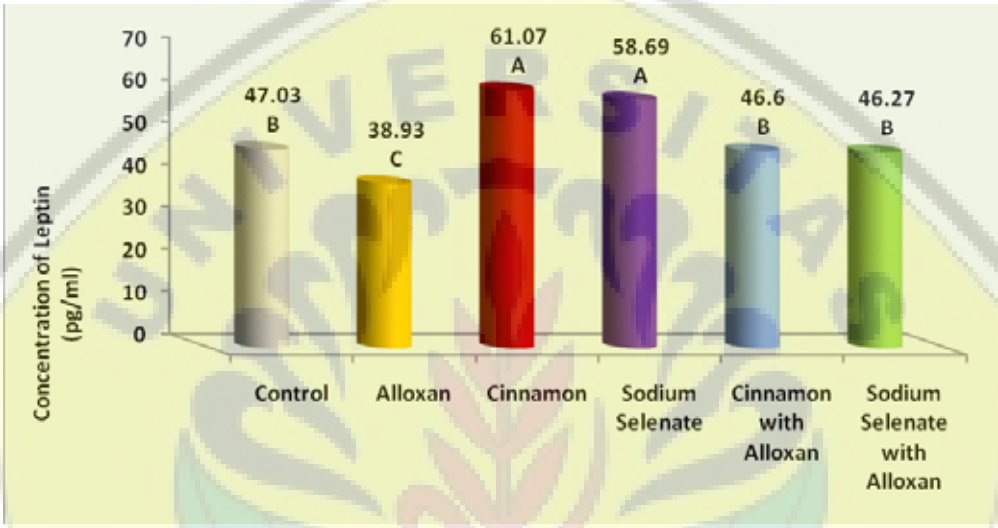
Values are expressed in arithmetic mean (±) standard deviation and the number of rabbits/group = 9
Figures associated with different letters indicate a significant difference at a probability level ($p \leq 0.05$)

Figure 2: Effect of treatment with Cinnamon extract and Sodium Selenite on Ceruloplasmin concentration in plasma of healthy female rabbits with experimental diabetes.

The increased concentration of Ceruloplasmin can be attributed to the high content of Cinnamon extract on polyphenols, flavonoids and glycosides, which reduce oxidative stress by removing free radicals and increasing concentrations of antioxidants and activating them, especially antioxidant enzymes such as Catalase, (SOD),(GSH-px)., and Glutathione reductase. Thus reducing the effect of oxidative stress on ceruloplasmin, which results in increase of its concentration in blood and prevents its interaction with mineral ions[16]. In addition to inhibition of the process of peroxidation of lipids andreducing the concentration of free cholesterol and LDH-C by breaking down the chain of diffusion reactions of free radicals and thereby increasing the concentration of Ceruloplasmin in plasma[17],[18].

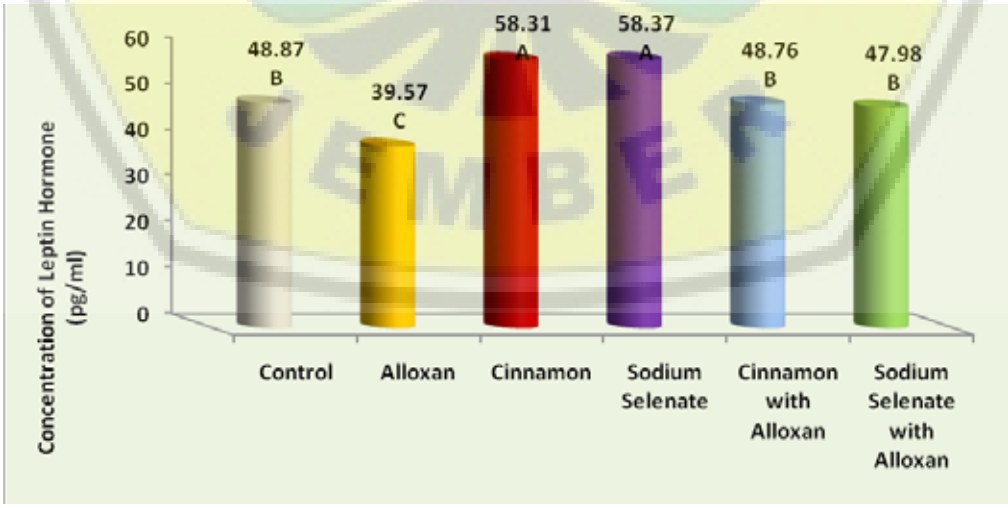
The low concentration of Ceruloplasmine in the Alloxan group can also be attributed to the low concentration of hemoglobin asreduced Ceruloplasmin is associated with anemia because it is necessary to release iron from its reservoirsas well as being necessary to exploit iron naturally by the Normoblast to build hemoglobin [19]. This association between hemoglobin and Ceruloplasmin is through the latter's role in the transfer of iron from its reservoirs in the liver to the position of hemoglobin formation inthe bone marrow, and thus, the formation of erythrocytes. Accordingly low concentration of hemoglobin is associated with low Ceruloplsmin[20].This might also be attributed to the lack of Ferritin retaining iron, transferrinand the low iron in the blood serum [21]. The reason might also be attributed to the low basal metabolic rate [22].Another reason might be that Ceruloplasmin is a protective antioxidant that prevents the formation of free radicals by binding to minerals such as iron Fe^{+} 2and copper ion (Cu2) and preventing the formation of free radicals [22][23]. This decrease may be due to complications of diabetes and the resulting high concentrations of free radicals, which induce Ceruloplasmin to remove these free radicals, thereby reducing its concentration in the blood [24]. Figure (3) shows a significant increase in the concentration of Leptin hormone in serum of male rabbits for the Cinnamon group and Sodium Selenite group compared with other treatments where the arithmetic mean of Cinnamon group was 61.07pg/ml and for the Sodium Selenite group 58.69pg/ml, whereas the Alloxan group showed a significant decrease in the concentration of Leptin hormone inplasma of malerabbits compared to other treatments where its arithmetic mean was 38.93pg/ml.Results showed an improvement in the concentration of Leptin hormone in the group of Cinnamon with Alloxan and ofarithmetic mean equals

to 46.6 pg/ml, and in the group of Sodium Selenite with Alloxanof arithmetic mean equals 46.27pg/ml, until their level reached the control group of arithmetic mean equals 47.03pg/ml. Figure (4)shows a significant increase in the concentration of Leptin hormone in sera of femalerabbits for Cinnamon group and Sodium Selenite group compared to other treatments, where the arithmetic mean of Cinnamon group was 58.31pg/ml, and for Sodium Selenite group 58.87pg/ml. Alloxan group showed a significant decrease in the concentration of Leptin hormone in sera of female rabbits compared to the other treatments, where its arithmetic mean was 39.57pg/ml. The group of Cinnamon with Alloxan and the group of Sodium Selenite with Aloxan improved in the concentration of the Leptin hormone with an arithmetic mean of 48.76pg/ml for the group of Cinnamon with Alloxan, and 47.98pg/ml for the group of Sodium Selenite with Alloxan, till their levels reached that of the control withan arithmetic mean 48.87pg/ml.



Values are expressed in arithmetic mean (±) standard deviation and the number of rabbits/group = 9
Figures associated with different letters indicate a significant difference at a probability level (p≤0.05)

Figure 3: Effect of treatment with cinnamon extract and Sodium Selenite on the concentration of Leptin hormone (Pg/ml) in plasma of healthy male rabbits with experimental diabetes.



Values are expressed in arithmetic mean (±) standard deviation and the number of rabbits/group = 9
Figures associated with different letters indicate a significant difference at a probability level (p≤0.05)

Figure 4: Effect of treatment with Cinnamon extract and Sodium Selenate on the concentration of Leptin hormone (Pg/ml) in plasma of healthy female rabbits with experimental diabetes.

High concentration of Leptin in the group treated with Cinnamon at a concentration of 2000 mg/kg B.W may be due to a positive relationship between the Leptin hormone and the concentration of insulin hormone and the level of glucose in the blood, and because Cinnamon contains Cinnamaldehyde, Eugenol and Polyphenol, which have significant role in stimulating the secretion of Insulin from beta-pancreatic cells. Increased insulin secretion increases the formation of Leptin hormone mRNA in the adipose tissue and then secretes Leptin to increase glucose metabolism [25]. Whereas the low level of Leptin in the group treated with Alloxan may be due to increased oxidation and burning of fat to produce energy from adipose tissue as well as low levels of insulin, which has a positive relationship with Leptin [26].

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Role of Chromium Supplementation in Reducing Insulin Resistance among PCOS Patients: A NarrativeMini Review

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Abstract

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder among women of reproductive age. PCOS is associated with metabolic abnormalities, including insulin resistance. Dietary supplements, including chromium, are attractive strategies for alleviating insulin resistance. Several studies have been conducted to investigate the effect of chromium supplementation on PCOS. Therefore, the present review aims to highlight the impact of chromium supplementation on insulin resistance among women suffering from PCOS. Clinical trials were chosen to examine the effect of chromium picolinate supplementation among women with PCOS. The results demonstrated the beneficial effects of chromium supplementation as it decreased fasting blood sugar, serum insulin, and insulin resistance. These findings suggest that supplementing PCOS patients with chromium may alleviate insulin resistance.

Keywords: *Chromium picolinate, Insulin resistance, Polycysticovary syndrome.*

Introduction

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder among women, affecting approximately 5–10%. It causes anovulation and infertility in women during their reproductive age[1,2]. The risk of PCOS increases as a result of obesity, particularly increased abdominal fat[3]. PCOS is characterized by an increased prevalence of impaired glucose tolerance and insulin resistance.

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The manifestation of PCOS and insulin resistance maybe improved through a healthy diet and regular exercise. The impact of the diet's macronutrient com position on PCOS has been previously studied [4]. In addition, growing evidence suggests that trace elements, such as copper, zinc, magnesium, calcium, manganese, and chromium, play a role in the pathogenesis of PCOS[5].

Chromium (Cr) is an essential nutrient for both humans and animals. In general, the organic forms of Cr are better absorbed than the inorganic forms[6]. The metabolic effects of Cr are affected by its ingested formulation. Chromium picolinate is a common form of Crfound in dietary supplements [7,8].

Crhasbeenrecognizedasanessentialmineralrequired in the insulin signal cascade[9]. Daily supplementation of 200–1000 mcg of chromium picolinate may decrease

blood glucose concentration[8]. Recent studies found that chromium supplementation improves PCOS patients' insulin metabolism and resistance conditions[10] pre-diabetic condition that precedes the onset of type 2 diabetes. The signs and symptoms of insulin resistance are similar to those of the insufficient dietary intake of Cr, including glucose intolerance; hyperinsulinemia; decreased HDLcholesterol and lean body mass; and increased LDL cholesterol, triacylglycerols, total cholesterol, and fat mass[11]. Insulin resistance offers potential avenues for early intervention to treat different diseases.

The majority of the recent available drugs that improve insulin sensitivity have adverse effects. Therefore, dietary supplements, such as Cr, are attractive strategies to alleviate insulin resistance[12,13]. However, studies investigating the effects of Cr on PCOS patient improvement are limited. Therefore, the present study aims to conduct a narrative review of the findings of previous studies that explored the impact of chromium picolinate on the insulin resistance indices among PCOS patients.

Methodology

The impact of Cr supplementation on insulin resistance among women suffering from PCOS was searched electronically using different databases, including Medline, Pub Med, and Google Scholar. All the studies published in the last 10 years period (2008–2018) were considered. Initially, 560 abstracts were found and evaluated based on the inclusion and exclusion criteria. The review included pilot, clinical, and randomized control trials that study the effects of chromium picolinate supplementation on PCOS patients. None of the animal studies, reviews, or qualitative research were included in this review. Case reports, essays, and blogs were also excluded due to the lack of reliability and authenticity. Therefore, a total of 7 articles qualified for use in this review.

Results and Discussion

The qualified articles in this review investigated the effects of daily chromium picolinate supplementation on insulin resistance and its related parameters among PCOS patients (Table 1).

Table 1: Characteristics of the Included Studies

Author (Year)	Sample Size	Age Criteria	Study Design	Chromium Dose and Duration	Outcome
Lucidi et al.[14]	10 PCOS women	18–39 years	Pilot study	Chromium picolinate (200 µg/d) or placebo for 4 months	Significant decrease in OGTT 1-hour glucose (mg/dL) and OGTT 2-hour glucose (mg/dL)
Amooee et al. [7]	92 women with clomiphene citrate-resistant PCOS	-	Randomized clinical trial	Chromium picolinate (200 µg/d) for 3 months	Reduced fasting blood sugar and serum insulin levels and increased insulin sensitivity
Jamilian and Asemi [15]	64 Women with PCOS (according to Rotterdam criteria)	18–40 years	Randomized double-blind, placebo-controlled, clinical trial	Chromium picolinate (200 µg/d) for 8 weeks	Favorable effects on insulin metabolism markers
Jamilian et al. [17]	40 infertile PCOS women candidates for IVF	18–40 years	Randomized double-blind, placebo-controlled trial	Chromium picolinate (200 µg/d) for 8 weeks	Beneficial impact on the patients' glycemic control
Lydic et al. [18]	10 PCOS patients	19–42 years	Pilot Study	Chromium picolinate (1,000 µg/d) for 2 months	Significantly reduced the glucose disposal rate
Ashoush et al. [19]	85 PCOs patients	20–35 years	Double blinded randomized controlled trial	Chromium picolinate (1000 mcg/day) for 6 months	Reduced insulin resistance among PCOS patients.
Fogle et al.[20]	25 PCOS women	-	Randomized control trial	(500 µg) twice daily for 3 months	Had no effect

Four studies used 200 µg of chromium picolinate in their experiments. Lucidiet al.[14] found that the daily supplementation of 200 µg of chromium picolinate for 4 months improved glucose tolerance. Similar findings were reported by Amooee et al.[7] who studied the effects of 200µg/d of chromium picolinate for 3 months among clomiphenecitrate-resistant PCOS patients. The results showed a significant decrease in fasting blood sugar and serum insulin levels that resulted in an increase in insulin sensitivity, which was measured using the quantitative insulin sensitivity check index (QUICKI). Jamilian and his research group studied the effect of the same dosage of chromium picolinate supplementation for a shorter period of time (2 months only). Their results from the study of 2015 showed that there were significant decreases in serum insulin levels and HOMA-IR as well as a significant increase in the QUICKI score among PCOS patients[15,16]. The same group found that chromium administration for 8 weeks to infertile PCOS women candidates for IVF had beneficial impacts on glycemic control as well as significant reductions in fasting plasma glucose and insulin levels. In addition, their results found improvement in insulin sensitivity as showed by the significant increase in QUICKI score and decrease in HOMA-IR[17].

The rest of the studies that qualified for this review examined the effect of higher doses of chromium picolinate on PCOS. Lydicet al.[18] demonstrated that 1,000 µg/d chromium picolinate supplementation for two months improved the glucose disposal rate among obese women suffering from PCOS by 38%[18]. Ashoush et al. [19] administered 1,000 µg/d of chromium picolinate for a longer period time (6 months) and found a significant reduction in fasting serum insulin and significant increase in the fasting glucose insulin ratio[19]. However, one study showed no significant changes in fasting glucose, insulin, and HOMA-IR from 1,000 µg/d chromium picolinate supplementation for three months among Hispanic and morbidly obese PCOS-IR patients[20]. These opposing findingsmay be explained by the different characteristics of the study participants, such as race and morbid obesity

Conclusion

According to the selected studies, daily 200-1000 µg chromium picolinate supplementation reduces insulins resistance in PCOS patients.

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Ethical Clearance: No ethical approval is needed.

Conflict of Interest: No

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Role of Nerve Ultrasound in Diagnosis of Guillain-Barré Syndrome

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Abstract

Objective: To assess role of ultrasound (US) in diagnosis and follow up of Guillain-Barré syndrome (GBS) patients.

Method: We prospectively recruited 24 GBS patients and 40 healthy controls. Cross-sectional areas (CSAs) measured by nerve US and nerve conduction studies (NCS) were performed within the first week of disease onset and repeated after follow up period about 3 months.

Results: Nerve CSAs were significantly enlarged in most of examined peripheral nerves when assessed at disease onset compared to controls. However, no significant difference could be found when compared with follow up measures.

Conclusion: US measurement of CSA of the peripheral nerves could be a reliable non-invasive imaging modality helps in diagnosis of GBS.

Keywords: *Guillain-Barré syndrome, Nerve ultrasound, Cross-sectional area, Nerve conduction studies.*

Introduction

Guillain-Barré syndrome (GBS) is immune-mediated post-infectious disease that affects peripheral nervous system. Its common types are the acute inflammatory demyelinating polyradiculoneuropathy (AIDP), the acute motor axonal neuropathy (AMAN) and acute motor & sensory axonal neuropathy (AMSAN). GBS diagnosis is settled through history, clinical examination, cerebrospinal fluid analysis and electrophysiological features of neuropathy[1].

The electrophysiological changes in GBS patients may appear late which make early diagnosis within the first week is difficult[2,3]. In GBS, there have been many studies that have investigated the role of peripheral nerve US[4,5,6,7,8,9]. Most have investigated the use of nerve US in the early stages of GBS[6,8,9], where nerves are seen to be enlarged in comparison to controls.

In this study we prospectively performed peripheral nerve US and NCS in GBS patients to measure CSAs within onset of symptoms and after a period of follow up and to correlate them with NCS.

Methods

Subjects: This study was conducted on 24 patients with GBS. We recruited patients from Neurology Department - Kasr Al-Ainy from April 2017 to October 2018. These patients were compared to 40 healthy controls within one week of disease onset, 17 of them only were assessed after follow up period about 3 months as 1 patient died shortly after onset and 6 patients were lost at follow up. Inclusion criterion was adult patients with GBS; acute inflammatory demyelinating

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polyradiculoneuropathy (AIDP), acute motor axonal neuropathy (AMAN) and acute motor & sensory axonal neuropathy (AMSAN), according to published criteria[1]. Exclusion criteria were; patients with recurrent inflammatory neuropathy, patients with history of any medical condition that could affect peripheral nerve diameter e.g. thyroid disease and patients with history of entrapment neuropathy. Disability was classified using the Hughes Score (HS)[10,11] ranging from 0 (normal) to 6 (death) The study was approved by the local Ethics Committee, and all patients and controls gave their informed consent to participate in the study.

Nerve Conduction Studies: Nerve conduction studies were carried out in the clinical neurophysiology unit, Kasr Al-Ainy, Cairo University using a Neuropack MEB9200 four channels apparatus. Measurements were done, according to Preston and Shapiro[12]. Motor studies were performed on ulnar, median, radial, posterior tibial and common peroneal nerves. Distal motor latency, amplitude, conduction velocity and F wave response were recorded. Sensory nerve conduction studies were done on ulnar and superficial peroneal nerves, where latency, amplitude and conduction velocities were recorded.

Nerve Ultrasound: Nerve Ultrasound was performed by expert neuro-sonographer operator using qualified system (Philips IU22 xMATRIX, California, US), no special preparation for the examination. This examination was done at Neurology department, Kasr Al-Ainy, Cairo University. It was performed on an affected arms and legs, and the nerves were scanned in axial planes, and the cross-sectional area (CSA) of each nerve was measured at standardized anatomical points; median nerve: at carpal tunnel inlet, junction between distal 1/3 and proximal 2/3 of forearm, antecubital fossa and junction between distal ¼ and proximal ¾ of the arm. Ulnar nerve: at Guyon's canal, junction between distal 1/3 and proximal 2/3 of forearm, 5 cm distal to elbow between 2 heads of flexor carpi ulnaris, at cubital canal and 5 cm distal to cubital canal. Radial nerve: at radial groove close to the shaft of humerus. Tibial nerve: just posterior to the medial malleolus and at the popliteal fossa adjacent to the popliteal artery. Peroneal nerve: just distal and anterior to the postero-lateral aspect of the knee before it turns around neck of fibula.

Statistics: Data was analyzed using IBM SPSS advanced statistics version 24 (SPSS Inc., Chicago, IL). Numerical data were expressed as mean and standard deviation or median and range as appropriate. Qualitative data were expressed as frequency and percentage. For quantitative data, comparison between two groups was done using Mann-Whitney test. Spearman-rho method was used to test correlation between variables. A p-value < 0.05 was considered significant.

Results

This study carried on 24 GBS patients. All of them were examined within first week of disease onset. 17 of them were assessed after follow up period about 3 months. 1 patient died shortly after onset and 6 patients were lost, and 40 normal healthy subjects served as controls. Patient's characteristics were shown at table (1).

Table (1): Characteristics of the patients' group.

Patient's characteristics		**n = 24**
Age, mean ± SD		36.38±12.16
Gender (Male : Female)		13:11
Sensory affection, n (%)	At onset	7(29.2)
	During the course	16(66.7)
Autonomic dysfunction, n (%)		3(12.5)
Cranial nerve affection, n (%)		12(50)
Respiratory affection, n (%)		4(16.7)
Symmetry of weakness, n (%)	Symmetrical	20(83.3)
	Asymmetrical (mild)	4(16.7)
Pattern of weakness, n (%)	Ascending	19(79.2)
	Descending	5(20.8)
Hughes Score (HS) at onset and at 3 months, n at onset (n at 3 months), (Hughes et al., 1978)	HS 1	0(9)
	HS 2	0(6)
	HS 3	2(2)
	HS 4	21(0)
	HS 5	1(0)
	HS 6	1(0)
Treatment, n (%)	Plasma exchange	17(70.8)
	Intravenous immunoglobulin	1(4.2)
	Both	4(16.7)
	None	2(8.3)

Nerve Conduction Studies: NCS were carried out at inclusion and after 3 months from entry in the study and used for diagnosis of GBS patients. The measurements which were taken were shown in table (2).

Nerve CSA by Ultrasound: Comparison was done between patients at onset and controls regarding CSAs of examined nerves as shown in table (3). Significantly enlarged CSAs were found in almost examined points of peripheral nerves; in median at the level of wrist, mid-forearm, elbow and above elbow, in ulnar at the level of elbow, in radial at level of spiral groove, and in posterior tibial at level of ankle and popliteal fossa. Comparison was done between patients at onset and at follow up with no statistically significant difference could be found regarding CSAs of examined nerves as shown in table (4).

Table (2): Neurophysiological studies of examined nerves in patients' group at onset and during follow up.

Nerve			At onset (n=24)		Follow up (n=17)	
			Mean±SD	Range	Mean± SD	Range
Median nerve (motor)	Wrist	Latency (ms)	7.465±5.474	3.0-18.4	7.400±1.039	6.8-8.6
		Amplitude (mv)	1.918±1.595	0.13-4.50	3.030±3.269	1.00-6.8
	Elbow	Amplitude (mv)	1.416±1.288	0.08-3.70	2.200±1.819	1.1-4.3
		Conduction velocity (m\s)	47.53±13.77	19.5-77.10	29.600±11.003	21-25.8
Ulnar nerve (motor)	Wrist	Latency (ms)	5.499±1.936	2.5-8.8	4.205±1.618	2.6-8.8
		Amplitude (mv)	1.827±2.155	0.16-9.0	4.276±2.682	0.03-9.4
	Elbow	Amplitude (mv)	1.447±2.092	0.0-8.70	3.434±2.399	0.09-7.5
		Conduction velocity (m\s)	49.075±18.74	16.6-88.10	50.981±10.250	30.4-68
		F-wave (ms)	29.92±5.83	21.10-42.50	33.89±7.48	27-45.30
Posterior tibial nerve (motor)	Ankle	Latency (ms)	8.494±6.030	23.2-23.2	6.050±2.693	2.9-12.3
		Amplitude (mv)	1.791±2.521	0.01-8.50	1.728±1.906	0.04-6.9
	Popliteal fossa	Amplitude (mv)	0.912±1.428	0.01-5.50	1.145±1.292	0.02-4.2
		Conduction velocity (m\s)	44.471±14.66	19.7-84.5	42.380±7.088	31.4-53.0
		F-wave (ms)	46.05±11.10	27.0-64.0	50.13±4.33	45.0-56.2
Common peroneal nerve (motor)	Ankle	Latency (ms)	11.841±14.13	3.7-52.4	6.090±2.501	4.1-14.60
		Amplitude (mv)	1.390±1.390	0.05-4.1	3.518±7.470	0.11-30.0
	Popliteal fossa	Amplitude (mv)	1.443±1.346	0.02-3.9	6.080±18.278	0.06-72.0
		Conduction velocity (m\s)	42.96±14.646	12.0-56.5	42.113±9.320	19.0-52.0
Ulnar nerve (sensory)	Wrist	Latency (ms)	2.858±0.606	2.4-4.0	3.287±0.579	2.6-4.7
		Amplitude (µv)	26.111±17.95	9.6-69.4	27.570±20.304	4.0-87.0
		Conduction velocity (m\s)	26.05±27.31	26.0-68.0	47.615±9.827	27.1-69.0
Superficial peroneal nerve (sensory)	Ankle	Latency (ms)	3.304±0.631	2.6-4.3	3.675±0.645	2.9-4.3
		Amplitude (µv)	16.82±9.639	8.2-31.7	9.225±8.221	2.6-21.2
		Conduction velocity (m\s)	46.300±9.220	37.2-61.3	43.50±6.226	36.6-49.3

Table (3): Comparison between patients at onset and controls regarding CSA (cm^2) in examined nerves

Site	At onset (n=24)		Control(n=40)		ρ -Value
	Mean±SD	Range	Mean± SD	Range	
Median nerve					
Wrist	0.127±0.058	0.06–0.26	0.079±0.043	0.05-0.12	0.001*
Mid forearm	0.102±0.034	0.05-0.20	0.065±0.037	0.03-0.27	0.000*
Elbow	0.129±0.046	0.06-0.28	0.094±0.026	0.05-0.18	0.002*
Above elbow	0.142±0.045	0.08-0.27	0.096±0.031	0.45-0.18	0.000*
Ulnar nerve					
Wrist	0.078±0.023	0.04-0.12	0.064±0.043	0.03-0.31	0.103
Mid forearm	0.083±0.025	0.04-0.16	0.065±0.057	0.03-0.34	0.097
Elbow	0.101±0.035	0.05-0.18	0.074±0.046	0.04-0.29	0.011*
Above elbow	0.099±0.036	0.04-0.18	0.084±0.044	0.04-0.29	0.151
Radial nerve					
Spiral groove	0.141±0.057	0.07-0.27	0.095±0.033	0.04-0.19	0.001*
Posterior tibial nerve					
Ankle	0.189±0.059	0.09-0.32	0.105±0.017	0.07-0.14	0.000*
Popliteal fossa	0.203±0.056	0.10-0.34	0.089±0.025	0.06-0.20	0.000*
Common peroneal nerve					
Fibula	0.153±0.088	0.07-0.52	0.123±0.073	0.05-0.45	0.178

* The mean difference is significant at the 0.05 level

Table (4): Comparison between patients at onset and at 3 months after follow up regarding CSA (cm^2) in examined nerves

Site	At onset (n=17)		Follow up (n=17)		ρ -Value
	Mean±SD	Range	Mean± SD	Range	
Median nerve					
Wrist	0.132±0.059	0.06–0.26	0.117±0.043	0.06-0.19	0.422
Mid forearm	0.099±0.038	0.05-0.20	0.088±0.031	0.05-0.16	0.394
Elbow	0.135±0.051	0.06-0.28	0.137±0.092	0.06-0.44	0.929
Above elbow	0.139±0.051	0.08-0.27	0.120±0.044	0.06-0.19	0.231
Ulnar nerve					
Wrist	0.078±0.026	0.04-0.12	0.085±0.079	0.03-0.38	0.711
Mid forearm	0.082±0.029	0.04-0.16	0.070±0.024	0.04-0.12	0.219
Elbow	0.100±0.035	0.05-0.18	0.090±0.038	0.04-0.18	0.395
Above elbow	0.098±0.036	0.04-0.18	0.086±0.031	0.05-0.16	0.323
Radial nerve					
Spiral groove	0.144±0.058	0.07-0.27	0.161±0.082	0.06-0.38	0.485
Posterior tibial nerve					
Ankle	0.185±0.065	0.09-0.32	0.184±0.063	0.08-0.30	0.964
Popliteal fossa	0.205±0.065	0.10-0.34	0.202±0.073	0.07-0.32	0.891
Common peroneal nerve					
Fibula	0.163±0.102	0.07-0.52	0.143±0.057	0.06-0.27	0.489

* The mean difference is significant at the 0.05 level

CSA is directly correlated in ulnar nerve at wrist with latency of motor fibers, and inversely correlated with amplitude and conduction velocity of sensory fibers. Also, we found CSA inversely correlated with amplitude at popliteal fossa in posterior tibial nerve. No other correlations were found between CSA and electrodiagnostic parameters in examined nerves as shown in table (5).

Table (5): Correlation between CSA (cm^2) and NCS of examined nerves:

CSA	Neurophysiology studies	At onset	
		R	P
Ulnar nerve CSA (cm^2) at wrist	Ulnar nerve (motor) latency (ms) at wrist	0.642	0.005*
	Ulnar nerve (motor) amplitude (mv) at wrist	-0.088	0.738
Ulnar nerve CSA (cm^2) at elbow	Ulnar nerve (motor) amplitude (mv) at elbow	- 0.031	0.905
	Ulnar nerve (motor) conduction velocity (m\s) at elbow	0.034	0.897
Ulnar nerve CSA (cm^2) at wrist	Ulnar nerve (sensory) latency (ms) at wrist	-0.366	0.149
	Ulnar nerve (sensory) amplitude (µv) at wrist	- 0.566	0.018*
	Ulnar nerve (sensory) conduction velocity (m\s) at wrist	-0.685	0.002*
Median nerve CSA (cm^2) at wrist	Median nerve latency (ms) at wrist	0.216	0.422
	Median nerve amplitude (mv) at wrist	-0.027	0.920
Median nerve CSA (cm^2) at elbow	Median nerve amplitude (mv) at elbow	- 0.131	0.630
	Median nerve conduction velocity (m\s) at elbow	-0.066	0.808
Common peroneal nerve CSA (cm^2) at fibula	Common peroneal nerve amplitude (mv) at popliteal fossa	-0.312	0.257
	Common peroneal nerve conduction velocity (m\s) at popliteal fossa	-0.312	0.258
Posterior tibial nerve CSA (cm^2) at ankle	Posterior tibial nerve latency (ms) at ankle	0. 365	0.150
	Posterior tibial nerve amplitude (mv) at ankle	-0.308	0.230
Posterior tibial nerve CSA (cm^2) at popliteal fossa	Posterior tibial nerve amplitude (mv) at popliteal fossa	-0.532	0.028*
	Posterior tibial nerve conduction velocity (m\s) at popliteal fossa	-0.109	0.678

* The mean difference is significant at the 0.05 level

Discussion

Nerve ultrasound is an emerging modality for detection of peripheral nerve morphology through measurements of CSA which has been recently studied in different neuropathies. It has several advantages as it is inexpensive and noninvasive method, it also allows the examiner to view the whole length of the nerve quickly and in painless procedure. US of diseased nerves demonstrate changes in CSA, echogenicity and definition of surrounding epineurium[4,8].

We found statistically significant difference regarding CSA between GBS patients at the onset compared to normal controls, which is being larger at GBS patients. This finding was matched with other studies done by Zaidmanet al.[4], Gallardo et al.[6], Grimm et al.[8], and Razali et al.[13].

We found no significant difference regarding CSA between GBS patients at the disease onset when compared with follow up period, despite of clinical improvement. On the other hand, studies done by Almeida et al.[5] and Razaliet al.[13] found gradual reduction in nerve CSAs on serial assessment.

This discrepancy might be due to the longer duration of follow up period in their studies compared to ours. In the current study, US measurement of CSA correlated with some electrodiagnostic parameters but not others. Also, Zaidmanet al.[4], Grimm et al.[6] and Razali et al.[13] found no significant correlations between nerve CSA

and some electrodiagnostic findings of corresponding nerves**.** Watnabe et al.[14], and Di pasquale et al.[15], were found a significant correlation between CSAs and NCS in chronic neuropathies as diabetic neuropathy and chronic inflammatory demyelinating disease, this finding is indistinct at GBS as the nerve affection is patchy; in which segments are affected and others are not.

Conclusion

From this study it could be concluded that ultrasound could be a useful technique which help in early GBS diagnosis through measurement of CSA which is significantly higher in GBS patients at onset when compared to normal subjects in different nerves but no significant difference was found between disease onset and follow up.

More studies are needed to investigate the role of ultrasound in different stages of the disease course to detect changes in nerve morphology in larger sector of patients and to define criteria which could be clinically used in diagnosis.

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Conflict of Interest: No

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Effectiveness of Modified Twelve Core Biopsy to the Detection of Prostate Cancer between the Egyptian Patients

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Abstract

Background: Transrectal ultrasound-guided prostate biopsy is the method of choice for obtaining a conclusive diagnosis of prostate cancer.

Objective: To estimate the efficacy of modified twelve core TRUS prostate biopsy for the detection of prostate cancer among Egyptian patients.

Method: A total of 348 men with elevated PSA and/or abnormal DRE underwent initial TRUS-BX in Alkasr Alainy Hospital, Urology Department, Cairo University. All patients undergoing a modified 12 core biopsy planner in which the 2 medial apical cores on both sides were substituted by 2 cores were taken from the anterior apex, specified as the site at once lateral to the junction of apex and urethra. Site-clearly defined detection and tumor properties were recorded.

Results: Prostate cancer was detected in 122 patients (35.1%). The apical had contained two anterior cores on each side, with cancer detection average 79.7% of all cancers and also achieved the highest rate of unique cancer detection (8.1%).

Conclusion: From our results, it could be noticed that the modifying a level of the quality 12 core biopsy planner by containing the extreme apical cores increment prostate cancer detection on first Transrectal ultrasound-guided biopsies and minimize the potential for misdiagnosis and necessity for repeat biopsy.

Keywords: *Clinically, detection of prostatic, Egyptian of patients, core biopsy.*

Introduction

Clinically, the prostate had contained two lateral lobes, separated by a central sulcus that is palpable when the rectal checking, and a middle lobe, which may be estimated into the bladder in older men. These lobes do not agree to histological known structures in the normal prostate but are often concerning to pathologic magnification of the transition zone laterally and the periurethral glands centrally.[1]

Based on extremist prostatectomy specimens and the position of great prostate cancers, thus, Stamey indicated that the make partial sextant biopsies to be aimed for addition laterally to elevation cancer revelation. Meanwhile, in the late 1990s, many studies observed that a high false-negative average of the sextant biopsy strategy may be due to its absent cancers position in other regions of the prostate **Moussa *et al***.[2]

Extended prostate biopsy (PBx) advanced as a novel premier biopsy strategy after numerous research demonstrated that it considerably increments prostate

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cancer (PCa) detection[3]without elevating morbidity or the detection of insignificant cancer[4]

The National Comprehensive Cancer Network (NCCN) has defined EPBx as a sextant cores with at least four additional cores from the lateral peripheral zone as well as biopsies directed to lesions detect on palpation or imaging [5].

Moussa *et al*.[2] studied the important of additional anterior apical core needle biopsy of prostate (Standard 12 cores plus two additional anterior apical cores) concluded that apical core biopsy especially radical apical core elevated prostate cancer awareness on first TRUS-BX and minimize the possibility for misdiagnosis and the necessity for repeat biopsy. Extreme apical sampling increases aggressive prostate cancer detection on initial biopsy, especially in patients with standard risk of prostate cancer[4]

The aim of our study is to estimate the effectiveness of modified twelve cores transrectal ultrasound guided prostate biopsy for detection of prostate cancer among Egyptian patients.

Patients and Method

This is a prospective study to estimate the efficacy of modified twelve core TRUS guided prostate biopsy for the detection of prostate cancer among Egyptian male patients in Kasr Alainy Hospital, Urology Department, Cairo University from January 2017 to February 2019.

A prospective study was conducted on series 384 male patients with suspicious prostate cancer by either elevated PSA or/and abnormal DRE.

They underwent initial modified twelve core TRUS guided prostate biopsy as office-based procedure under local anesthesia.

Inclusion Criteria:

- Patients with elevated total PSA more than 4 ng/ml
- PSA ratio (free/total PSA) ≤10% in total PSA range between (4-10 ng/ml) according to **Leonard *et al.*[6].**
- Abnormal DRE.

They underwent initial modified twelve core TRUS guided prostate biopsy.

Procedure: All the biopsies were taken by one urologist in our institution. In the left lateral decubitus position, DRE was performed prior to the insertion of the probe. Imaging of the gland was then carried out first in a transverse fashion. The right and left seminal vesicles were viewed and followed by the bladder neck, mid gland and apex. After complete transverse imaging, the transducer was configured to provide sagittal imaging. The rights, mid and left aspects of the prostate were visualized. During this part of the examination, particular attention was paid to any regions that were hypo or hyper-echoic when compared to the peripheral zone of the prostate.

Periprostatic local anesthesia was infiltrated by long spinal needle 21 G (10 mL of 1% lidocaine) and biopsy taken by biopsy gun with needle 18 G.

We obtained four cores from the prostate in mid lobar parasagittal planes, halfway between the lateral edge and midline of the prostate gland at the base and mid-gland bilaterally. They essentially correspond to the initial strategy of **Presti[7].** An additional lateral biopsy was performed by obtaining six prostate cores from the lateral apex, mid-gland and base bilaterally at the same level as that of the medial cores. Finally, two cores were taken from the extreme anterior apex located lateral to the junction of apex and urethra making a total of 12 cores **(Figure 1)**. These were taken from extreme tip of apex medially termed as ´very apex` by Shinohara and colleagues[8]**.** This area is the most caudal portion and is often missed during routine biopsy because of its peripheral nature.

We collected the cores in separated containers according to the site of the biopsy and sent to pathology department.

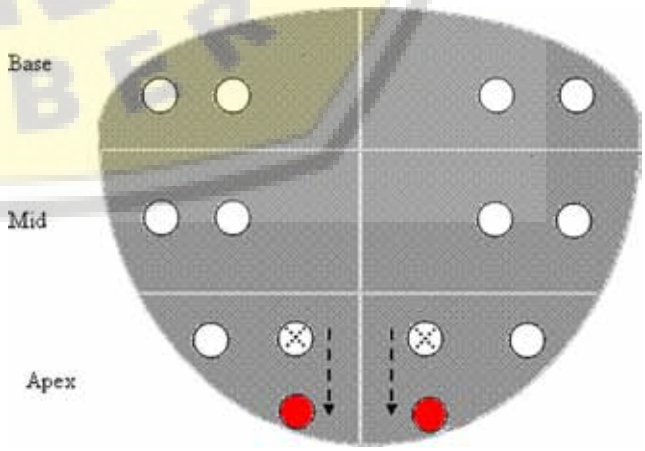

Figure (1): Modified twelve cores biopsy

Statistical Evaluation: All data was analyzed

statistically using SPSS Program Version 15 for Microsoft Windows. *P* value was calculated to check the significance when *P* value was <0.05.

Results

Descriptive data of the whole study population: Table (1) showed that the baseline characteristics of the studied sample. The age of the whole study sample ranged from (50 to 85) years with a mean value of (65. 61 ± 8.43) years. Total Prostatic specific antigen in the whole study sample ranged from 4.0 to 50 ng/ml with a mean value of 14.53 ± 10.66.

The same table observed that the 348 patients who underwent biopsy122 patients were positive for prostate cancer representing (35.1%) of whole patients. Prostatitis was present in 137 patients (39.4%). High grade prostatic intraepithelial neoplasia (HG PIN) was found in 51 patients (14.7%). Atypical small acinar proliferation (ASAP) was noticeable in 53 patients (15.2%)

Comparison between cases with and without prostate cancer as regarding mean of age and PSA: Table (2) shows the higher percentage of prostate cancer among older patients above 66 years which was 45 % compared to 24.4% among those with age below 66 years. The difference was statistically significant in favor of older patients. The odds ratio of finding prostate cancer was noticed as 2.5 times higher in those with older age above 66 years.

Table (1): Descriptive data of the whole study population

Variable	Frequency (Percentage)
Age (years)	65.61±8.43(50-85)
Total PSA ng/ml	14.53±10.66(4-50)
Cancer positive patients	122(35.1%)
Prostatitis/patients	137(39.4%)
HG PIN/patients	51(14.7%)
ASAP/patients	53(15.2%)

The same table showed a higher percentage of prostate cancer among those with total PSA above or equal 10ng\ml which 46.6% was compared to 23.3% among those with total PSA between from 4.0 to10.0 ng/ml. The difference was statistically significant. The odds ratio of developing prostate cancer was remarked as 2.8 times higher in those with PSA was above 10 ng/ml.

Table (2): Comparison between cases with and without prostate cancer as regarding mean of age and PSA

Age	No Cancer	%	Cancer	%	No Cancer	X^2	P	OR 95% CI
<66 years N=168	127	75.6	41	24.4	127	16.4	0.00**	2.5(1.6-4.0)
≥66 years N=180	99	55.0	81	45.0	99			
PSA								
Low PSA <10 ng/ml N=172	132	76.7	40	23.3	132	20.8	0.00**	2.8(1.8-4.5)
High PSA >=10 ng/ml N=176	94	53.4	82	46.6	94			

**P<0.01 highly significant

Comparison cancer positive and negative patients regarding the presence of prostatitis, HG PIN and ASAP: From the results in Table (3) it could be noticed that a higher percentage of prostatitis among patients with no prostate cancer 53.1% compared to 13.9% among patients with prostate cancer and the difference is highly significant statistically. The presence of prostatitis had a protective odds ratio of 0.14. Therefore, the presence of prostatitis was in favor of no cancer.

Cases with PIN had two times higher the risk of having prostate cancer in the same table indicated that the percentage of prostatic intraepithelial neoplasia among prostate cancer patients was 22.1% compared to 10.6% among cases without prostate cancer, thus the difference was statistically significant in favor of prostate cancer patients. The odds ratio of HG PIN was 2.39.

Moreover, presents a higher percentage of ASAP among prostate cancer patients which was 18.9% compared to 13.3% among cases without prostate cancer, but the difference was not statistically significant.

Table (3): Comparison cancer positive and negative patients regarding the presence of prostitutes, PIN and ASAP

Comparison	No cancer			Cancer		
	Infection	HG PIN	ASAP	Infection	HG PIN	ASAP
No	226	226	225	122	122	122
Negative	106	202	196	105	95	99
%	46.9	89.4	86.7	86.1	77.9	81.1
Positive	120	24	30	17	27	23
%	53.1	10.6	11.3	13.9	22.1	18.9
X2	50.9	8.3	1.9	50.9	8.3	1.9
P	0.00**	0.004**	0.1	0.00**	0.004**	0.1
OR 95% CI	0.143 (0.08-0.25)	2.39(1.3-4.3)	P>0.05 not significant	0.143 (0.08-0.25)	2.39(1.3-4.3)	P>0.05 not significant

**P<0.01 highly significant

Distribution of positive cancer grade based on Gleason scores, mid-gland, and apical cores with cancer sites cores results: Table (4) found that the pattern and grade of prostate cancer were studied and classified according to Gleason score into low grade (Gleason ≤6), intermediate grade (Gleason=7) and high grade (Gleason >7) and it was found that the commonest grade was high grade in 52 patients (42%) then low grade in 36 patients (29.5%) and the least was intermediate grade in 34 patients (27.9%). From the whole number of patients, 122 of them were positive for prostate cancer with a prevalence rate of 34.1%.

Table (4): Distribution of positive cancer grade based on Gleason scores, mid-gland, and apical cores with cancer sites cores results

Prostate Cancer Grade Based on Gleason Scores N=122	No.	%
Low grade (GLeason≤6)	36	29.5
Intermediate (Gleason=7)	34	27.9
High grade (Gleason>7)	52	42.6
Positive Base, Mid-gland, and Apical cores with cancer N=74		
Base	57	77.0
Mid gland	64	86.5
Apical	59	79.7

Out of these 122 patients who were positive for prostate cancer, only 74 patients had complete data regarding the distribution of positive cores according to the regional sites of the prostate. The percentage of positive cores from the positive base in 57 patients from the total cases was (77%), mid gland cores were positive in 64 patients with percentage (86,5%) and apical cores including the cores from anterior apex were positive in 59 patients with percentage (79.7%)

Distribution and isolate of positive cores among cancer patients: The following Table (5) showed that 14.9% of the 74 patients with prostate cancer had only one region site positive cores. 27% of those patients had two regional site positive cores while 58.1% of the patients had the three regional site positive cores. Whereas, in a number of 11 patients of the 74 prostate cancer patients with percentage (14%), the prostate cancer detected exclusively in only one regional site with the apical cores including anterior apex cores had the highest detection rate among this group of patients included 6 patients (8.1%) followed by mid gland in 3 patients (4.1%) and lastly base in two patients (2.7%).

Table (5): Distribution of Positive Cores among Cancer Patients

N=74	No.	%
One site core positive	11	14.9
Two sites core positive	20	27.0
Three sites core positive	43	58.1
Apical only positive	6	8.1
Mid gland only positive	3	4.2
Base only positive	2	2.7

Discussion

In the current study, the prevalence of prostate cancer was 35.1%, which was lower than Western countries and had higher percentage in patients above 66 years old and with high serum PSA 46.6% in patients with PSA above was 10 ng/ml compared to 23% in PSA between from 4 to10 ng/ml) and most of the prostate cancer with high grade pattern 42.6%. **Mosli*et al.*** [10] studied the incidence of prostatic a malignant tumor formed from glandular structures in epithelial tissue in patients accepted to King Abdul–Aziz University Hospital observed that the prostate cancer was revealed in 28.5% of patients with total PSA > 4 ng/ml, which is sawing lower than the happened for their patients average age 68 years. Another research parallels the age-adjusted serum level of total PSA of the Arabic people with that of the USA and the Japanese people. They observed that the USA whites direct to have the greatest total PSA, followed by the Japanese people and the lowest PSA level was present in the Arabic people[11].

There are many studies raise the importance of the anterior apical core prostate biopsy for increasing the cancer detection rate. **Presti*et al.*** [12] examined a dataset of 2299 patients who had experienced a 12-core systematic biopsy scheme by 167 group of people- based urologists. All patients were initial biopsy, and the overall cancer detection average was 44%. These great series explain the reproducibility of made larger biopsy schemes in the hands of practicing urologists.

In their study, **Moussa *et al.*** [2] detected prostate cancers in 86 patients (47.5%). The results showed that the apical cores (3 on each side) were had contained the greatest cancer detection average 73.6% of all cancers, and as well as radical front apical cores was one on each side, was contained the greatest average of cancer detection (P value= .011). It could be concluded that the apical cores, especially the radical frontal apical cores, increment prostate cancer detection on TRUS-BX and minimize the possibility of misdiagnosis and the necessity for repeat biopsy.

In our study the highest detection rate for prostate cancer was in mid-gland core in 64 patients (86.5%) followed by apical cores in 59 patients (79,7%) but the apical cores including the extreme anterior cores achieved the highest unique cancer detection rate. **Babaian*et al.*** [13] estimated an 11-core biopsy strategy in 362 patients, containing 85 patients (23%) who underwent the initial biopsy. The biopsy planner involved cores from a level of the quality sextant, bilateral anterior horn, bilateral transition region, and midline. The cancer detection average for patients who underwent the first biopsy was 34%, and nine cancers were uniquely specified by non-sextant sites (increasing CDR by 31%). of the cancers specified uniquely by cores from non-sextant sites, seven were specified by anterior-horn biopsies and two by transition-region biopsies.

Conclusion

From the obviously results it could be concluded that the prevalence of prostate cancer among the Egyptian population was 34% with a mean age of 66 years and with more detection rate among patients with total PSA more than 10 ng/ml with high-grade pattern in 42,6%. The cancer detection rate in apical cores including cores from extreme anterior in both sides was 79,7 % and exclusive only site with cancer in 8,1%, so we recommend this modified twelve cores biopsy to be the standard for initial TRUS guided prostate biopsy for the screening of prostate cancer

Funding: Self-funding.

Ethical Clearance: Cleared by ethical committee of Department of Urology, Faculty of Medicine, Cairo University, Giza, Egypt

Conflict of Interest: No

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Epidemiological Study of Cleft Lip and Palate in Al-Samawa City (South of Iraq)

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Abstract

Purpose: The aim of this retrospective study was to evaluate the epidemiology of CLP among population in the south of Iraq, and to assess the risk factors to its development

Materials and Method: The collected sample from 2010 to 2014, consists of 80 patients (47 male and 33 female) with different type of cleft lip and palate, their ages range from 1 week to 14 years old. they were evaluated well for the gender, site, type based on McCarthy (1990) who classified clefts into unilateral or bilateral, Finally the cause (genetic or acquired), and the associated other congenital anomalies

Results: We found that approximately 2 infants per 1000 live births were affected. The affected males were 47 (nearly 59 %), while the affected females were 33 (41%) of the sample. The unilateral clefts lip with or without cleft palate were 49 cases “nearly 75%” of the cleft lip cases The bilateral clefts lip with or without cleft palate were 16 “nearly 25%” of the cleft lip cases. The associated combined anomalies were found in 11 patients “nearly14%”

Conclusion: The distribution of the cleft lip and \ or cleft palate in the south of Iraq is not far from that worldwide but its main causes is somewhat different as the genetic causes implicated to be the main risk factor.

Keywords: *Cleft lip; cleft palate; congenital anomalies; epidemiology; south of Iraq***.**

Introduction

One of the commonest orofacial malformations that occur during fetal development is the cleft lip with or without cleft palate [1]. Many etiological factors are involved in its appearance which could be genetically related or developmentally related[2,3]

Psychological and social complications can affect the parents and their children that make early detection and management is mandatory[4,5,6].

Our aim of this study was to evaluate the epidemiology of CLP among population in the south of Iraq, and to assess the risk factors to its development.

Materials and Method

The Sample: The sample of this prospective study includes patients who were born and registered in Al-Samawa hospital for obstetrics and gynecology (the main hospital in Al-Samawa city), so the patients were belong to different areas (rural and urban).

The collected sample from 2010 to 2014, consists of 80 patients (47 male and 33 female) with different type of cleft lip and palate, their ages range from 1 week to 14 years old.

During period of study the number of live births in the Maternal and Pediatric Hospital was recorded which was 40500 live birth.

The examined patients were all included in this study, and they were evaluated well for the gender, site, type based on McCarthy (1990) who classified clefts into unilateral or bilateral, Finally the cause (genetic or acquired), and the associated other congenital anomalies especially cardiac and ophthalmological anomalies by

consulting cardiologists and ophthalmologists are also recorded.

Results

In this study, we found that 80 patients out of 40500 live births were born with cleft lip\and or cleft palate, so their percentage was 0.19%, that is mean approximately 2 infants per 1000 live births were affected.

The gender distribution was as follows:

1. The affected males were 47 (nearly 59 %) of the sample, of them 31 patients (nearly 39 %) had cleft lip and palate, 11 patients (about 14%) had cleft lip only, while the remaining 5 patients (6%) were born with cleft palate only.
2. The affected females were 33 (41%) of the sample, of them 20 patients (about 25%) had cleft lip and palate, 10 patients (about 12 %) had cleft palate only, while the remaining 3 patients (about 4%) were born with cleft lip only. Table 1

The percentage of the site of the clefts were as follows:

1. The unilateral clefts lip with or without cleft palate were 49 cases "nearly 75%" of the cleft lip cases (39 left sided, and 10 right sided) .
2. The bilateral clefts lip with or without cleft palate were 16 "nearly 25%" of the cleft lip cases . Table 2

The predisposing factors for development of the anomaly was as follows:

1. The relativity of parents\ 65 cleft patients "nearly 81%" were born to parents who are consanguine.
2. The developmental factors\ 3 mothers "nearly 4%" who born a child with cleft reported that they had a flu like illness during the first trimester, and 5 mothers "nearly 6%" reported a dietary deficiency during period of pregnancy.
3. The housing area\71 cases "nearly 89%" had been came from rural areas, while only 9 cases "nearly 11%" from urban areas.

Associated Congenital Anomalies: The associated combined anomalies were found in 11 patients "nearly14%" (5 with cardiac anomalies, 2 with visual impairment, 2 with congenital cerebral palsy, and 2 with thoracic cage anomaly "pigeon chest").

Table 1: Gender distribution of different types of the clefts & its statistical significance.

Type of the cleft	Male		Female	
	No.	%	No.	%
CLP	31	39	20	25
CL	11	14	3	4
CP	5	6	10	12
Total	47	59	33	41

CLP: cleft lip and palate, CL: cleft lip, CP: cleft palate

Table 2: Site distribution of the cleft lip & its statistical significance.

Side of the cleft	No.	%
Left	39	60
Right	10	15
Bilateral	16	25

Discussion

The Sample: In this prospective study, I found that approximately 2 infants per 1000 live births were affected with cleft lip and \or palate, which is not so far from that in adjacent areas like in Iran (2.14 per 1000 live births)[7].

The Gender Distribution: The percentage of cleft lip and palate between males (39%) and females (25%) was not so different, however, I found that the incidence of cleft lip only was greater in males (14%), while the incidence of cleft palate only was greater in females (12%), these results were not away from that of another study which was done in Baghdad (the capital of Iraq) by Al-Zubaidee et al[8]

The percentage of the site of the clefts: It was found that the unilateral cleft (75%) was more common than bilateral, and the left sided clefts (60%) were significantly more common than that on the right, all these findings are in acceptance with the universal agreement.[7,8,9]

The Predisposing Factors: A high percentage (81%) of the parents who had children with CL &\or CP) were relatives, and most of them (89%) came from rural areas, this is due to the increasing number of marriages between relatives in those areas in regards to the urban

people, so this reflected that the genetic causes were the main cause of CLP development in the south of Iraq, however environmental causes like a dietary deficiency also implicated, because the rural people are away from health centers which are responsible for pregnancy care .these findings are in agreement with Carinci F, Rullo R et al[10], and Ingalls et al.[11]

Associated Congenital Anomalies: In this study we found that the cardiac anomalies are the most common associated congenital anomalies, so it is mandatory to send every child with cleft lip and\ or cleft palate for echocardiography and chest x-ray to exclude anomlies, these findings also were stated by Shin et al[12],Greene[13], and Abyhom[14].

Conclusions

From this study we can conclude that the distribution of the cleft lip and/or cleft palate in the south of Iraq is not far from that worldwide but its main causes is somewhat different as the genetic causes implicated to be the main risk factor.

The investigations for exclusion of congenital anomalies must be done as early as possible especially those for heart anomalies, to avoid intraoperative complications

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Association between Iris in and Obesity

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Abstract

Objective: To observe the relationship between serum Irisin and obesity. Background: One of the top worldwide health problems is obesity. Many causes have been implicated for developing obesity such as: excessive food intake, lack of physical activity, genetic susceptibility, endocrine disorders, medications, or mental disorder.

Material and Method: One hundred and five individuals were participated in this study visiting Al-Imam Al-Sadiq Teaching Hospital from October 2017 to June 2018. A 50 normal non-obese, and 55 obese. They were classified according to body mass index after measuring their weight, height. Blood and data were collected from patients and control to detected Irisin.

Results: The highest percentage of obese patients were female, the highest percentage of obesity was recorded among 20-30 age group, the majority of the obese patients were from urban areas, and largest group of obese patients were unemployed. Regarding investigation: Irisin, there is significant difference ($p \leq 0.05$) between case and control for Irisin. There is also a significant positive correlation between irisin and body mass index (p value$\leq$0.05; r = 0.44), and with the waist circumference (p value $\leq$0.05;r = 0.407). Conclusion: serum irisin levels were higher in obese patients than in control. Moreover, serum irisin levels were correlated positively with anthropometric markers of obesity (BMI, Waist Circumference).

Keywords: *Obesity, Irisin, Body Mass Index, Waist Circumference.*

Introduction

Obesity is "a chronic, relapsing, multifactorial, neurobehavioral disease, where there is an increase in body fat adversely effects on adipose tissue function and physical forces of fat mass, resulting in abnormal biomechanical, metabolic and psychosocial health consequences", it is more common in women [1-3].

There are many types of obesity depending on where fat cells are stored. Abdominal obesity (excessive accumulation of fat cell in adipose tissue of the abdomen) is associated more strongly with meta-inflammation[4].

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Irisin is a plasma myokine/adipokine that is produced by the proteolytic cleavage of fibronectin type III domain containing 5 (FNDC5) [5].

There are many reports of the positive, negative and no correlations between serum irisin and body mass index (BMI) [6-9].

The aim of This Study is To observe the relationship between serum Irisin and obesity

Materials and Method

Subjects: A case-control study was conducted in the obesity unit in Al-Imam Al-Sadiq Teaching Hospital at Babylon Governorate/Iraq, from October 2017 to June 2018.

Inclusion Criteria: A convenient sample of one-hundred five individuals were included in this study (55 obese and 50 control) according to body mass

index, with age range from 18 to 51 years old. All individuals subjected to the same clinical examinations and biochemical tests. The obese persons were taken from the obesity unit in the hospital while the control group individuals were friends, medical staff, medical students, and relative to the patients. Informed consent must be taken from all people.

Exclusion Criteria:

1. Free of significant medical illnesses {diabetes mellitus (DM) (type I or II), cardiac disease, hypertension (HTN), hypothyroidism, poly cystic ovarian syndrome (PCOS), acromegaly, and any congenital abnormalities} that known to impact body weight.
2. History of drugs administration that cause obesity or increase in body weight such as Antiepileptic drugs, anti-Diabetic drugs, Oral contraceptive pills, steroids and Chemotherapy.
3. Post-menopause women.
4. Pregnant women.

General History: Socio-demographic traits such as: age, gender, occupation, educational level, residency. Past medical history: thyroid disease (hyper: tremor, heat intolerance, palpitation; hypo: cold intolerance, previous unexplained obesity, etc.).Past surgical history: history of bariatric surgery, gynecological history: menstruation, fertility, pregnancy history, and dietary history.

General Examinations:

Weight Measurement: Patient is weighed with minimum clothes and bared feet by digital scale with 0.1 kg as degree of error[10].

Anthropometric Measurements: Height: Is measured by graded scale firmly fixed on the wall when participant is standing against the wall while feet are bared and the legs are held close to each other, no bending, the shoulders are straight in parallel line, the height is measured from the ground to the top of the head [11].

Waist Circumference: Is measured by flexible tape measure graded to 0.1cm at the midline between the last rib and the upper part of iliac bone [12].

Body mass index (BMI): Is calculated by dividing the weight in kilograms by the square of the height in meter[13].

Results

Socio-Demographic Characteristics of Study Groups: The highest percentage of obese patients (89.09%) were female as shown in figure 1:

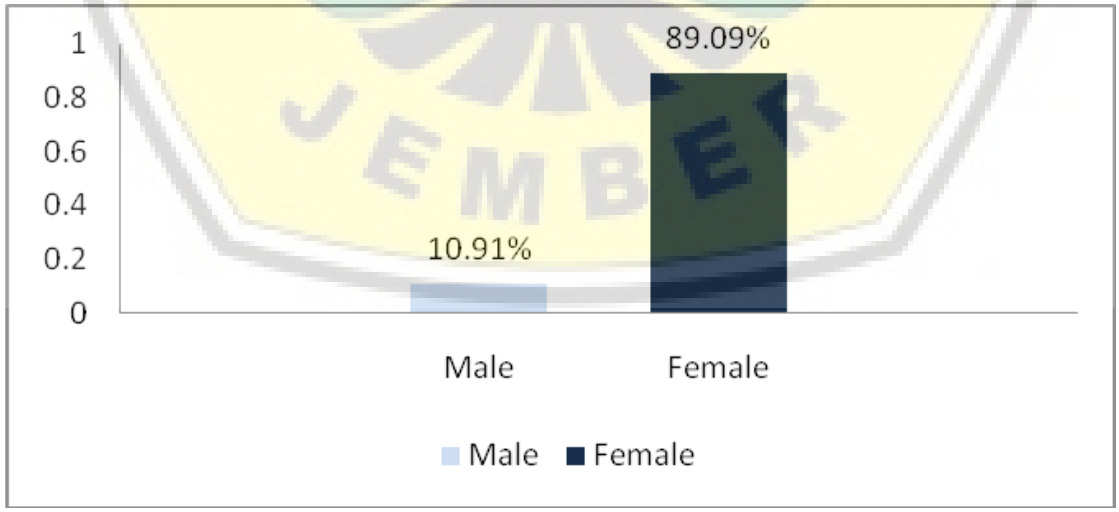

Figure 1: Distribution of obese patients according to the gender

The highest percentage for obesity was recorded among 20-30 age group, while the lowest percentage for obesity was recorded below 20 years old as shown in Figure 2.

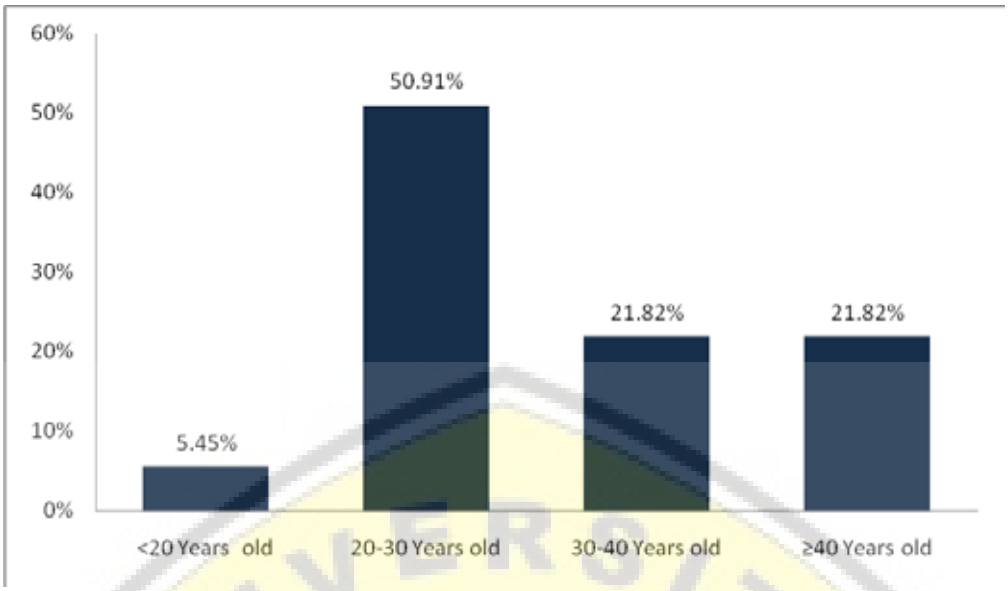

Figure 2: Distribution of obese patients according to age groups.

The majority of the obese patients (63.64%) were from urban areas. Minority of obese patients were from rural area as shown in figure 3.

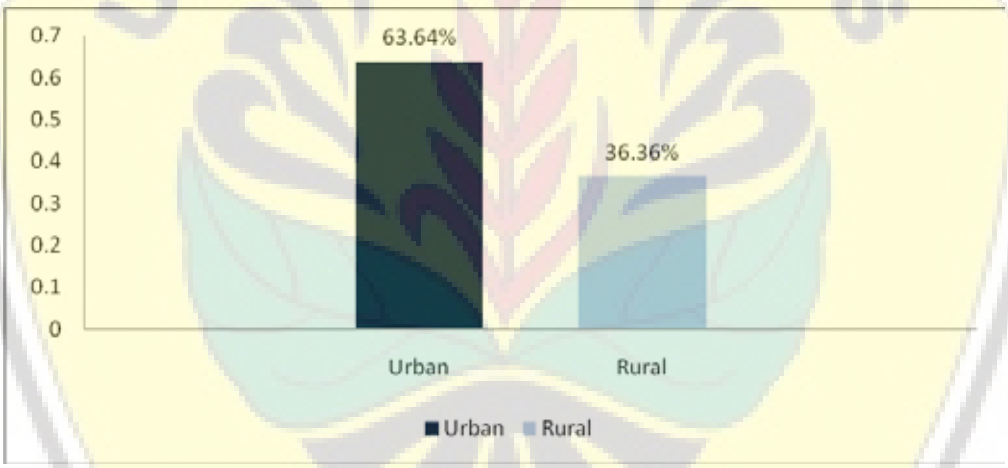

Figure 3: Distribution of obese patients according to residence.

Largest group of obese patients were unemployed as shown in figure 4.

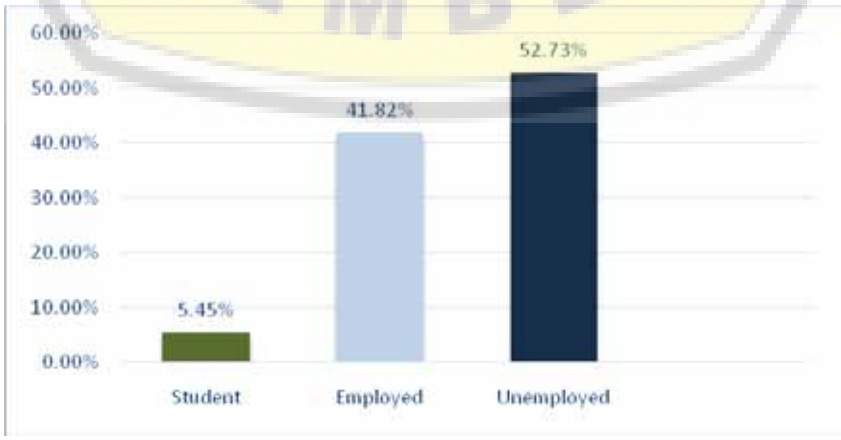

Figure 4: Distribution of obese patients according to occupation.

Figure 5 shows mean differences of irisin (ng/ml) for control and obese patients. There were significant differences between means of irisin for both study groups. **(t=9.435, P= <0.001*).**

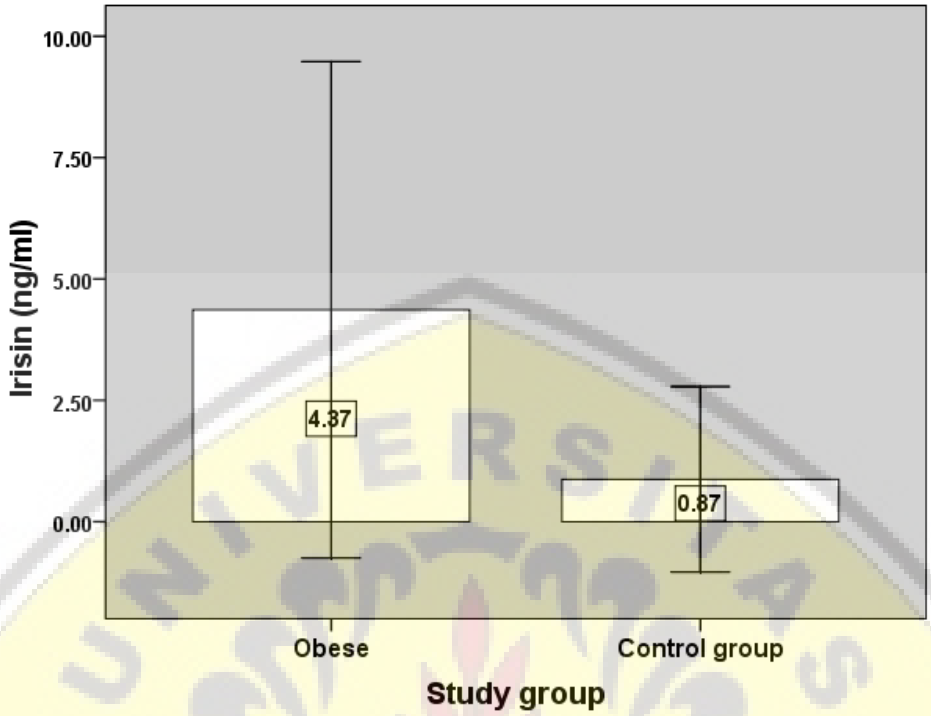

Figure 5: Meandifferences of Irisin (ng/ml) according to study groups

Figure 6 shows the correlation between Irisin (ng/ml) and body mass index (kg/m^2) among obese patients. There was significant positive correlation between irisin and BMI(p value≤0.05). **(r = 0.441, P = 0.002*).**

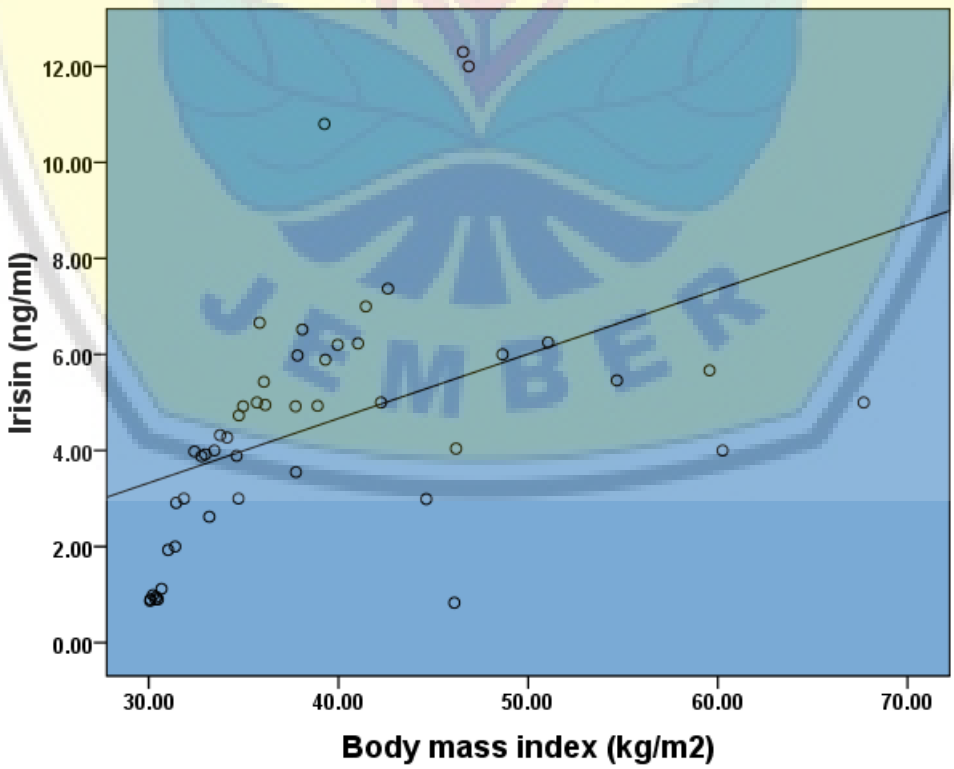

Figure 6: The Correlation between Irisin (ng/ml) and BMI among Obese patients (Correlation is significant at the 0.05; r:correlation coefficient)

Figure 7 shows the correlation between Irisin (ng/ml) and waist circumference (cm) among obese patients. There was significant positive correlation between irisin and waist circumference (p value≤0.05). **(r = 0.407, P = 0.004*).**

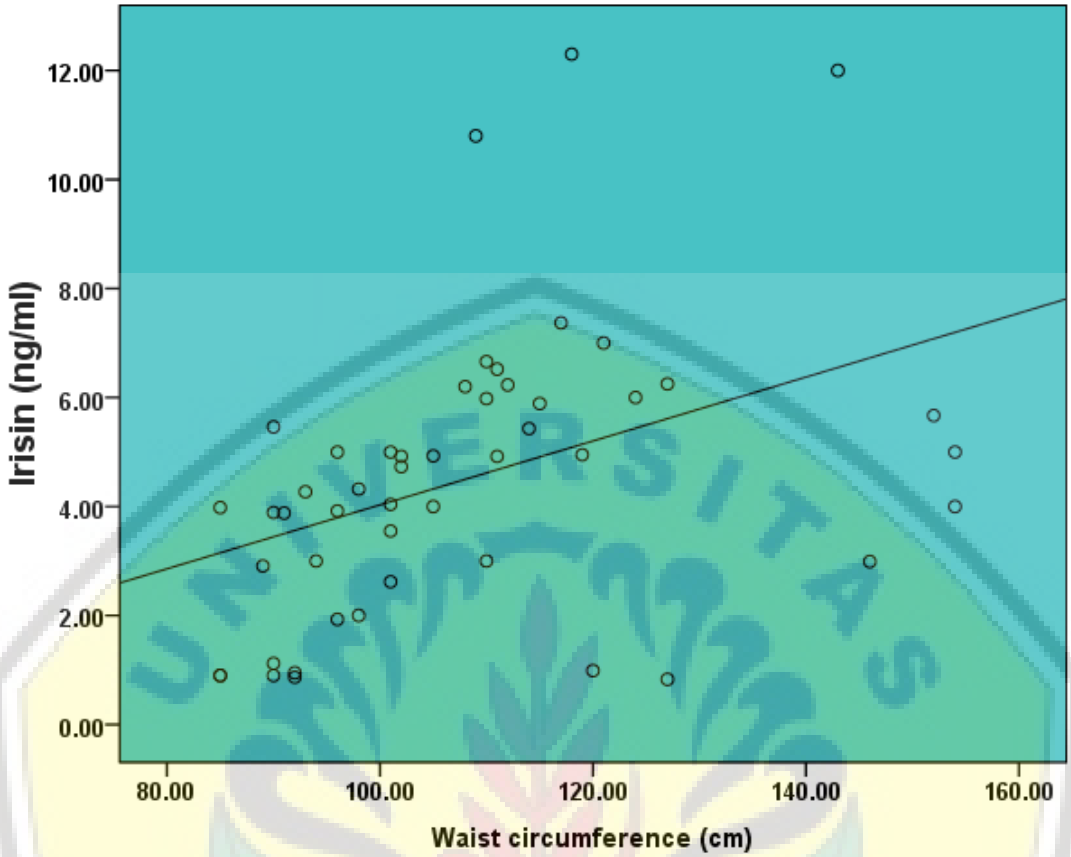

Figure 7: The correlation between Irisin (ng/ml) and WC among obese patients (Correlation is significant at the 0.05; r:correlation coefficient).

Discussion

Regarding to the gender of obese patients shows in figure 1, the highest percentage of obese patients (89.09%) were female. This result agree with findings of other researchers [14-20]. The suggested reason for this result is presence of Traditional/cultural restrictions in lifestyle of women in Iraq are one source for increased rates of obesity among females than males, females have limited access to sports and exercise activities, also multiple pregnancies is an important factor as women gain 4.5 kg or more in one year postpartum, due to a combination of factors such as gestational weight gain, decreased physical activity, and increased food intake.

Regarding the age of obese patients shows in Figure 2 the greatest increase of obesity was seen among 20-30 age group and this result agree with the findings of[21-24], this may be due to sedentary life-style and dietary habits. Also young adult people who live in countries making the socioeconomic shift, are particularly affected by the social and environmental factors such as financial independence, the easy availability of 'ready to eat' food stuffs, the increasing numbers of fast food chain shops, which are all part of adopting western life culture.

Regarding the residence of obese patients shows in Figure 3, the majority of the obese patients (63.64%) were from urban areas, this result agree with [25-29]. Urban populations are more exposed to a sedentary lifestyle and the high-fat fast food consumption are common, and it is clear that those populations are at a higher risk of developing obesity compared with rural populations, which have a higher level of physical activity such as fishing and agricultural work.

Figure 4 showed distribution of obese patients according to occupation. Largest group of obese patients

were unemployed, this result agree with the findings of [29-31]. Unemployment is more strongly associated with adiposity outcomes. Also, psychosocial stress and financial restriction associated with unemployment could have heterogeneous effects on energy balance .

Figure 5 shows mean differences of irisin (ng/ml) for control and obese patients. There is significant difference between control and obese patients (p value ≤0.05), the resulted data shows higher level of Irisin in obese patients compared with control, These findings confirmed the results of a previous study which demonstrated that obese patients had higher circulating levels of irisin than normal weight individuals [9, 32,33], in contrast with other studies that found lower irisin levels in obese patients [34].

Figure 6 shows the correlation between Irisin (ng/ml) and body mass index (kg/m^2) among obese patients. There is significant positive correlation between irisin and BMI(p value≤0.05). (r = 0.441, P = 0.002), in accordance with our findings, several studies have revealed a positive correlation between serum irisin levels and BMI[6,32,33,35,36]. Contrastingly, some studies found a significant negative correlation between circulating irisin and BMI [34,37]. Moreover, one study reported that irisin was not related to BMI[38].

Figure 7 shows the correlation between Irisin (ng/ml) and waist circumference (cm) among obese patients. There is significant positive correlation between irisin and waist circumference (p value≤0.05). (r = 0.407, P = 0.004).This result agree with (6,36), while disagree with[38].

Conclusion

Serum Irisin levels are higher in obese than in non-obese people.

Recommendations:

1. A community-based multiple prevention and intervention strategies should be implemented to combat with increasing level of obesity.
2. Study the gene expression of irisin, leptin, ghrelin associated with obesity.
3. We may push for the increasing medicalization of obesity.
5. Routine cardiac checkup for obese patients by a cardiologist doctor.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors have no conflict of interest.

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Impact of Fertilization Rate on ICSI Outcome and Pregnancy Rate for Unexplained Subfertile Couples

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Abstract

Fifty subfertility couples were involved in the present study during their attendance at the fertility clinic at Al-Sadder teaching hospital in Al-Najaf/Iraq throughout a period from January 2018 to January 2019 to undergo intracytoplasmic sperm injection (ICSI). Details history and physical examination were done for every subject participated in this study. Fertilization rate (FR) was calculated as percentage transformation of microinjected oocytes into two pronuclei. A categorical variable of FR defined based on 50% FR grouped couples; Group I with FR>50% and Group II with FR>50%. The objective of this study was to investigate the influence of fertilization rate on ICSI outcome and pregnancy rate for unexplained subfertile couples. Main results of this study revealed that there was a significant difference ($p<0.05$) in ICSI outcome and pregnancy rate between different study groups. With increasing fertilization rate, there was an increase in the ICSI outcome and the pregnancy rate. It was concluded that increased fertilization rate have a positive impact on the ICSI outcome and pregnancy rate for unexplained subfertile couples.

Keywords: *Intracytoplasmic sperm injection, Fertilization, Fertilization rate.*

Introduction

Infertility could be defined as the couples inability to achieve spontaneous conception after one year or more of a regular, unprotected sexual relationship [(1)]. Infertility is a growing concern affecting globally up to 15% of couples trying to conceive, and it represents a source of social and psychological suffering for both men and women and can place high pressure on the relationship within the couples[(2)]. Fortunately, progresses in the assistive reproducing technologies (ART) have assists many subfertile couples to achieve conception[(3)]. In Vitro Fertilization (IVF) is a well-established procedure as a treatment of various types of infertility, including tubal obstruction, endometriosis, idiopathic infertility and some cases of mild male infertility. However, those couples suffering from severe male factor infertility represent the leading cause of failed fertilization in IVF[(4)]. The need for a more efficient procedure to achieve normal fertilization ended with the development of ICSI, where a single viable sperm was introduced directly into the ooplasm [(5)]. The first human pregnancy and live birth using this technique were achieved in 1992. Since then, ICSI has become the common treatment of choice for couples presenting with male infertility[(6)]. Fertilization rate (FR) is the percentage of the transformation of microinjected oocytes into two pronuclei [(7)]. The implantation rate (IR); the number of pregnancies per embryo transferred, has been reported to

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vary from 10% to 40% in different clinics. Fertilization process involves that, the ovulated or retrieved oocyte is activated by sperm entry either by normal conception in vivo or artificially with ICSI. Events happen during fertilization include sperm-oocyte membrane fusion, then polar body extrusion and completion of the second meiotic division[8]. The first week of preimplantation development starts from fertilization and continue up to blastocyst hatching. This involves repeated mitotic division of zygote in the tubes and uterus before the blastocyst hatches and implants in the endometrial cavity on day 6 or 7[9].

The most important morphological criteria to evaluate cleaved embryos in vitro are blastomere size and shape, whether even or not, fragmentation and multinucleation[10]. Nuclear structure, especially of nucleoli, change after embryonic genome expression between the 4-cell and 8-cell stages, where compact nucleoli in early embryos become progressively reticulated in later embryos [11]. Failure of treatment after ICSI a to a long list of factors which vary depending on the cause of infertility. In 25% of the cases, the aetiology of infertility cannot be found. This unexplained infertility is described with normal semen counts together with optimal ovulatory functions, presence of patent tubes and a normal uterine cavity [12]. It has been observed that failure of fertilization and cleavage is more likely to occur in couples with unexplained infertility as compared to tubal factor infertility, and male sperm problems [13].

Materials and Method

Patients: A total of fifty subfertile couples who approach the clinic of fertility centre at Al-Sadder teaching hospital in Al-Najaf/Iraq for their inability to conceive and undergoing ICSI were included in this study, throughout a period from January 2018 to January 2019. Couples with unexplained infertility for more than two years with female's age ranging from 20 till 35 years were included. Details history and physical examination were done for every subject participated in this study. Subfertility due to male factor and females with polycystic ovaries, endometriosis, and endocrine abnormalities were excluded from the study. Fertilization rate (FR) was calculated as percentage transformation of microinjected oocytes into two pronuclei. A categorical variable of FR defined on the basis of 50% FR grouped couples; Group I with FR ≤ 50% and Group II with FR >50%.

Sperm preparation for ICSI: Semen analysis and preparing, damage to sperm must be minimized by avoiding large fluctuations in temperature and unnecessary centrifugation[14].

Intracytoplasmic sperm injection (ICSI): All-female partners were subjected to controlled ovarian hyperstimulation with different protocols, including long agonist, short agonist, and antagonist programs. Ovulation was induced by intramuscular injection of 10,000 IU of human chorionic gonadotrophin. Oocyte retrieval procedure was performed under ultrasound guidance at about 36 hr. after triggering. The oocytes were denuded by hyaluronidase enzyme and the mechanical way by repeated aspiration through a sequence of denuding pipettes. Then the oocytes were washed with the culture medium, and the maturity of oocytes was assessed.

Oocyte Culture and Evaluation of fertilization: The normal standardized routine method was used for all patients 16-18 hours after injection oocytes were inspected for fertilization (finding of two pronuclei and two polar bodies). The fertilization rate was calculated from the number of oocytes normally fertilized divided by the number of injected oocytes. Subsequent evaluation of the embryo quality depended on blastomere number, shape, equality, mononucleated and proportion of fragmentation. Embryos were incubated individually in drops and transferred daily to fresh cleavage medium. Embryos were classified as 'good quality' if they were at the four-cell stage at forty-eight hr. after injection or at the six- to the eight-cell stage, seventy-two hr. after injection with even-sized blastomeres and little or no fragmentation [15].

Pregnancy Evaluation: In this study, pregnancy was reported as positive when serum hCG (IU/mL) concentrations were more than 10 IU/mL on day 10 post-transfer, and clinical pregnancy was confirmed by the presence of cardiac activity on transvaginal ultrasound scan (TVS) two weeks afterwards [16].

Results

In this study, we evaluate the impact of fertilization rate on ICSI outcome and pregnancy rate for unexplained subfertile couples.

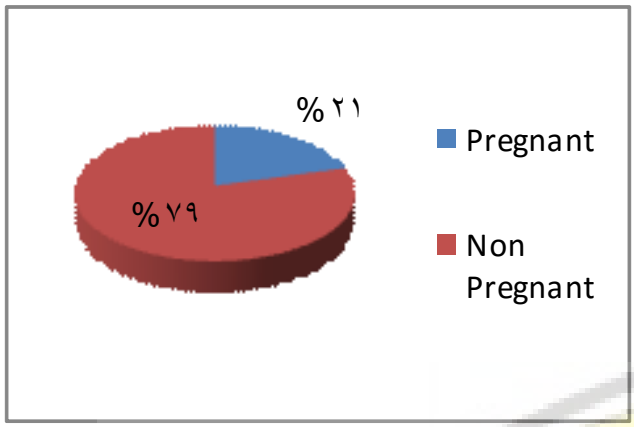

Figure 1: Distribution of patients according to the pregnancy rate (PR).

Figure 2: shows the pregnancy rate among different studied groups. The clinical PR was 15.9% in group I and 29.4% in group II. Thus, a higher rate was achieved in group II.

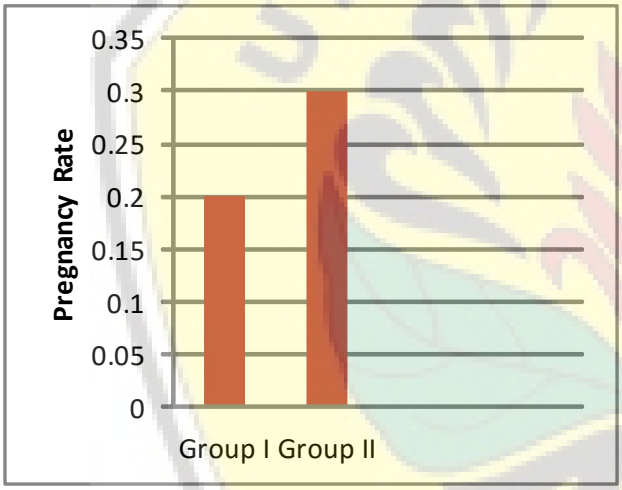

Figure 2: Pregnancy rate among different studied groups.

Table-1 shows that Group II had higher basal E2, LH and FSH levels than Group I, but the results were not significant.

Table 1: Hormonal profile of the studied groups

Hormone	FR		P-value
	<50%	>50%	
Basel E2 (pg/ml)	38.41	39.57	0.783
E2 at the day of HCG injection (pg/ml)	1768.32	1693.88	0.785
Basel FSH (Miu/ml)	5.41	5.48	0.916
Basel LH (Miu/ml)	3.15	3.33	0.688

Table 2: shows that Group II had higher ICSI outcomes than Group I, there was a significant difference.

Table 2: ICSI outcomes of the studied groups.

ICSI Outcome	FR		P-value
	<50%	>50%	
No. of follicles	8.35	9.73	0.304
No. of retrieved oocytes	5.85	6.77	0.438
Good injected oocyte	5.20	5.77	0.545
2PN	1.80	5.10	0.00
No. of embryos	1.75	4.83	0.00
Grade I embryo	0.8	1.5	0.67
Grade II embryo	0.65	2.4	0.002
No. of embryos transferred	1.75	3.87	0.00
Cleavage rate	83%	93%	0.289

Discussion

The introduction of intracytoplasmic sperm injection (ICSI) in 1992, a technique of in-vitro fertilization using direct insertion of a single sperm into an egg, offered the ability to bypass even some of the most severe etiologies of male subfertility[4]. ICSI procedure need a single life sperm with ability to activate oocyte and form pronuclei is necessary but morphology, motility and acrosome status not important [15]. It is documented that fertilization of oocytes involves a complex series of events requires growth, development and cytoplasmic maturation of oocytes microinjected with spermatozoa. Implantation of the human embryo is a well co-ordinated sequenced event of apposition and adhesion of the invading blastocyst in the endometrial bed during the window of implantation[17]. The sensitivity of antral follicles to gonadotropic drugs, response to stimulation, oocyte maturity, fertilization, embryo quality and endometrial thickness, all contribute to the magnitude of success rates of ART. In all procedures, failure of fertilization is the stage which stops the process and wipes the hopes and expectations of the infertile couples. The problem is intensified more in the couples to whom the reproductive endocrinologists have no true explanation of the cause of infertility. It is established that low FR results in poor IR and pregnancy outcome in comparison to patients with greater FR[18]. During ICSI, a number of oocytes estimated by TVS as preovulatory follicle count (PFC) is the strongest predictor of number of oocytes obtained during oocyte pick up. In the present study, the oocytes number and basal FSH was high in group

II. E2 produced during the follicular phase of female reproductive cycle improves endometrial receptivity for implantation of the blastocyst. A good number of oocytes and high E2 measured on the day of hCG administration reflects response and pregnancy outcome that has been subjecting of debate by several researchers [19]. In a previous study, it is reported that females with higher peak E2 had more significant number of retrieved, mature and fertilized oocytes with increased FR and IR [17]. In this study, peak E2 gives a positive predictor of FR in patients of unexplained infertility. Our results in this study show that the quality of the embryos at the time of ET has a critical effect on the outcome of ICSI, as was the case with conventional IVF.

Total oocyte retrieved, PN, grade II embryo, the total number of embryos, and the number of ET were significantly higher in pregnant women when compared with non-pregnant women. These results agreed with Van Loendersloot and his co-workers in 2014 who found a direct relationship between the increasing number of oocytes retrieved, ET, embryo quality and pregnancy rate after ART [20]. Also, he discovered that pregnancy chances had a significant association with ICSI parameters[20].

Cai and his co-workers (2011) found that the total number of grade I and II embryos was a superior predictor for ART success [21]. Also, they established that embryonic parameters, including a total number of grade I & II embryos and the total number of embryos, ordered as the first most important and second most important predictors for ART success. These results recommend that the total number of embryos give additional information to predict ART success if there was a lack in the determination of the total number of good-quality embryos. It may be a substitution marker for hormonal factors and may work through the uterine receptivity[22].

It is clear that in ICSI, different sperm indices do not affect the fertilization rate, PR, or the outcome of pregnancy as long as a morphologically well-shaped motile sperm is used for injection[23]. Although poor-quality embryos failed to demonstrate the same PR as those derived from mature oocytes, the cause was not the quality of the sperm, but the quality of the oocyte and particularly the maturity of the cytoplasm. In general, the ICSI fertilization rate is lower than expected despite the mechanical injection of one sperm into a mature oocyte, possibly because sperm that is selected may have defects in their DNA [24]. That is to say ICSI procedure bypass the natural selective process although the most normal-appearing and motile spermatozoa are selected there is always a small percentage of sperm used in in vitro fertilization (IVF)/ICSI that contains varying degrees of DNA damage and due to the high apoptotic activity during development into a blastocyst the chance of a successful ongoing pregnancy is significantly low [24].

Conclusion

It was concluded that increased fertilization rate have a positive impact on the ICSI outcome and pregnancy rate for unexplained subfertile couples.

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Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Antifungal Activity of Mixture Eugenia Aromaticum and Thymus Vulgaris Essential Oils Against Candida Albicans Clinical Strains in Al-Muthanna Province

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Abstract

The aim of the study was to investigate the antifungal properties of plant essential oils (EOs extracted from Mixture of Eugenia aromaticum and Thymus vulgaris -M-ET) against Candida albicansclinical strains. The antifungal activity of the plant EOs were determined by broth microdilution and microtiter assays. The results indicated a good antifungal activity of M-ET EOs against C. albicans strains. The overall antifungal results demonstrated that the investigated plant EOs represent promising approaches to cope with the emerging antifungal resistance.

Keywords: *EOs, antifungal activity, Candida albicans.*

Introduction

The novel antibiotic resistance and recurrence of fungal infections linked the attention of scientists to conduct intensive studies about this problem. It has been indicated that immunodeficiency disease (AIDs), diabetes and leukemia are associated with fungal re-infections[7].

Candidiasis is a common opportunistic diseases of skin and oral cavity caused by Candida species. The most common and worldwide distributed one is C. albicans[13], this pathogenic yeast owns several virulence factors involving; adherence, germ tube formation and enzymes production, such as phospholipase[16]. Candidaisis is a common recurrent infection due to the presence of the causative agent, C. albicans mainly, as a commensal fungi in oral cavity, vaginal and digestive system[9], Getting infected with human immunodeficiency virus (HIV), diabetes, Leukemia or administration of broad spectrum antibiotics may promotes converting the normal flora to opportunistic microbes[4&14].

Currently, several plant pharmaceuticals have been used as natural anti-fungal formulations instead of synthetic anti-fungi which are used as skin ointment due to their toxicity on liver and pancreases when used at high concentrations [10]So,Urgent approaches are needed to fight against extensively drug-resistant fungal infections. Prevention and control of the emergence and spread of antifungal resistance require global efforts contributing to the solution. New prophylactic and therapeutic strategies must be developed as the existing antifungals become ineffective. Plant essential oils (EOs) constitutes a group of phytochemicals with potential application in development of novel antifungal agents that could contribute to the reduction in drugs use and thus to the maintaining of drugs effectiveness. Additionally, several reports demonstrated that they present a synergistic effect in combination with drugs thus they could be employed in the development of safe drug associations for fighting multi-drug resistance [12 & 15], also threre are a new method and preservatives techniques, in capsules and dry tablets, have been innovated to facilitate using of these plants and maintain their antimicrobial activity [1 & 2] . The aim of the present study was the investigation of antifungal properties of plant essential oils (EOs extracted from Eugenia aromaticum and Thymus vulgaris -M-ET) against Candida albicans clinical strains.

Materials and Method

Samples Collection and Isolation of C. albicans: A total of 16 clinical isolates were collected using sterile swabs from patients showed a clinical sings of

Candidiasis. A samples were collected from different sites, i.e. respiratory tract, wound and urinary tract infections, *Candida albicans* was included in the present study. Samples were collected at admitted at the Al-Hussein teaching Hospital and inoculated directly in a test tubes containing phospate buffer saline (PBS). All samples were kept at refrigerator (4°C) until the time of inoculation and identification**.**

Direct Examination and culture: Each sample was directly examined microscopically and stained using Gram staining method to identify the Gram-positive yeast [6,10]. For direct examination and identification of yeast cells and pseudomycillium, light microscope was used at (40X, 100X). Microbial strains were identified using the automatic system Vitek II.

Plant EOs: Essential oils used in this study were extracted in laboratories Al Muthanna university- faculty of science, department of Biology, from the mixture of *Thymus vulgaris* and *Eugenia aromaticum*. These were separately grounded and powdered in domestic blender and hydro distilled in a Clevenger's apparatus to obtained essential oils. Dilution was made after a known volume of each oil was diluted by adding fresh solvent (DMSO) and stored at 4°C till used.

Assessment of the influence of plant EOs on microbial isolates growth: Binary serial microdilution method performed in 96-well microtiter plates was used to determine the minimum inhibitory concentration (MIC) for each of the plant EO against the above mentioned fungal strains. Briefly, microbial suspensions prepared from 24 hours microbial cultures were adjusted to a density of 0.5 Mc Farland, corresponding to 1.5 x 108 CFU/ml and added in wells containing a range of plant EOs prepared by binary serial dilution using DMSO. After inoculation, microtiter plates were incubated for 24 h at 37°C. Wells containing broth inoculated with microbial strains and wells with uninoculated broth were used as positive growth controls and as negative controls, respectively. Solvent control tests were also performed to determine the effect of DMSO on microbial growth. The experiments were performed in duplicate. MICs were determined as the lowest concentration inhibiting microbial growth, indicated by a visible decrease in the growth medium turbidity.

Results and Discussion

We determined the effects of plant essential oils extracted from *Eugenia aromaticum* and *Thymus vulgaris -M-ET)*, at various concentrations, on growth of fungal strains isolates using turbidity measurements. Our study revealed that the investigated EOs displayed good antifungal growth effects. The results of antifungal tests are presented in the Table 1. We found that the mixture of M-ET was very efficient. The *C. albicans* strains were susceptible to the tested EOs, with MIC values ranging from 0.7 - 5.56 mg/ml.

Table 1. Plant EOs MIC values (mg/ml).

Plant EOs Microbial strains	M-ET mixture min–max
C.albicans (n=16)	0.7 - 5.56

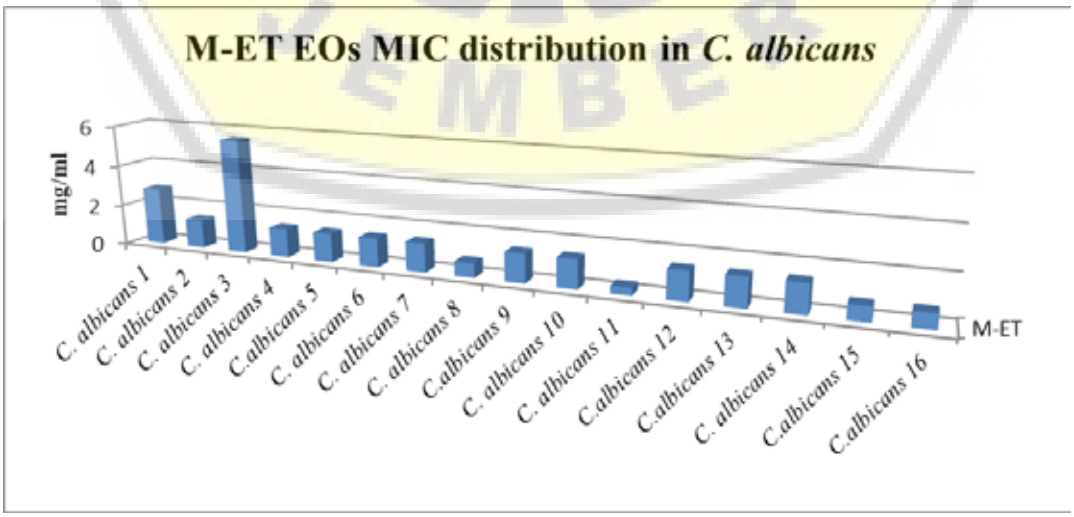

Figure (1): Minimum inhibitory concentrations for M-ET Eos

Antimicrobial resistance is a global health problem. The emergence and spread of pathogens resistant to current drugs require the development of new strategies[1&2]. Since ancient times, plant EOs are known to possess antimicrobial proprieties, however in order to develop adequate alternatives to the existing antimicrobials, we need first to better understand the mechanisms of the antifungal activity. In this study, we assessed the growth inhibitory activity of mixture *E. aromaticum* and *T. vulgaris* (M-ET) against fungal clinical isolates (*C. albicans*). Entire plant extracts and many of their individual components were demonstrated to possess antimicrobial activity against pathogens *in vitro*. In our study, we found that the tested plant EOs were able to inhibit the fungal growth with different intensities. The clinical isolates exhibited high variations in plant EOs susceptibility that could be explained by the various drug resistance patterns. The M-ET mixture demonstrated the strongest antifungal activity against all clinical isolates that probably correlated with the highest percentage of phenolic compounds, these results are in agreement with previous studies [3, 5 & 8]. According to Marchese (2017) p-cymene has enhanced the activity of other antimicrobial substances through synergism, antagonism and additive effects [11].

The antimicrobial activity of the tested plant EOs could be attributed to high amounts of phenolic compounds: eugenol about 75-85% of *E. aromaticum* EO (12), thymol, 57.7% and p-cymene 24.79% of *T. vulgaris* EO[3&17], The major antimicrobial phenolic components are, principally, acting as envelope permeabilizers[5].

Conclusions

With the increasing emergence of antifungal drug resistance, phytochemicals could constitute an alternative therapeutic strategy for fighting infectious diseases. Oily aromatic liquids extracted from plants represent a reservoir of bioactive compounds in nature. In this context, we analyzed the influence of: The mixture of *E. aromaticum* and *T. vulgaris* (M-ET) on drug resistant fungi. The overall results indicated that selected plant EOs displayed a good antifungal activity, that demonstrating their potential as bioactive alternative to conventional synthetic antifungal for controlling drug resistant fungi. However, for drug development additional tests are needed to determine their toxicity and pharmacokinetic and pharmacodynamic properties.

Abbreviations:

Eos: Plant essential oils

M-ET: Eugenia aromaticum and Thymus vulgaris mixture

MIC: Minimum inhibitory concentration

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The Prevalence of Tension Type Headache among Students of Baghdad College of Medicine in 2018

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Abstract

Objectives: The main goal of this study was to estimate the prevalence of Tension-type headache "TTH" among students of College of Medicine\University of Baghdad "CM\UB"; to compare its prevalence between males and females, and to decide on its relationship with years of study in college; to estimate the relative proportion of episodic to chronic subtypes of TTH; and to identify aggravating\relieving factors of TTH.

Method: A cross-sectional survey study was conducted from the 28th of July 2018 to the 14th of October 2018 on 150 students of CM\UB. The data were collected by using self-administered questionnaire which included demographic data and specific questions on headache based on international Headache Society criteria (ICHD-III) for diagnosis of TTH and other headache types.

Results: Of 150 participant, 86 (57.3%) had TTH: in 78 (52%) it was episodic while in only 8 (5.3%) it was chronic. Neither age nor year of study had a significant relationship with TTH, but there was a significant difference between genders with higher prevalence in females (65.3%) as compared to males (49.3%). Stress, sound and lack of sleep were the most common triggering factors, while rest and sleep are the most effective relieving factors.

Conclusion: TTH is common among students of CM\UB, being more in females, and mainly episodic. Its prevalence was comparable with results from medical schools in nearby countries.

Keywords: *Headache, tension type headache, medical students, undergraduate, Baghdad.*

Introduction

Tension Type Headache "TTH" is the most common primary headache disorder in all age groups across the globe[1]. Several epidemiological studies have shown a high prevalence of headache among medical students. The prevalence rates of TTH have been reported in the range of (5.6-40.8%) in different countries[2,3].

TTH leads to considerable disability with up to 60% of individuals reporting decreased work effectiveness, increased absenteeism and reduced social engagement[4]. TTH often begins during the teenage years, affecting three women to every two men[5]. It is frequent among medical students and shows significant impact on their personal and social lives and the students often claim that their symptoms had worsened since admission to the university[6]. Some studies showed that particular years of study in medical schools are associated more with TTH[7], but this was not consistent among studies[8]. The relationship of gender with TTH in medical students was also variable across studies, some showed it to be more in females[9], but some studies didn't show that or even showed the opposite[7,10].

The term "Tension Type Headache" has been chosen by the International Classification Headache Diagnosis I (ICHD I)[11]. International headache society divides TTH into episodic and chronic types based on the frequency of the attacks. Episodic TTH occurring on

fewer than 15 days per month, is reported by more than 70% of some populations. It usually lasts a few hours, but can persist for several days. Chronic TTH, occurring on more than 15 days per month, affects 1-3% of adults. It can be unremitting and is much more disabling than episodic TTH[12].

There are also conflicting reports on aggravating\ alleviating factors of TTH, some affirming the role of stressors[13-15], others negating it[8]. As the cause of TTH is still unknown[16], epidemiological studies on specific populations are required to assist clinicians and researchers in finding the origin of pain and the factors influencing the frequency of headache[7].

Objectives: To achieve the following aims among students of College of Medicine\University of Baghdad "CM\UB":

- Estimate life time prevalence of TTH
- Determine the association of TTH with gender, age and grade.
- Estimate the proportion of chronic and episodic types of TTH.
- Identify aggravating\relieving factors of TTH.

Subjects and Method

A cross sectional study was conducted among medical students of CM\UB from 28th July 2018 to 14th October 2018. The study was conducted in accordance with the Declaration of Helsinki, after approval from Medical Education unit of CM\UB. This study enrolled 150 students who were selected randomly for the purpose of the study. The targeted Medical students were from 2nd, 3rd & 4th grade (year of study), for the age groups 18-23 years from either gender. Data were collected online using self-administered questionnaire. The questionnaire was designed by the researchers according to the international headache standards (IHS), and contained individual's demographic information such as age, gender, grade and questions to identify the type of headache. All subjects were classified by using 3rd edition of the International Classification of Headache Disorders "ICHD-3"[17] to make the differential diagnosis between TTH, migraine and cluster headache according to the responses provided by the research subjects. And then we sub-classified TTH to episodic and chronic according to the frequency of the attacks.

Statistical Analysis: All data were statistically analyzed by using the Statistical Package for the Social Sciences (SPSS) software (version 25) at level of significance ($P \leq 0.05$) Descriptive statistics were presented in frequencies, percentages, standard deviations, and 95% confidence intervals.

The differences among groups were analyzed by using logistic regression model for showing the influence of the factors of age, gender, and grade on the type of the headache; and by using z-test (for proportion) for differences in aggravating/alleviating factors of headache.

Finding: There were 75 males and 75 females participating in this study which represent 50% and 50% respectively. The age of participants ranged between 18 and 23 years with a mean equaling 20.59 years ± standard deviation of 1.181 years (95% CI: 18.3-22.9). The mean age for males was 20.67 years +/- 1.277 standard deviation (95% CI: 18.2-23.2), while for females it was 20.51 +/- 1.073 standard deviation (95% CI: 18.4- 22.6), both males and females age ranged from 18 to 23. The number of participants at the second stage were 58 (32 F, 26 M), at the third stage 47 (25 F, 22 M), and at the fourth stage 45 (24 F, 21 M).

The study showed that out of 150 students, 114 (76%) had headache, this was distributed as: 57.3% (n=86) had TTH, 16.7% (n=25) had migraine, 2% (n=3) had cluster headache and 24% (n=36) had no headache. The distribution of those per gender and age were calculated and depicted in Fig. (1,2) respectively.

The descriptive statistics showed that the age of 86 students with TTH was distributed between 18 and 23 years with a mean of 20.52 years and standard deviation of ± 1.193 (95%CI [18.18-22.86]). Those were distributed as follows: 3(3.6%); 13 (15.7%); 25 (30.1%); 28 (33.7%); 8 (9.6%); 6 (7.2%), per years of age (18 to 23) respectively; with 35 (40.7%); 29 (33.7%); 22 (25.6%) in 2nd, 3rd, and 4th grade respectively.

Of 150 participant, 86 (57.3%) had TTH: 78 (52%) had episodic TTH and only 8 (5.3%) had chronic TTH. of all 75 males: 37 (49.3%) had TTH, in 35 (46.7%) it was episodic and just in 2 (2.6%) it was chronic. of all 75 females: 49 (65.3%) had TTH, in 43 (57.3%) it was episodic and just in 6 (8%) it was chronic. The percentages of episodic and chronic TTH per age were calculated and are depicted in Fig. (3).

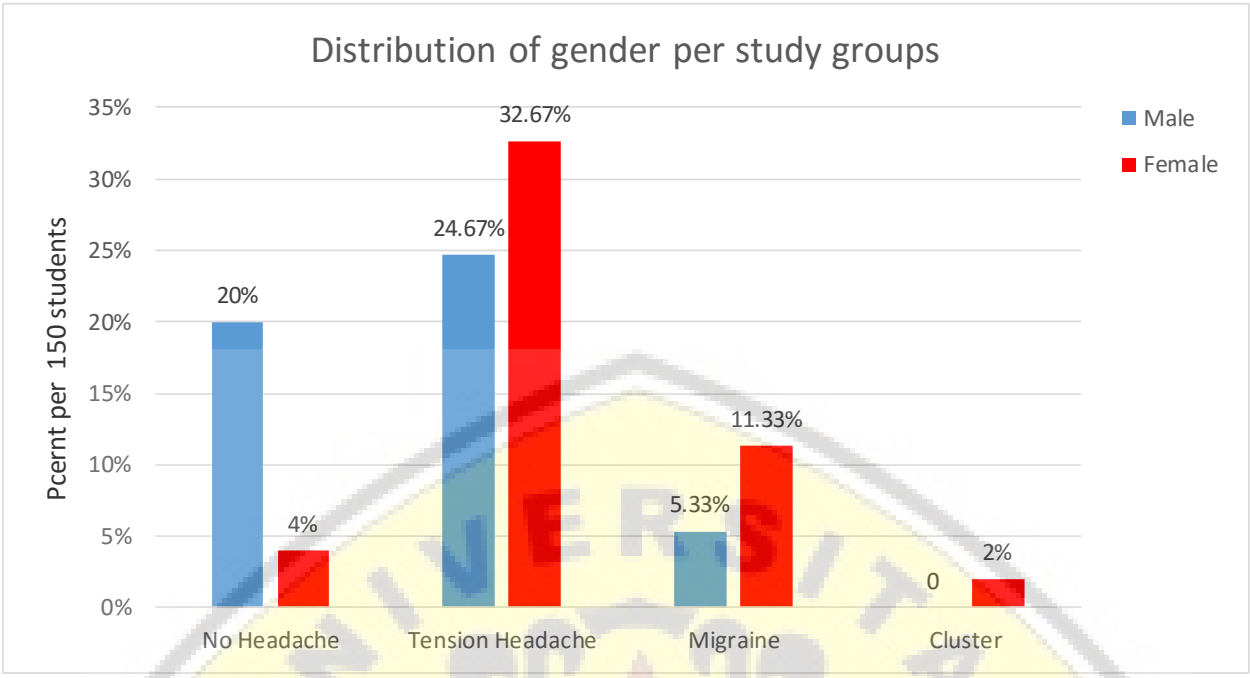

Figure 1: Bar chart showing the distribution of gender per study groups in a sample 150 students of Baghdad medical college.

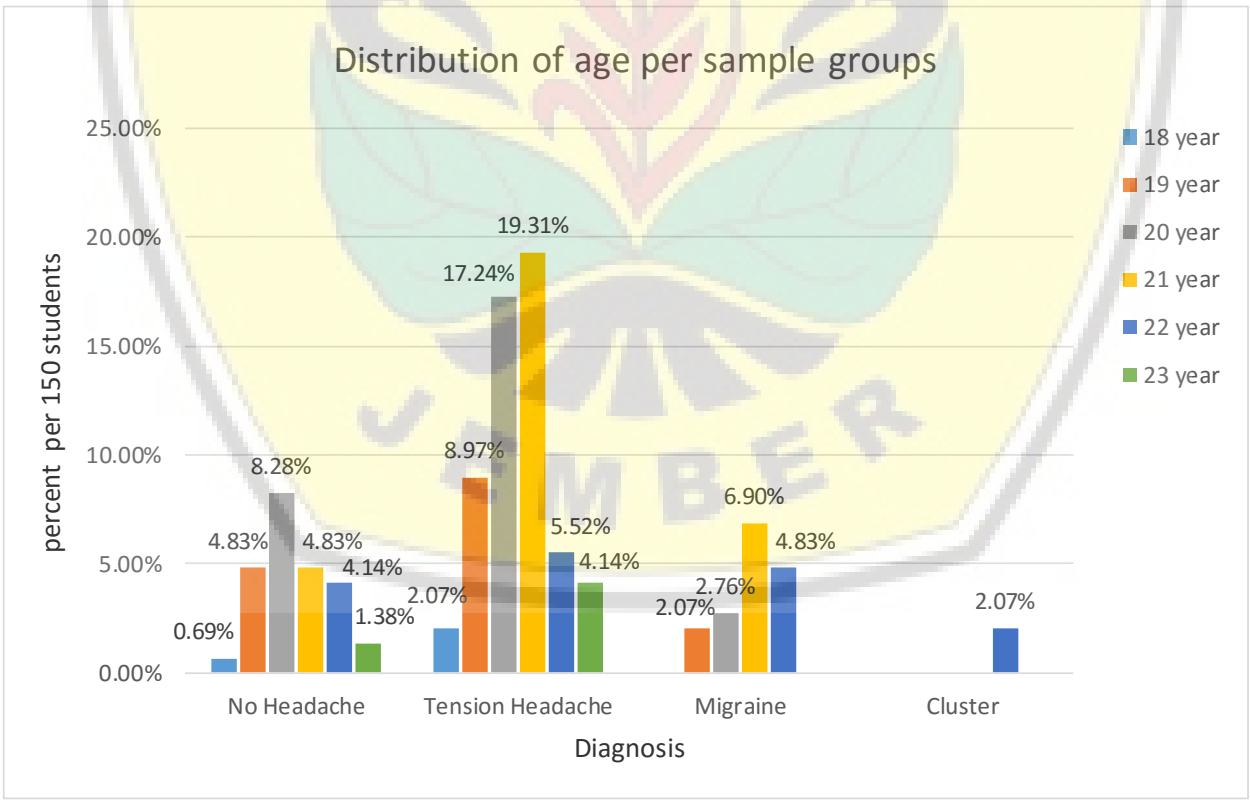

Figure 2: Bar chart showing the distribution of age per study groups in a sample of 150 students of Baghdad medical college.

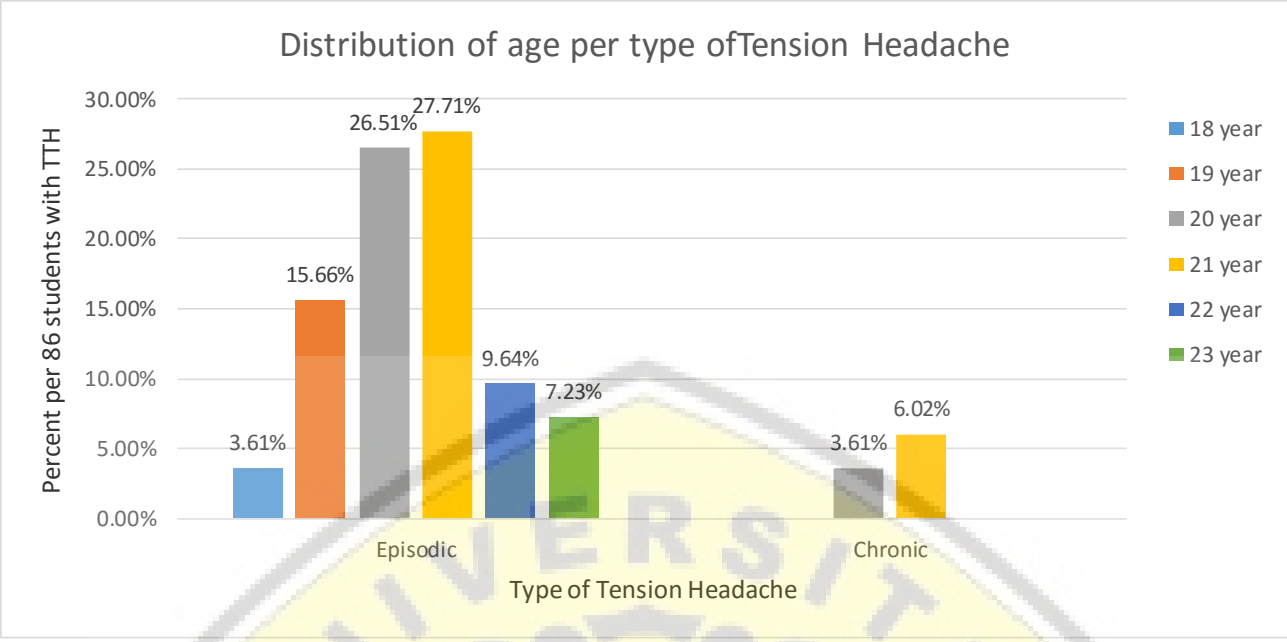

Figure 3: Bar chart showing percentage of types of TTH in relation to age in a sample of 86 students of Baghdad medical college with TTH.

The results also showed that out of 114 participants with headache: 8.8% (n=10) occurred daily, 28.1% (n= 32) occurred once a week, 35.1% (n=40) occurred more than once a week and 28.1% (n=32) occurred once a month. Regarding TTH: 8.1% occurred daily, 29.1% occurred once a week, 32.6% occurred more than once a week, and 30.2% occurred once a month.

Logistic regression model had been used to show the influence of age, gender and grade on the type of the headache, and to show the influence of these factors on TTH especially (Tab. 1).

Table 1: p-values of influence of age, gender and grade on the type of headache and influence on TTH

Factors	Studied Sample		Tension Headache	
	P-value	Influence	P-value	Influence
Gender	0.030*	S	0.045*	S
Age	0.121	N.S	0.222	N.S
Grade	0.272	N.S	0.379	N.S

Headache's type is a dependent variable
*statistically significant, S statistically significant, N.S not significant.

Frequencies and significance of aggravating factors of headache in tension and non-tension groups were calculated (Tab. 2). Similarly these were calculated for alleviating factors in those groups (Tab. 3).

Table 2: Frequency table of the factors that bring on\ aggravate headache

Factors	No Tension Headache (28)		Tension Headache (86)		z-test statistic	P-value
	N	%	N	%		
Stress	8	29%	80	93.0%	7.0597	<0.00001
Lack of sleep	25	89%	43	50.0%	-3.6803	0.00024
Exercise and physical exertion	13	46%	17	19.8%	-2.7827	0.00544
Light	6	21%	15	17.4%	-0.4727	0.63836
Sound	7	25%	47	54.7%	2.7293	0.00634

Table 3: Frequency table of the factors that help the students in relieving their headache

Symptoms	No Tension Headache 28		TTH 86		z-test statistic	p-value
	N	%	N	%		
Rest	8	28.6%	62	72.1%	4.1088	< 0.00001
Sleep	28	100%	61	**70.9%**	3.2289	0.00124
Medication	20	71.4%	50	58.1%	1.2546	0.2113

Discussion

This is the first study reporting the life time prevalence of headache and particularly TTH in CM/ UB. The prevalence of headache in this study was 76% which is higher than what's found in a study in Iran (58.7%)[7] and much lower than a study conducted in Oman (98.3%)[10], both of which were conducted on medical university students.

In the present study TTH was found to be common in medical students of CM\UB with the overall prevalence of 57.3%, which is in line with a number of studies on medical students that were conducted in Iran (44.2%)[7], Turkey (50.7%)[18] and Saudi Arabia (58%)[8], as well as in Zagreb (57.69%)[9], yet it is much higher than a study conducted in Iraq[19] on the general population (21%), and also higher than the prevalence of TTH reported in the Middle East area (11-39%) [10, 20- 22], which might signal a possible correlation between TTH and university study of medicine in Iraq.

In our study, TTH was more frequent than migraine (16.7%) and cluster (2%), in agreement with studies done in universities in nearby locations: Isfahan[7] (44.2% TTH versus 14.2% migraine); Jordan[23] (36.9% TTH versus 7.7% migraine); Zagreb[9] (57.69% versus 8.86%); while in Oman[10] both were equal (12.2%). However the last study[10] contained a higher percentage of females in its sample (62.5%).

The generally believed higher prevalence rate of TTH among women, reflected by several studies, was observed in our sample with a prevalence of (65.3%) in females versus (49.3%) in males. This is in agreement with the findings of the study carried out in University of Zagreb Medical School (25.9% male, 70.1% female)[9]. However, some studies found no significant difference between male and female students like studies that are conducted in Isfahan[7] (49.2% in males vs. 39.2% in females) and the one conducted in Oman (13.9% in males vs.11.1% in females)[10].

In our study, grade showed no significant relationship with TTH, which comes in conflict with some studies like the study conducted in Isfahan which reported significant relationship with 3rd year study[7].

Several studies have reported the effect of age on different types of headach[24]. Considering the limited age range in this study; we did not observe any effect of age among sufferers from TTH, which agrees with the study in Isfahan[7].

Regarding the types of TTH, our study showed that the prevalence of episodic TTH is 52% (46.7% of males; 57.3% of females) and prevalence of chronic TTH is 5.3% (2.6% of males; 8% of females), which comes in agreement with a global report[12].

Among the factors affecting the intensification of

tension headache, stress had the highest effect (93%), which conflicts with results of a study in Taibah University in Saudi Arabia on 3rd year female medical students, which reports no relationship with stress[8]. However our results agrees with many prior studies on TTH in general[13-15]. Sound (phonophobia) intensified TTH in (54.7%) in our study and it was significantly different even from migraine group which also had phonophobia, this agrees with results of a prior study on the relationship of phonophobia with TTH[25]. Lack of sleep occurred in (50%) of students with TTH in our sample, which agree with prior studies on TTH in general[14,15], however lack of sleep was significantly found to be more with migraine than TTH, which comes in agreement with prior studies[15]. Rest and sleep are the factors found in our study to be with the highest effect on relieving TTH by (72.1%) and (70.9%) respectively, coming in agreement with prior studies[13,14] which agrees with what's generally mentioned about TTH in various textbooks[26], though this conflicted with another study[15].

Conclusion

- TTH is common among medical students in CM\UB, being more in females, and mostly episodic.
- There is no significant association between TTH and age or year of study in CM\UB.
- Stress, sound and lack of sleep are the most common triggering factors, while rest and sleep are the most effective relieving factors.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

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Evaluation of DNA Damage and Antioxidants Defense Systems in Type 2 Diabetes Mellitus Patients

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Abstract

The presents study was conducted to evaluate the DNA damage markers, antioxidants makers and lipid peroxidation in type 2 diabetes mellitus patients.

About 5ml of venous blood was collected from10 healthy persons and 30 patients,fasting for 10 hours. Comet assay used to measure DNA damage andantioxidants were assessed biochemically. Lipid peroxidation was estimated by the Thiobarbituric acid assay.

The results of presents study showed that the DNA damage markers such as comet length, tail length, DNA% in tail and tail moments were increased significantly at $p<0.05$ in diabetic patients as compared with healthy control group. Also, all biochemical markers such as SOD, CAT, GPx, GSH and MDA were significantly elevated with diabetic patients as compared with healthy control

Keywords: *DNA damage, Comet assay, Antioxidants, Diabetic mellitus.*

Introduction

World Health Organization demonstrated that more than 170 million people hve diabetes worldwide and in 2030, this number might rise to 370 million [(1)]. Complications of micro vascular and macrovascular of diabetes mellitus are the leading cause of mortality and morbidity [(2)].

Many biological pathways are triggered in hyperglycaemia state like glucose autoxidation, polyol pathway, prostanoid synthesis and protein glycation,leading to increased free radicals production where Oxidative stress is a common pathogenic factor in diabetes mellitus and its complications [(3,4)].

In human, there are antioxidant enzymes like superoxide dismutase (SOD), Catalase (CAT), Glutathione (GSH) and its enzymes such as Glutathione reductase (GR), Glutathione peroxidase (GPx) & glutathiones-transferase, which scavenges the free radicals actionin order to protect the body[(5)]. Some studies have estimated the status of oxidative stress in diabetics and reported oxidative damage in Diabetic mellitus patients [(5,6)].

Polyunsaturated fatty acids are readily oxidized by reactive oxygen species (ROS) to produce fatty acid radicals that generate new free radicals by reacting with adjacent lipid molecules. Breakdown of lipid peroxidation products form many reactive aldehydes like MDA which is highly reactive with protein and DNA molecules lead to form adduct with these macromolecule[(7)].

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Hyperglycemia generates ROS then oxidative stress in many tissues that generatediabetic complications like protein, lipid, and DNA modifications could lead to teratogenic or carcinogenic consequences [8-10].

There is an increasing concerns of the DNA damage effect in chronic diseases. Comet assay is a sensitive, simple, economic and rapid technique to detect DNA damage and repair, radiation pollution, genetic toxicology and aging[11-14].

Materials and Method

Collection of blood samples: About 5ml of venous blood was collected from 10 healthy persons and 30 patientsfasting for 10 hours.

DNA damage measurement: About 100µl of venous blood was put in a 2ml microfuge tube containing 1.5ml of phosphate buffer solution. Then 40µl of proteinase K were added and Centrifuged at 10000xg for 15min at4°C then2-5µl of cell suspension transferred to a clean 1.5ml tube and mixed on Comet slide with 40µl of low melting agarose. Lysis solution was prepared that consist of 2.5M NaCl, 100mM EDTA, 10mM Tris-base and 8g NaOH, all dissolved and volume completed to 700ml by deionized water.About 110ml was added of 1% tritonX and 55ml of 10% dimethyl Sulphoxide (DMSO), after that, the volume competed to 100ml by deionized water and stored at 4ºC or on ice for at least 20min before use.About 7.5µl of the solution was combined with 75µl of low melting agarose and immediately the mix was spread on the clear part of a comet slide, then warmed on a heating plate at 42-50ºC before application.Slides were stored in lysis solution at 4ºC for 60 minutes, then the lysis solution was replace by alkaline solution containing 6g NaOH and 500µl of 0.5% Na_2EDTA for 60minutes at room temperature in dark. The slidesremoved from alkaline solution and washed by immersing in 1X TBE buffer for 5minutes. They were transferredto horizontal electrophoresis apparatus and placed on the gel tray and 1X TBE buffer was poured to cover the slides. The apparatus was run for 60 min. at 70V, then gently tappedto get excess TBE off and some drops of 70% ethanol were added on slides to remove the water. Sildes were stained by ethidium bromide and left for 24hour before checking by fluorescence microscope [15].

Antioxidants Measurements: SOD activity was determined by autoxidation of Pyrogallol according to [16]. While CATactivity was measured according to procedure of [17,18]. GSH activity was measured according to[19], the acid soluble sulfhydryl groups form a yellow colored complex with dithionitrobenzene (DTNB). The activity of GPx was investigated according to procedure of [20].

Lipid Peroxidation: Lipid peroxidation estimated using Thiobarbituric acid assay for Malondialdehyde (MDA) concentration according to[21,22].

Statistical Analysis: Data of present study was analyzed using SPSS(V.20) to find means, standard deviation and least significant differences by ANOVA. Values where $p<0.05$ is represented significant.

Results

DNA damage Markers: According to figure (1), the DNA damage markers were showed significant differences in control and patient according to statistical analysis at ($p<0.05$). The Comet length record highest Mean±SD in patients was reached to(107.6±5.6) µm as compared with control (22±2.1µm) figure (2). The tail length was recordedin patients (6.64±1.9) µm While in control (1.88±0.23µm) figure (3). While the DNA% in tail in control of serum was (0.77±0.02%), while in diabetic patients reached to (3.27±0.54%) figure (4). Whereas thetail moments in patients (1.38±0.34µm)and (0.55±0.02µm) in controlfigure (5).

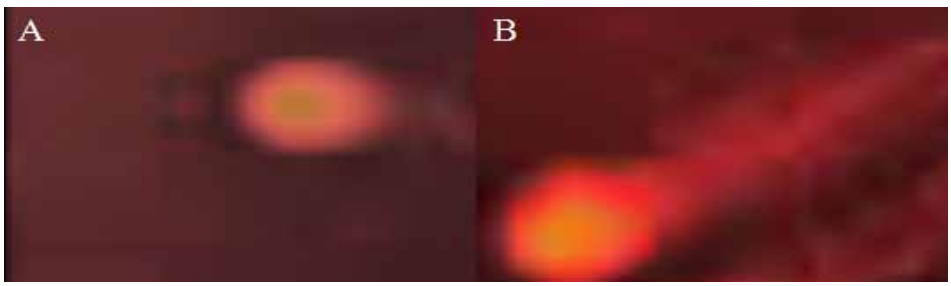

Figure 1: DNA damage makers in diabetic mellitus patient and healthy control A: Healthy control, B: diabetic mellitus patients

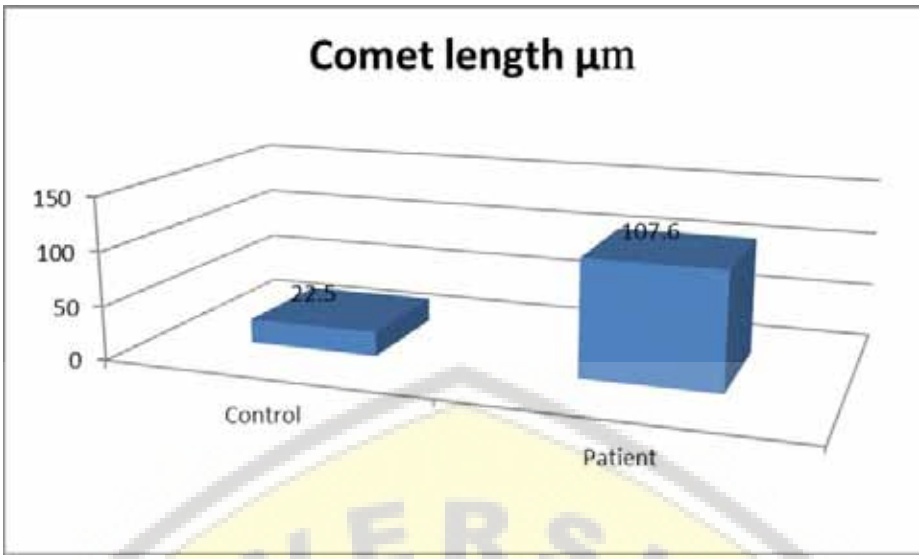

Figure 2: Comet length in control and diabetic patients

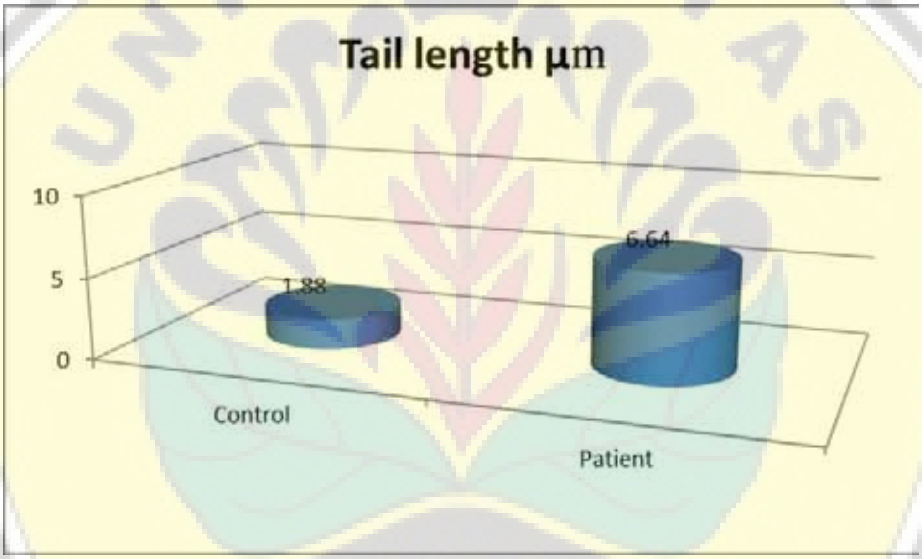

Figure 3: Tail length in control and diabetic patients

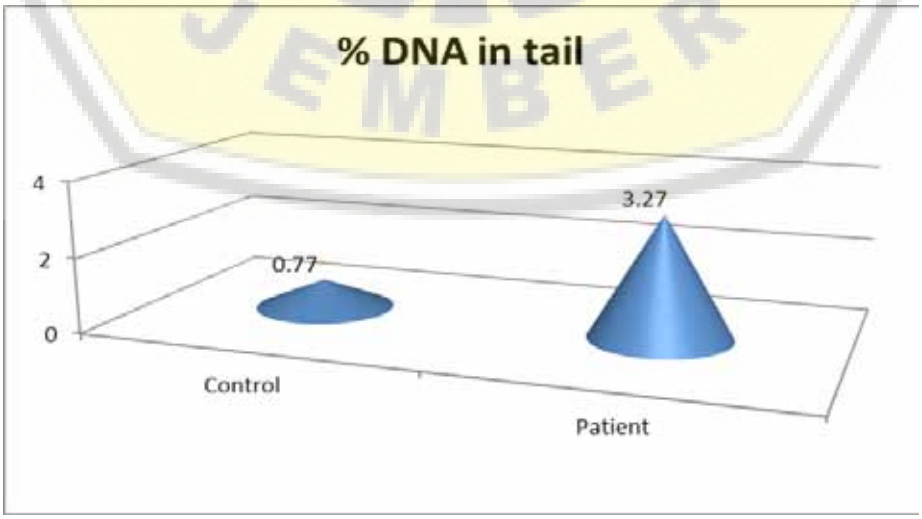

Figure 4: DNA % in tail in control and diabetic patients

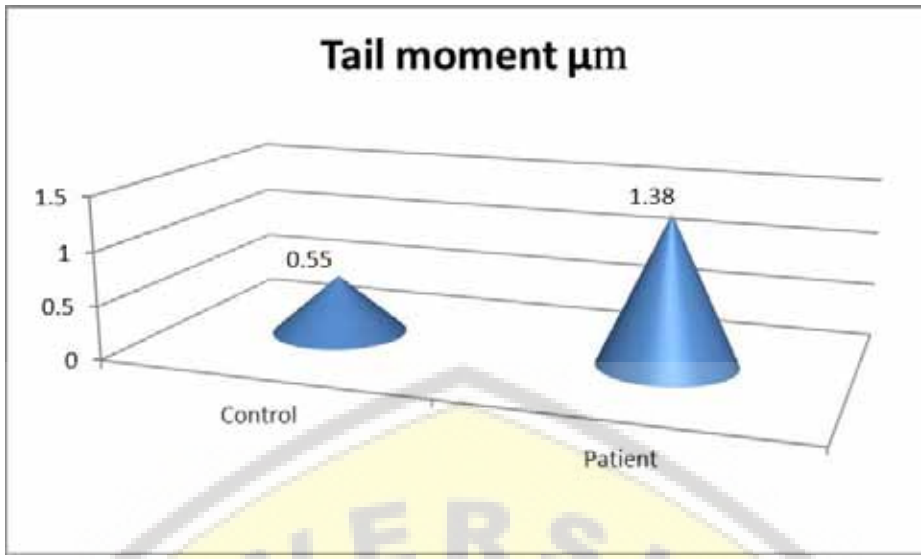

Figure 5: Tail moment in control and diabetic patients

Biochemical Markers: All biochemical markers was showed significant differences between control and diabetic patients, the SOD activity in serum of control were (22±2.4U/mg), in patient was reached to (201±21.9U/mg) while the activity of CAT in control of serum was (15±2.8U/mg) and in diabetic mellitus patients which elevated to reach (180±22.4U/mg).

The GSH activity was showed significantly differences between control and diabetic patient, it's activity in control of serum was (45±3.5µmol/ml), while activity in the patientsrise to (280±34.5µmol/ml).

Significant differences between control and patients in GPx activity, it's activity in serum control was (33±3.5µmol/ml) and the activity were elevated to (177±34.5µmol/ml) in diabetic patients. The concentration of MDA was significantly difference between control and patients in serum, it's activity in control of serum was recorded (15±1.07µmol/ml), its activity was increased in diabetic patients to reach (190±6.7µmol/ml)(figure 6).

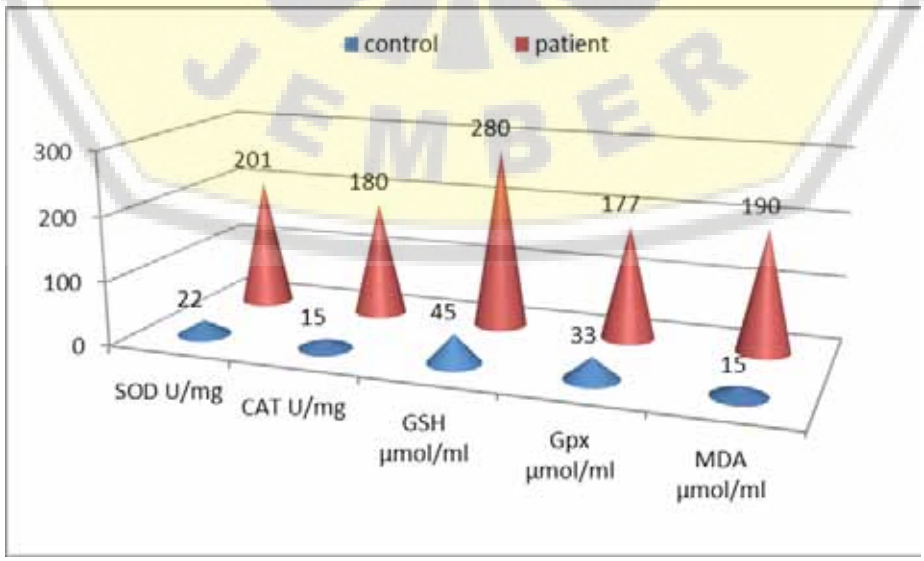

Figure 6: The biochemical markers in control and patients of diabetic mellitus type 2

Discussion

The association of diabetes mellitus with oxidative stress, leading to oxidation of protein, lipid peroxidation. Also effects on antioxidants status in initial effects of most toxic molecule that inter the body of human and organism can cause increasing the activities of all antioxidants defense, While in the final stage of its effects, the antioxidants activities will be decreasing due to oxidative stress that occur by free radicals and DNA damage [23]. The oxidized base 8-OHdG in blood or urine, can also be used as a DNA damage marker [24].

Comet assay used for measuring of DNA damage, as less susceptible method to artifacts than measuring 8-OHdG,more sensitive that detect very low levels of DNA damage [25].

High level of ROS in diabetes cause DNA strand breaks and base modifications (oxidation of guanine to 8-OHdG)[26,27]. Other studies reported that there is no relation between diabetes and increased levels of DNA damage [28]. This is possibly due to the difference in glycemic control, diabetes duration or the cell type used in the assay [27].

The SOD and CAT were increased significantly in diabetic mellitus patients' serum due to oxidative stress was generated by free radicals that cause induction lipid peroxidation, imbalances in antioxidants defense and increased ROS formation [29].

GSH regulates the intracellular redox status and cofactor in many metabolic reactions [30]. A significant elevation observed of GSH in serum of diabetic mellitus patients as compared with control may be due to animbalance in the redox state that induce compensatory response because of excessive H_2O_2 production, oras a result of overproduction for cell protection against oxidative stress [31] and increased demands on GSH utilization [32].

The GPx is catalyzing the reduction of H_2O_2 to oxygen and water by using GSH as a substrate. The result of present study pointed the GPx activity also significantly increased in the serum of diabetic mellitus patients as compared with control due to the response of antioxidants systems and to reflect the adaptation to oxidative condition [33].

Lipid peroxidation play key role in generation of pathogenesis disease that occur by oxidative stress through imbalance in low production of antioxidant defense and high production of ROS that lead to increase in lipid peroxide level [34].

The results of present study showed that the concentration of MDA was significantly increased in serum of diabetic mellitus patients as compared with control because the oxidative stress that occur by free radicals that cause increase inlipid peroxidation [34].

Conclusion

The present study showed increased DNA damage through elevation in markers of DNA such as comet length, tail length, DNA% in tail and tail moments the leukocytes of diabetic patients. In addition, to significant increase in SOD, CAT, GSH, MDA and GPx activity

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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The Relationship of Some Elements of Physical Fitness in Women Aged (35-45) Years on the Fat Component and Some Body Measurements

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Abstract

The scientific progress is one of the main reasons that helped the development of human life, and this progress covered all areas of life, including the health of society through investigating the physical and functional variables that can affect an individual's daily life. From a scientific point of view, fitness contributes to the development of the individual through its direct impact on functional organs. The study aims to identify some elements of physical fitness in women and their relationship to the fatty component and some physical measurements to understand the positive and negative effects of this relationship in order to develop and improve the health aspect of the individual.

The problem of study is the increasing of weight and fat in the body which has negative effects on the general fitness in women and their feeling of poor health. The sample of the study includes women who are participating in some fitness centers in the province of Basra. They are (37) women and the ages (35 - 45) years. They are the sample that researchers focus on for the sake of their work. In order to achieve the aims of the study subject, the researchers have presented the results and analyzed them according to the set aims, they found that there was a statistically significant relationship between some elements of physical fitness and fat component on the one hand and physical measurements on the other hand in the sample of the study.

Keywords: *Community health, physical variables, fitness, fat component.*

Introduction

The scientific progress of the world is one of the main reasons for the development of human life through the scientific and programmed planning that contributes to the achievement of human goals. This progress has covered all fields of life including community health, by knowing the physical and functional variables that can effect an individual's daily life. The fitness contributes to the development of the individual from a scientific point of view through its direct impact on the functional organs. Different studies and researches have shown that there is a close relation between physical fitness and the general health of the individual.(1)

The significant of the study: The importance of the research is to identify some elements of physical fitness in women and their relationship to the fatty component and some physical measurements, to understand the positive and negative effects of this relationship in order to develop and improve the health aspect of the individual.

The aims of the study: The study aims to know the relationship between some elements of fitness and both the fat component and body measurements.

The procedure of study: The different curriculums which are used in the implementation of scientific research and procedures come according to the type of

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study. That is the curriculum means following logical steps in dealing with problems, phenomena and resolving the scientific issues to reach the discovery of truth .[2]

The researchers have used the descriptive method, which studies the phenomenon as it exists in reality and cares as an accurate. So, it is appropriate for the problem of study. One of the things that should be considered in the field of study is the selection of the sample that represents the real representation of the study community to achieve the aims of study. The researchers determined the sample intentionally, a sample of women participating in fitness centers in the province of Basra (37) women. They are the sample that researchers have to focus on for the sake of their study in which they want to generalize the results of their study. To solve their problem, researchers must provide the means, tools and devices for their study, appropriately to ensure the success of their study, because "The tools study are the means by which the researcher can solve his problem whatever those tools data, samples, devices"[3]

The researchers are used Arabic and foreign sources, two Japanese electronic clocks, an Italian-made medical scale, caliper to measure the thickness of skin folds (grease), measuring tape for measuring length, distances and a small wooden box mounted on one side of a ruler with a length of (30) cm used to measure the flexibility of the spine, the back muscles of the thighs and the Grib Dynamometer to measure the strength of the first muscles. One of the physical measurements that researchers measured was measuring the weight of all the individuals of the sample by using a precision balance designed for this purpose as well as measuring the length of the body which is measured to the nearest cm by using the measurement of height. From the previous two measurements, the researchers extracted BMI: It is extracted by dividing the weight (kg) by the square length (meters).

BMI = Weight (kg)/Length (m) * length (m)

One of the measurements made by the researchers was the measurement of the fatty component. The test operator holds the meter with his right hand and holds with his left hand the fold of skin from the area indicated for it. Then, he takes the measurement and record the score in the registration form. Thus, he takes the measurement of the rest of the skin areas specified for measurement taking into account that one side of the body which is measured as well as measuring one area three times and taking the average readings. The four position equation was used (arm, abdomen, thigh, and iliac bone)for (Jackson and Pollock) in calculating the percentage of fats:[4]

Fat percentage = 0,29288 (the total of the four areas)-0,0005 (the total of the four areas)2 + 0,15845 (age) - 5,76377: As for the physical test that researchers conducted, it is the wide jump test of stability. The aim of this test is to measure the explosive strength of the muscles of the legs. The tester stands on the front edge, bounces and feet parallel to the breadth of the pelvis from the position of the bend of the mid knees and the measurement that is made to the nearest centimeter (cm) left by the tester at the distance near the beginning of the measurement, each tester is given three attempts to record the best.[5] The second test is the sitting from lying in 20 seconds [6]. The aim of the test is to measure the strength marked by the speed of the abdominal muscles. The laboratory lies on the back of the mattress with its feet open by (30) centimeters. A female colleague installs the two legs once hearing the starting signal from the referee. The third test is the grip strength test. The goal of the test is to measure the strength of the first muscles (the flexor muscles of the fingers). The laboratory holds the dynamometer in its right hand and the arm is stretched without any bending in the elbow joint. Then, she is slightly away from the body. The first presses the dynamometer to try to bring out the maximum force possible and give each lab two attempts to score the best try. The front-resting test - bending the arms and extending them to 15th was applied to the research sample as well. The aim of the test is to measure the force marked by the speed of the two arms. The sample woman takes the front rest position on the ground so that the body is elongated in an upright position. At the signal, she begins by bending the arms and extending them upward for a full period and continues for 15 seconds for one try [7]. For the latter test, it is a test (flexibility) bending the trunk down from the standing position. The goal of the test is to measure the flexibility of the spine and posterior muscles. The material for the thighs . The sample woman stands on a small wooden box fixed on one of its sides with a ruler with a length of (30) cm divided by (15) cm from the surface of the box to the top and (15) cm from the surface of the box to the bottom. Then the laboratory begins by bending the trunk down with the arms extended downward, noting that the knees are not bent and steadfast in the last extent to which the laboratory reaches. The number that touches the fingers

of the hands is recorded so that from the surface of the box to the top the measurement is negative, and from the surface of the box to the bottom according to. The statistical program (spss) version 22 was used to process the results statistically.

Correlation coefficient values between the measurements of physical and physical search variables and between the physical measurements and the lipid component.

The correlation coefficient values between the physical measurements and the lipid component.

Table (1) Shows the correlation coefficient values between somatic measurements and the lipid component

The Difference	Calculated T	Correlation coefficient	Tests
Moral	8.93	0.386	Weight and lipid component
Random	1.98	0.071	Length and lipid component
Moral	7.78	0.265	BMI and lipid component

The results of Table (1) shows the emergence of a significant value between the weight and the fatty component, while the body mass index is also significantly correlated with the fatty component as this correlation is evidence of a direct relationship between these variables. This is consistent with what Osama asserted [8], "The very high and high fat levels are directly related to the increase in body weight." Further, what called for using the BMI as a measure to estimate obesity in individuals is that there is an acceptable correlation between the body mass index and measures of body fat percentage. [9] This is what is observed that any increase in weight or body mass index is accompanied by an increase in the percentage of fats, except for the increase in the muscle mass in the body that comes as a result of exercising physical activity on a continuous basis that "the process of losing or increasing weight due to those ideal weights found in the tables of weight and height may It is due to an increase in muscle mass and a decrease in the amount of fat from the required level. [10]

Correlation coefficient values between physical and physical measurements

Table (2) shows the correlation coefficient values between the parameters of physical measurements and physical characteristics

Tests	Correlation Coefficient	Calculated T	The Difference
Weight and bounce from stable	0.032	0.77	Random
Weight and the strength of the right hand grip	0.201	6.87	Moral
Weight and the strength of the left hand grip	0.187	5.23	Moral
Weight and forward leaning	0.027	0.69	Random
Weight and sitting lying down	0.021	0.59	Random
Weight and bend the body down	0.027	0.77	Random
Height and jump from stable	0.016	0.55	Random
Length and the strength of the right hand grip	0.015	0.40	Random
Length and the strength of the left hand grip	0.080	0.18	Random
Length and forward leaning	0.019	0.48	Random
Length and sitting lying down	0.030	0.69	Random

Tests	Correlation Coefficient	Calculated T	The Difference
Length and bend the body down	0.035	0.89	Random
BMI and jump from stable	0.011	0.28	Random
BMI and the strength of the right hand grip	0.185	4.75	Random
BMI and the strength of the left hand grip	0.158	3.88	Moral
BMI and leaning forward	0.017	0.31	Random
BMI and sitting from lying	0.008	0.13	Random
BMI and bending the body down	0.025	0.59	Random

Through Table (2), we notice the emergence of a significant value between weight and grip strength of the right hand, as well as between weight and the strength of the left hand grip. Further, a significant correlation appeared between the body mass index and the strength of the right hand grip and the strength of the left hand grip. [11] This moral correlation is evidence of a direct correlation between these variables. This corresponds to (Wind and Henry) study on a group of University of Michigan students with the aim of finding the relationship between the grip strength and both weight, height and age. The study has shown that there are correlations between the grip strength and weight. While it was noted that the relationship between the strength of the fist, height, and age was not distinctive and this was proven by (Verell & Sillse) that the strength of the first was affected by weight, size and size of the hand, height, and muscle pattern. [12]As for the emergence of the random value among the remaining variables, the researchers attribute the reason for this to the high weights that characterized the research sample due to the lack of physical activities necessary for the health of the body and give the necessary flexibility for ease of movement, and this confirms (Hazza) that the changes in the lifestyle of the society led to a decrease Average daily physical activity per person. " [13]

The importance of exercising and physical activity lies at a moderate intensity to increase the circulating hormone (Circulating Catechol amines) which have an effect on the movement of fats in adipose tissues that explain the fat loss that usually occurs through continuous training.[14]

Values of the correlation coefficient between the physical characteristics and the lipid component.

Table (3) Shows the correlation coefficient values between the physical characteristics and the fatty component

Tests	T calculated	Correlation Coefficient	The Difference
Jumping from stability and lipid component	0.043	0.94	Random
Right hand grip strength and lipid component	0.132	4.43	Moral
Left hand grip strength and lipid component	0.129	3.28	Moral
Leaning forward and lipid component	0.033	0.76	Random
Sitting from lying and lipid component	0.024	0.53	Random
Bending the body down and lipid component	0.044	0.86	Random

Through Table (3), we note the emergence of a significant value between the strength of the right hand grip and the fatty component, as well as between the power of the left hand grip and the lipid component. As for the relationship of the rest of the variables mentioned in the table, they are random with the variable of the lipid component, and the researchers attribute the reason for this to the increase in the percentage of the lipid

component in The body affects inversely with physical fitness. [15]The percentage of fat and muscle tissue has a close relationship with all other components of physical fitness. Each affects and is affected by the other." [16] Studies indicate that "the process of losing or increasing weight due to those ideal weights found in the tables of weight and height may be due to an increase in muscle mass and a decrease in the amount of fat from the required limit." [17] The studies also indicated that muscle strength develops with resistance training and is affected by the amount of non-lipid mass (Lean Body Mass) is positive and with increased lipid negatively. [18]

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Anatomical Factors Affecting DXA Scan Measurement of Bone Mineral Density in Lumber Spine

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Abstract

Background: Dual-energy X-ray absorptiometry scan is used to measure bone mineral density. Correct measurements greatly depend on accurate selection of targeted anatomical areas of bone. Various anatomical factors including anatomical knowledge can be a potential source of error; they can falsely increase or decrease measured bone mineral density. Technician ability to recognize these factors is critical for accurate scan analysis. The aim of study was to demonstrate the prevalence of different anatomical factors affecting Dual-energy X-ray absorptiometry scan results and to analyze how they affect final clinical decision.

Method: Using systematic random selection, Dual-energy X-ray absorptiometry records of lumbar spine for 50 patients were divided into two categories;the first was normal and affected by anatomical factor. The second category was divided into five groups (A1 – A5) containing a spectrum of anatomical factors that may influence bone mineral density measurements. Reports analyzed using measurements of bone mineral density, T/Z-scores from WHO based OPC. A1 and A4 were not analyzed further. A2, A3, and A5 reports were recalculated using anatomical landmarks.

Results: Data from current study showed that anatomical factors affecting bone mineral density were prevalent (72%). A1 included 14 cases (28%), A2 included 8 cases (16%), A3 included 8 cases (16%), A4 and A5 included 3 cases (6%) for each. Group A2 showed a significant increase in bone mineral density. T/Z-scores (mean±SD) after reselection of ROI, were 0.44±0.19. OPC changed in three cases from A2, 3, and 5 when T/Z-score was border-line.

Conclusion: Optimal DXA reports require well-trained technicians and expert clinicians who can recognize diverse anatomical factors influencing results. Effects of AF can be reduced by initiating or improving training programs of involved persons. Further studies are recommended to explore the extent to which each group of anatomical factors affects T/Z-scores.

Keywords: *DXA, anatomical factors, osteoporosis classification, bone mineral density.*

Introduction

Dual energy X-ray absorptiometry (DXA) is a standard tool in clinical assessment of osteoporosis. It can be used for diagnosis of, follow-up patients at risk of, and monitoring treatment response in patients with, osteoporosis[1]. It can measure fracture risk with high accuracy[2]. DXA scan is considered the first choice in clinical practice for its accuracy, efficiency, noninvasivenessand low radiation[3].

DXA scan measures the mineral content of bone (BMC). This value is converted into bone mineral density (BMD) by dividing BMC by surface area of measured bone[2].

World health organization (WHO) classified osteoporosis according to BMD results as follows:

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Normal with BMD > (1 SD) below young adult mean, Osteopenia with BMD between (1 - 2.5 SD) below young adult mean and Osteoporosis with BMD ≤ (2.5 SD) below young adult mean[4]. These results are reported by DXA scan as T-score (equals to measured BMD – mean BMD in healthy young adults/SD of young population) and Z-score (equals to measured BMD–mean BMD in age-matched adults/SD of age-matched population). This WHO based osteoporosis classification (OPC) is used by most clinicians[5].

DXA machines can measure BMD in lumbar spine, hip and other regions. The usual AP view DXA scan of lumbar spine uses mean T-score of L1-L4 vertebrae to assess osteoporosis. Auto-analysis software of DXA machine selects region of interest (ROI) of lumbar spine which is the surface area of individual lumber vertebra from L1-4 with marking lines passing along intervertebral spaces. Manual adjustments of marking lines is often needed using local anatomical landmarks[6]. It measures BMC of individual vertebra, then BMD and T/Z-score of that vertebra is measured and mean is calculated[7]. In clinical practice, abnormal vertebrae can be excluded and two vertebrae are acceptably used to assess osteoporosis[1].

Factors affecting anatomy of spine can be a potential source of errors when measuring BMD. These factors includeincorrect positioning,anatomical variations,artifacts andabnormal progression of BMD from L1 to L4[1]. Another potential source of error is incorrect selection of ROI by DXA auto-analysis software which can contribute for up to 64.2% of inadequate reports unless technicians use anatomical knowledge to reselect ROI[6]. Incorrect positioning that leads to rotation of spine can decrease measured BMD by increasing surface area of vertebra[8]. Anatomical variations in spinal segmentation are common and can cause the device to mislabel vertebrae leading to erroneous report. Absent twelfth rib can lead to T12 being mislabeled as L1 with subsequent decrease in BMD. In addition, L2 is mislabeled as L1 in case of presence of L1 rib leading to an increase in measured BMD[9]. Artifacts on or even lateral to lumbar vertebra in AP-view (e.g:surgical clips)[10], osteophytes, fracture and/or end plate sclerosis[11], can significantly increase BMD value. There is progressive increase in BMD from L1 to L4, sudden changes from one to next vertebra can be due to vertebral fracture, or artifacts, in such cases mean BMD of L1-4 can show higher results[1].

This study wasaimed to investigatethe prevalence of anatomical factors affecting DXA scan results in local community, their effects on DXA reportand thereby on clinical decision.

Materials and Method

This study was retrospective analytical study that measured for BMD saved in DMS Stratos system located in outpatient-clinic in Hilla City Center, Iraq.

Records of 50 patients underwent assessment for lumbar spine BMD were selected from device database using systematic random selection for patients who visited the clinic from 1st, January 2016 to 30th, April 2016. Data collection considered T-score except for men below 50 years and premenopausal women whereZ-score was considered. Patients classified using WHO-based OPC into normal (T/Z-score above -1), osteopenic (T/Z-score between -1 and -2.5), and osteoporotic (T/Z-score below -2.5).

Cases were divided into two categories, those with no AF affecting their results (N), and those with scan errors caused by AF (A). The last category subdivided into five groups (A1-5). A1 included cases of incorrect positioning where DXA image showed bent or rotated spine and when parts of L1, L4 or pelvic brim are excluded from the field with inability to correctly identify vertebrae. A2 included cases in which ROI shifts up from usual L1-4 to T12-L3. A3 included images with incorrect boundary of ROI were marking lines crossed over bones rather than intervertebral spaces in addition to images in which ROI included artifacts lateral to vertebra. A4 included images with artifacts located on vertebra. A5 included images showing abnormal progression of BMD from L1-L4 not included in other categories.

Original measurements were reviewed such as mean BMD, T/Z-scores of L1-L4 were recorded. Stored images were classified into different groups of AF. For A2 & A3 reports, ROI was manually reselected using anatomical landmarks and new BMD, T/Z-scores were calculated. For A5, mean BMD, T/Z-scores were recalculated after excluding abnormal vertebra. No further analysis of group A1 and A4 was done. OPC compared with original results in group A2, A3 and A5.

Statistical Analysis: Prevalence of each group was calculated. Using paired *t*-test, we compared mean BMD and T/Z-score for groups (A2 and A3) before and after correction, and mean BMD, T/Z-score for group

(A5) before and after exclusion of abnormal vertebra. Sigmaplot for windows 12 was used to infer statistical data.

Results

Evaluation of reports revealed that 14 cases (28%) had no factors affecting measurements. However, 36 cases (72%) were affected by various types of AF (Table1). The distribution of AF according to designed groups was as follows: A1, incorrect positioning in form of bending, rotation or exclusion of part of T12 vertebra, included 14 cases (28%; Figure 1), A2 ROI shift-up to T12-L3 in 8 cases (16%) either because of software error (6 cases; 14%) or absent rib on T12 vertebra (2 cases; 4%) (Figure 2), A3 incorrect boundary of ROI markers (8 cases; 16%) of which two cases (4%) included artifacts lateral to vertebral bodies (Figure 3), A4 artifacts anterior to vertebral bodies and A5 abnormal progression of BMD values of L1-4 vertebra were seen in 3 cases (6%) for each (Table2).

Table 1: Distribution of DXA scans cases

Category	N*	A**	Total
Number	14	36	50
Percentage	28	72	100

*: Cases with no scan errors and no AF affecting measurements. **: Cases with scan errors resulting from AF.

Table 2: Prevalence of anatomical factors affecting DXA report

Group of AF	A1	A2	A3	A4	A5	Total
Number	14	8	8	3	3	36
Percentage	28	16	16	6	6	100

For A2, manual shift-down of ROI to usual L1-4 significantly increased BMD and T/Z-scores for all cases. Mean difference of T/Z-scores was 0.44±0.19 SD.OPC changed from osteoporotic to osteopenic range in two (4%) cases (Table 3).

Table 3: A2 factors before and after reselection of vertebra

Case No.	Factor involved	BMD values		T/Z scores	
		Before	After	Before	After
1	Shift-up	0.704	0.76▲	-3.1	-2.7▲
2	Shift-up	0.807	0.851▲	-2.3	-1.9▲
3	Shift-up	0.78	0.875▲	-2.5	-1.7▲*
4	absent rib	0.573	0.622▲	-4.2	-3.8▲
5	Shift-up	0.974	1.04▲	-0.9	-0.3▲
6	absent rib	0.6	0.627▲	-4	-3.8▲
7	Shift-up	0.804	0.843▲	-2.5	-2.2▲*
8	Shift-up	0.877	0.921▲	-1.7	-1.3▲

▲Valueincreased. * OPC changed.

For A3, replacing marking lines on intervertebral spaces or excluding artifacts didn`t significantly change BMD or T/Z-scores. OPC changed in one case from normal to osteopenic range (Table 4).

Table 4: A3 factors before and after reselection of ROI

Case No.	Factor Involved	BMD Values		T/Z Scores	
		Before	After	Before	After
1.	Nonmetallic artifact	0.901	0.902▲	-1.5	-1.5
2.	Bone spike	0.879	0.885▲	-1.9	-1.8▲
3.	Incorrect boundary	0.858	0.862▲	-2	-2
4.	Incorrect boundary	0.864	0.87▲	-2	-2
5.	Incorrect boundary	0.909	0.898▼	-1.4	-1.5▼
6.	Incorrect boundary	0.963	0.96▼	-0.9	-1▼*
7.	Bone spike	0.748	0.727▼	-2.7	-2.9▼
8.	Incorrect boundary	0.988	0.983▼	-0.8	-0.8

▲: Valueincreased. ▼: Valuedecreased. *: OPC changed.

For A5, exclusion of abnormal vertebra didn't significantly change BMD or T/Z-score. Osteoporosis classification did not change in all cases (Table5).

Table 5: A5 factors before and after exclusion of abnormal vertebra

Case No.	Vertebra involved	BMD values		T/Z scores	
		Before	After	Before	After
1.	L4	0.92	0.94▲	-1.30	-1.20▲
2.	L4	0.80	0.81▲	-2.30	-2.13▲
3.	L1	0.73	0.71▼	-2.90	-3.20▼

▲: Valueincreased. ▼: Valuedecreased.

OPC of 50 cases revealed that 6 (12%) had normal range T/Z-scores, 21 (42%) are osteopenic, and 23 (46%) are osteoporotic. Out of 19 cases from A2, A3, & A5 which were corrected, OPC changed in 3 (15%) cases. Two cases (10%) of A2 changed from osteoporotic to osteopenic and one case (5%) of A3 changed from normal to osteopenic. All three cases had border-line T/Z-scores

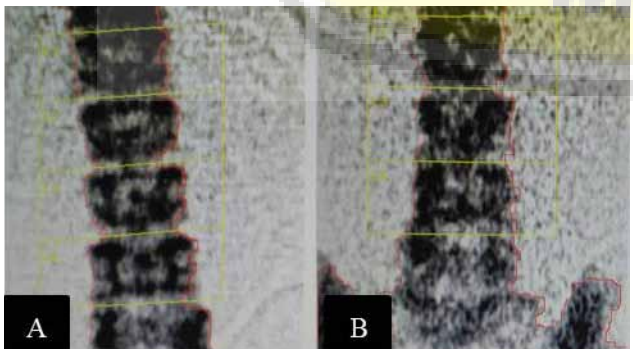

Figure 1: A1 factors showing bending (A) and incomplete L1 (B)

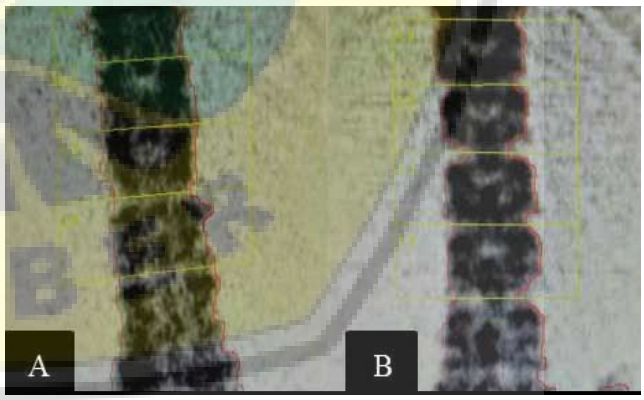

Figure 2: A2 factors showing shift up of markings (A) and absent rib on T12 (B)

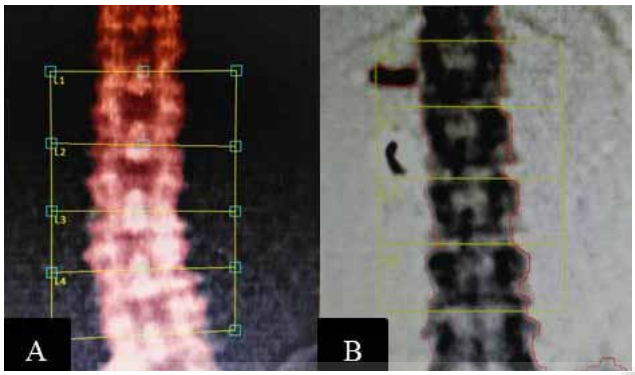

Figure 3: A3 factors showing incorrect boundaries (A) and lateral artifacts (B).

Discussion

Analysis of DXA reports of 50 cases showed high prevalence (72%) of AF affecting results. This may be due to small sample size. A larger study may provide lower results. Using auto-analysis of DXA machine without manual correction can result in more than 64% of inadequate reports. Health institutions should aim at highest level of accuracy in clinical diagnosis of osteoporosis through optimizing training programs of technicians.

A1 factors were most frequent AF encountered (14 cases; 28%). Most of cases were caused by bending or rotation of spine. Some researchers suggested that such reports should be considered invalid as straight position cannot be obtained[1]. Others recommend the use of scoliosis software to allow placement of non-rectangular ROI markers for more accurate definition of vertebra[12]. Vertebral rotation can falsely decrease BMD by 20%[8]. Clinicians should consider this fact when reading DXA reports with spinal rotation. Fewer cases are caused by absence of part of L1 as a result of bad positioning of patient. Technician should repeat DXA scan of this sub-type in order to optimize results. Researchers require that positioning should be checked by technologist before patient leaves the testing room and should also be double checked by clinicians interpreting the test[7].

A2 factors included 8 cases (16%) in which T12 was mislabeled as L1 vertebra. In two (4%) cases, the 12th rib was bilaterally absent which is the usual cause of such error[1]. Prevalence of bilateral absence of 12th rib ranges from 3.2%[13] to 6.6%[14]. In 6 (12%) cases, the 12th rib was normal. Auto-analysis software of DXA machine can cause shift-up from L1-4 to T12-L3 in 11.9% of cases[6]. Although this error is not directly related to AF, it is the anatomical knowledge of the technician that can affect the percentage of reports relying on auto-analysis only. After reselection of vertebra and subsequent correction, BMD and T/Z-scores increased in all 8 cases. L1 has higher BMD than T12[9]. Mean±SD difference in T/Z-score was 0.44±0.19 which is almost identical to a previous study[6]. This figure can be used to define border-line T/Z-scores in which OPC can change, but a larger study is required to set this value; this can help clinicians in making best clinical decisions.

A3 factors included 8 cases (16%). ROI markers crossed over vertebral bodies in five cases (10%). This percentage was lower than that from a previous study (17.9%) which relied on auto-analysis only[6]. Various artifacts were seen lateral to vertebral bodies in three cases (6%). In one of these cases there was a bone spike projecting from L1, in another case ROI included part of hip bone. Reselection of ROI in cases with incorrect boundaries decreased BMD in three cases which was expected because boundary lines dissecting vertebral bodies can increase the BMD[6], however, in our study the BMD increased in two cases this was because the boundary line dissected part of the twelfth vertebra which has lower BMD than L1[9]. All changes in BMD and T/Z-scores in all A3 cases were not significant; this can be due to that despite the surface area of an individual vertebra had changed, the total surface area did not change much.

In A4 factors, 3 cases (6%) contained image artifacts all were caused by presence of osteophytes. Cases of osteophytes overlapping with other groups were not considered. Artifacts anterior to vertebral bodies cannot be excluded from ROI. Osteophytes tend to increase BMD leading to underestimation of osteoporosis state. Metallic objects or fractured vertebra should be corrected by removing artifacts, or exclusion of vertebra from final results[1], but none was found in this study

In A5 factors, 3 cases (6%) were seen. Normally BMD increases progressively and is highest at L4[9]. This anatomical abnormality can be due to vertebral fractures, osteosclerosis, etc[1]. Plain X-rays of patients were not available, therefore; the cause was not explored. Recalculation of BMD and T/Z-score after exclusion of abnormal vertebra did not result in a significant change. Although affected vertebra should be excluded from final results[1], we suggest that in these cases exclusion of affected vertebra should only be applied if X-ray

showed evidence of anatomical defect like fractured vertebra, osteosclerosis, etc. and/or OPC is border line.

Out of 19 cases, OPC was changed in 3 (15%) cases only. Two cases from A2 changed from osteoporotic to osteopenic range. One case from A3 changed from normal to osteopenic range. In all three cases, T/Z-score was border line according to OPC. Although AF commonly affects DXA results, trying to correct these factors didn't result in significant change in final results. This agreed with a previous study[9], unless T/Z-scores are near to border line for OPC. Defining border-line T/Z-scores is of great practical importance.

Conclusions and Recommendations

AF affecting DXA reports are common; they can be a potential source of error and their effect on final results and clinical decision is much lower. Optimal DXA reports require well-trained techniciansand expert clinicians who can recognize diverse anatomical factors influencing results. Effects of AF can be reduced by initiating or improving training programs of involved persons. We recommend training operating personals on proper selection of ROI for best vertebral definition. Courses on how to accurately identify lumbar vertebra, exclude foreign bodies, properly align patient spines and mark abnormally low or high BMD are suggested.

Minor changes in reports with border-line T/Z-score may alter clinical decision and should be cautiously interpreted. Further studies exploring the extent to which each group of AF affects T/Z-scores are recommended to set a score range indicating border-line reports.

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Survey of Isospora Belli Infection in Some Different Hosts: Birds and Mammals

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Abstract

The current study aimed to revealing of isosporiasis in different species of birds and mammals which caused by *Isospora belli*, to achieve this target a 287 stool samples were collected from two groups which are : ten species belong to birds and five species belong to mammals distributed as follows: the birds included 30 samples of *passer domesticus*, 15 samples of *streptopeliadecaocto*, 25 samples of *Columba Livia*, 30 samples of *Columba domesticus*, 15 samples of *Anasplatyrhynchos*, 10 samples of *Anseranserdomesticus*, 10 samples of *Pycnonotusleucotis*, 30 samples of *Gallus gallusdomesticus*, 20 samples of *Coturnixcoturnix*, 10 samples of *Meleagrisgallopava*; the mammals included 20 samples for these species: *Canis lupus, Equusferuscaballus, Oryctolaguscuniculus*, 24 samples of *Feliscatus* and 8 samples of *Caviaporcellus.* All types of specieshave been collected from different provinces in middle of Iraq for the period from January 2017 until September 2018. The samples were kept in the refrigerator at 4°C until it tested in vitro by the preparation of the direct smear and then staining with Ziel- Neelsen stain (acid fast stain) to observe the oocysts of the parasite. DNA of positive fecal samples was extraction and amplification with 18S rRNA by using PCR technique. The results of stool test revealed that 127(44.25%) birds and mammals were infected with isosporiasisand there is no infection in fecal samples which isolated from guinea pig in this study. Also results showed a disparity in the infection rates among birds and mammals under study with a significant difference in the rates of infection between *Gallus gallusdomesticus* and *Pycnonotusleucotis* (73.3% and 10.0% respectively) at $P < 0.05$, the results of DNA electrophoresis confirmed examination results by staining with Ziel – Neelsen, the amplicons of DNA which belong to infected birds and mammals showed size at 550-630 bp. and the tested samples which belong to guinea pig didn't appear any band in agarose gel media.

Keywords: *Isospora belli, 18S rRNA, Cystoisospora belli, birds and mammals.*

Introduction

Isosporiasis is an parasitic intestinal disease that can infect many species of birds and mammals including human[1-3]. This disease caused by a parasite belong tococcidian called *Isospora belli* (recently known as *Cystoisospora belli*) which causes human coccidia disease[4] and it has a huge spread in the Mediterranean region, Africa and Latin America, also spreads in the Middle East and Far East regions and some infections had been recorded in the United States of America [5,6]. This parasite returns to the class: sporozoa, it attacks the small intestine of its hosts and its life cycle is very similar to intestinal cycle of Toxoplasma gondii. In the intestine where it is multiply within epithelial cells to formschizonts, later meroziotes invade a new epithelial cells (Asexual cycle)[7]. After a few asexual cycles, thesexual stagebegins byformation of gametocytes, when fertilization occurs the zygote formed which regrow later to immature oocysts which excreted forward out with stools, immature oocysts contain two sporocysts each one of them contain 4 sporozoites at this

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stage the oocystbecome mature and have ability to infect again when they are eaten or swallowed by a new host with food or water which containing it; when it reaches to small intestine; sporozoites release after the wall of oocyst and sporocyst are melted by host's stomach enzymes. Sporozoites invade the bowel cells and then they repeat their life cycle[8].

The immature oocysts which excreted with faeces have ability to stay infectivity until hard environmental conditions like high temperatures or severe light sun, it can maintain its ability to infect for several months and this parasite doesn't need the intermediate host to complete its life cycle, but the transition from infected host to another through contaminated water and food.[9,10]

Humans infection is usually occurring in people that suffering from HIV/AIDS, in particular HIV immunodeficiency syndrome [11], where the first infection was recorded in 1915 [7,9]. Symptoms are characterized by acute fatty blood-free diarrhea, abdominal pains with nausea and anorexia and symptoms may persist for weeks and this may cause lack absorption in epithelial layer of intestine, which results a decrease in total weight in general.[12]

Diarrhea is more severe in the case of children, infants and HIV patients [13]. One of the pathological changes occurring in the bowel wall are: dwarfism of villi, hyperplasia and swelling of intestinal grooves with large numbers of inflammatory cells, especially eosinophil, as well as plasma and lymphatic cells in submucous layer of the intestine [12].

Several studies have been done about isosporiasis, which including different hosts domestic and/or wild birds and mammals, from these studies: the study (14) in which they isolated this parasite from wild and pet bird feces and (15) were found isosporiasis infection in a bee-eating bird, in Australia *I. belli* was isolated from many species belonging to the family passerine form[3,16] and some study isolated this parasite from mammals like (1) they were found infection in tiger, the study (17) record 20.78% in stray dogs and 10.41% in stray cats. The incidence of this parasite is consider a zoonatic disease with HIV infected patients which recorded at 94.7% in Thailand [6,18] and recorded at 16.9% in Sao Paulo[19].

Because of the importance of this parasite at health aspects to humans and its domesticated animals and the fact that infected birds and mammals is an important source of continuous infection and spread it to many other hosts through contaminate of water and soil by oocyst, so this study aimed to detection extent of infection in different species of birds and mammals and determine the relationship between infection rate and the change of study's months.

Materials and Method

Collection of Samples: Atotal of 287stool samples were collected from different provinces in middle of Iraq which belong to different species (10 species belong to birds and 5 species belong to mammals) distributed as follows: the birds included 30 samples of passer domesticus, 15 samples of streptopeliadecaocto, 25 samples of Columba Livia, 30 samples of Columba domesticus, 15 samples of Anasplatyrhynchos, 10 samples of Anseranserdomesticus, 10 samples of Pycnonotusleucotis, 30 samples of Gallus gallusdomesticus, 20 samples of Coturnixcoturnix, 10 samples of Meleagrisgallopava; the mammals included 20 samples for these species: Canis lupus, Equusferuscaballus, Oryctolaguscuniculus, 24 samples of Feliscatusand 8 samples of Caviaporcellus. All fecal samples were placed in clean test tubes with the sample numbering, date of the collect was recorded and then it stored in the refrigerator at 4°C after added normal saline until examination.

Examination of stool by using acid fast stain: All stool samples were prepared for microscopic examination, firstly purification by filtering through four layers of medical gauze and put the filtrated stool in a clean test tubes, then it put in centrifuge (2500 rpm) for 10 minutes, finally stool samples were make a smear for staining according to [20]. The positive stool samples which contain oocysts of Isospora belli were stored at -20ºC in freezer to used it for DNA extraction.

Extraction and Amplification of DNA: Positive stool samples were processed to extraction of DNA according to [21] by using 18S rRNA gene with forward primer (5'-CCAGCAGCCGCGGTAATTCC-3') and reverse primer (5'-CGAGCCCCTAACTTTCGTTC-3'), after DNA amplification by PCR, the products were put on agarose gel to prepare for electrophoresis and then DNA products are photographed.

Statistical Analysis: The data were analyzed statistically by using chi square at level of significance of $P \leq 0.05$ with SPSS program.

Results and Discussion

The results of current study showed that birds and mammals under study were infected with *Isospora belli*, 127 specimens was positive from 287 specimens through used acid fast stain technique, with a total percentage 44.25%. The results revealed a significant difference between the highest and lowest infection percentage which were 73.3% followed by 66.7% and 10.0% in *G. gallusdomesticus*, *Anasplatyrhynchos* and *P. leucotis* respectively at p≤ 0.05; while the results showed no infection in guinea pig *C. porcellus*.

With regard to molecular diagnosis of *I. belli* by using PCR technique, when DNA was amplified with 18S rRNA gene, the electrophoresis of amplicons showed band size at 550-630bp for all fecal samples of infected birds under study which were a positive samples with Ziel-Neelsen staining (fig.1), also the amplicons of DNA which belong to infected mammals appeared similar with the bands which isolated from infected birds while there is no bands after electrophoresis for the samples which isolated from guinea pig.(fig. 2).

Fig. 1: Analyzed amplicons of Isospora belli by electrophoresis which isolated from birds, M = Marker 1000bp, the specimens from 1 to 10 represent species of infected birds in the same order of birds that appears in Table (1).

Fig. 2: Analyzed amplicons of Isospora belli by electrophoresis which isolated from mammals, M = Marker 1000bp, the specimens from 1 to 5 represent fecal samples isolated from guinea pig, and the specimens from 6 to 9 represent infected mammals in the same order of mammals that appears in Table (1).

Table 1: the infection percentage with I. belli in birds and mammals under study

Groups of Hosts	Species of Hosts	No. of Examined Samples	No. of Infection	Percentage of Infection (%)
Species of birds	Passer domesticus	30	16	53.3
	Streptopeliadecaocta	15	5	33.3
	Columba livia	25	10	40.0
	Columba domesticus	30	15	50.0
	Anasplatyrhynchos	15	10	66.7
	Anseranserdomesticus	10	4	40.0
	Pycnonotusleucotis	10	1	10.0
	Gallasgallusdomesticus	30	22	73.3
	Coturnixcoturnix	20	8	40.0
	Meleagrisgallopavo	10	6	60.0
Species of mammals	Feliscatus	24	14	58.3
	Canisupus	20	6	30.0
	Equusferuscaballus	20	5	25.0
	Oryctolaguscuniculus	20	5	25.0
	Caviaporcellus	8	0	-
Total No.		287	127	44.25

The results in table (1) indicate to infection with *I. belli* in many species of birds and mammals under study and the outcome of current study is consistent with several studies that have registered the infection with this parasite in various species of wild and pet birds or mammals[1,2,14,17,22], as well as human infection[6,18,19].

The high incidence of parasite in domestic chickens *G. gallusdomesticus* (73.3%) may be due to the conditions of breeding and the interest of cleanliness of the breeding house as well as the presence of other animals like sheep, cows and dogs, likely to be infected with this parasite near the chicken living place, as the infection occurs through eatinga contaminated seeds with infected animal fecal[23-25].

The low rates of infection in the birds and mammals under study can be attributed to the fact that they are very limited in their exposure to the sources of infection, many of birds depending in their feeding on seeds, some worms and insects, so the infection with this parasite could be caused by the sources of drinking water contaminated with oocysts[16,22]. The same reasons could be caused infection in mammals under study like cats, dogs, horses and wild rabbits, they infected through contaminated water or their food with oocysts of this parasite[26-,28]. In addition, oocysts able to maintain their ability to infect for more than a year, with the possibility of long stays in the dirt, water or feces [10,13]

The current infection rates give an important health indicator that must be taken into consideration in the role of these birds in spreading of this parasite to other hosts by putting their oocysts without visible or clearsymptom on infected birds, therefore it contributes in environmental contamination with parasitic infection [9,10].

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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The Level of Some Immunoglobulin and Antioxidant Enzymes Activities in Patients with Dermatophytosis

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Abstract

The current study included collection of 131 clinical samples (91 skin peel samples, 31 hair samples and 9 nail samples), as well as withdrawal of a blood sample from patients with dermatophytes and skin consultants in Hussein Medical City in the holy city of Kerbala in Iraq.

The most fungus isolated was *Microsporumcanis*was 25% of the total samples positive culture then *Trichophyton rubrum* was 15.9%, *T.mentagrophytes* was 13.2%, *Epidermophytonfloccosum*was 11.9%, then *T.verrucosum* was 7.9%, *M.gypsum* was 7.9%, then *T.schoenleinii* was 3.9%, *T.riniacei* was 3.9%, *T.concentricum* was 3.9 %, *T.tonsurans* was 2.6%, *T.interdagtale* was 2.6% and finally *T.violaceum* was 1.3%. The most isolated species of *Trichophyton* species were followed by *Microsporum* species, The highest percentage of Zoophilic dermatophytes was followed by Anthropophilicdermatophytes, the study found that *Tineacorporis* first among clinical cases 41.98%followed by *Tinea capitis* 23.66% and *Tineapedis* 9.16%, *Tineamanum* 7.63%, *Tineaunguium* 6.87%, *Tineafaciei* 5.34% and *Tineacruris* 5.34%, the highest rate of isolation of *T.corporis, T.capitisand T.cruris*of the males while *T.pedis, T.unguiumand T.faciei*highest rate of isolation in females.

The study also showed that age factor affected the incidence of infection it was found that age group ≥ 10 years is the most affected by ringworm and *T.capitis* and T.faciei the most affected in this category, while *T.corporis* is the most affected in age group (20 -11), *T.unguium* is most common injury in age group (21-30), finally *T.pedis* and *T.manum* were most Injury in age group ≤ 40, The results of the present study showed a significant decrease in the values of SOD, CAT and IgE for patients with dermatophytes compared to control group, while there was a significant increase in the value of IgA for patients with skin fungi compared to control group.

Keywords: *Dermatophytes, Catalase, Superoxide dismutase, Immunoglobulin A.*

Introduction

Dermatophytes is one of the most common human pathogens, which are highly correlated with the host and cause chemical and physical changes in the host due to the production of many of the enzymes that are soluble and neutralizing the keratin and host proteins in body areas rich in keratin, the most important enzymes produced (keratinases, lipases, phospholipases, elastases, collagenases and proteases), Dermatophytes differ in their Ability to produce these enzymes, which are main factor of virility and therefore the preferred host, whether human or animal or the environment, which combined together about 40 species and is characterized by keratinophilic and keratinolytic, Not life-threatening but long-term, frequent and difficult to treat[123].

First stages of tinea begin with adhesion of fungus on the skin where it germinates and overcomes the skin barrier, It then produces and releases Keratinases and other important enzymes in breaking surface layer of skin[4].

When dermatophytes colonize skin, they stimulate keratinocytes to produce different types of cytokines that mediate inflammatory response and accumulation of

leukocytes, particularly neutrophils in diseased tissues[5]. two cells of Th1 and Th17 help cells play an important role in controlling skin infection by stimulating cellular immunity, Th17 increases the infiltration of Neutrophils into injury site and also promotes activation of epithelial cells to produce molecules such as Chemotactic and antimicrobial peptides[67].

Host can use different types of mechanisms to eliminate fungal infections, Neutrophil and Macrophages tend to be attracted to skin lesions by Th1-based inflammation[8]. Free radicals are produced by Phagocytosis process against microbes by white blood cells, especially Neutrophils and Monocytes, leading to significant changes in oxidative metabolism and increase in free radicals that cause oxidative stress in cells due to an imbalance between oxidizing agents and antioxidants[9].

Materials and Method

Collection of Specimens: Clinical samples were collected for different ages and for both sexes of patients with clinically diagnosed Tinea disease from specialist skin care specialists at Al Husain Teaching Hospital in Kerbela, included, 78 samples of males and 53 females and age groups ranged from one year to 63 years, Small scabs were taken from the edge of ulcers using a sterile blind blade, Hair samples were obtained using sterile flat forceps and pieces of infected nails were taken with debris under nails after sterilization by sterile scalpel, The samples were transferred to laboratory.

Direct Microscopic Examination: Put some of samples on a glass slide and add a drop of 15% potassium hydroxide solution, then cover slide cover and leave for 5 minutes until keratin melts and then microscopically examined under 10x and 40x magnification to see fungal compositions[10]

Culturing of Specimens: Dseased specimens was placed on petri dishes containing Sabouraud's Dextrose Agar with cycloheximideand chloramphenicol and incubate at a temperature of 27 C° for 4 to 2 weeks.

Blood Samples: Of the same patients with dermatophytes and some healthy patients, 5ml of venous blood was withdrawn with sterile syringes was placed in Gel Tube And left at room temperature for a quarter of an hour and then centrifuged for four minutes and a force rotation of 4000rpm and then separated serum in Eppendorftubes sterilized and kept under high freezing.

Examination and identification of dermatophytes isolates: After 3 days incubation at a temperature of 27 ± 2ºC, petri dishes were examined and monitored daily for 4-2 weeks. The developing fungi were then transferred using a sterilized needle to dishes containing SDA, PDA for purifying them and studying isolated fungal traits for accurate classification. Part of fungal colony was taken using a sterile needle and placed in a drop of LPCB dye placed on a glass slide After placing the slide cover, it was tested with a light microscope and with a 40 x magnification force to observe various fungal structures such as hypha and non-sexual spores Macroconidia, Microconidia and Chlamydospores.

All isolated fungi were identified during the study period depending on the characteristics of the colonies such as nature of fungal colonies, shape, color, size, texture, contrasting pigments produced by back of dish and changes that occur with age, as well as the microscopic characteristics which include nature of fungal structures, spores Large and small in terms of shape, size, number, thickness of walls, dividers, number of existing cells and based on the following taxonomic sources[11121314].

Immunological and Biochemical tests:

Detection of IgE: IgE ELISA Kit was used to measure the amount of IgE in the human serum. The method used to detect IgE is sandwich assay muthed, which is based on streptavidin-biotin principle. Antibodies in the human serum are linked to the antigen found inside drill through interaction of streptavidin-biotin proteins that are not connected by washing with washing solution are then added Horseradish peroxidase (HRP) to anti-IgE-antibody reagent. sandwich complex is then washed to remove proteins and unconnected enzymes and then add base material that gives chromatic density according to IgE concentration in serum sample.

Detection of IgA: IgA ELISA Kit was used to measure the amount of IgA in the human serum, where the tissue consists of a thin plate initially coated with IgA antibodies, then serum samples and standard solutions, biotin-conjugated antibody specific to IgA and Avidin conjugated to HRP After incubation, TMB solution is added, resulting in a change in color in the holes containing IgA, reaction between the enzyme and the base material is then suspended by adding a sulphuric acid solution the optical density of ELISA reader is measured below 450nm.

Superoxide Dismutase (SOD) Activity:

Table 1: Shows the procedure that used for measurement of SOD activity[15,16].

Reagents	Test (µl)	Control(µl)
Serum	50	-
Tris buffer	1000	1000
Distil water	-	50
Pyrogallol	1000	1000

Absorption was read at the wavelength of 420 nm against Tris-EDTA buffer at zero time and after 1 minute of the addition of pyrogallol.

Catalase (CAT):

Table 2: Shows the procedure that used for measurement of catalase activity[17].

Reagents	Test	Standard	Blank
Sample	100µl		
Distil water		100µl	2100µl
Hydrogen peroxide	2000µl	2000µl	
Mix with vortex and incubate at 37C° for 2 min, after that, add:			
Vanadium reagent	2000µl	2000µl	2000µl
After that, the tubes were kept at 25C° for 10min. changes in absorbance were recorded at 452nm against the reagent blank.			

Statistical Analysis: Data subjected to analysis using IBM SPSS Statistics version 22.0 Comparisons among proportions performed using Independent-Samples-T-test, P≤0.05 was considered as significant.

Results

Most common type of fungus isolated was *M.canis* It was found that 19 samples of samples obtained were due to this fungus and rate 25% of total samplepositive culture, then *T. rubrum* with 12 samples and rate 15.9%, followed by *T.mentagrophytes* with 10 samples and rate 13.2%, then *Epidermophytonfloccosum* with 9 samples and 11.9%, then *T.verrucosum* with 6 samples and rate 7.9% and *M.gypsum* with 6 samples and 7.9%, *T. schoenleinii* with 3 samples and rate 3.9%, *T.erinacei* with 3 samples and rate 3.9%, *T.concentricum* with 3 samples and rate 3.9% and *T. tonsurans*with 2 samples and rate 2.6%, *T.interdagtale* with 2 sample and rate 2.6%, finally was *T.violaceum* only one sample and rate 1.3% (Table 3, Table 4).

The results of present study showed a significant decrease in values of SOD and CAT for patients with dermatophytes compared with control group. The current study showed a significant decrease in IgE for patients with dermatophytes compared with control group. Whilethe current study showed insignificant increase in IgA for patients with dermatophytes compared with control group (Table 5).

Table 3: Frequency of types of isolated dermatophytes relative to clinical patterns that cause them

Type of Dermatophytes	Type of Tinea							Total
	T. Pedis	T. Manum	T. Cruris	T. Unguium	T. Faciei	T. Corporis	T. Capitis	
	Percentage of frequency							
M.canis			2		1	8	8	19
T.rubrum	1	2		4	1	2	2	12

Type of Dermatophytes	Type of Tinea							Total
	T. Pedis	T. Manum	T. Cruris	T. Unguium	T. Faciei	T. Corporis	T. Capitis	
	Percentage of frequency							
T.mentagrophytes		1	1			6	2	10
E.floccosum	3		2	1		3		9
T.verrucosum	1					4	1	6
M.gypsum					1	3	2	6
T.schoenleinii							3	3
T.eriniacei		1			1	1		3
T.concentricum			1		1	1		3
T.tonsurans						1	1	2
T.interdagtale						2		2
T.violaceum							1	1
Total	**5**	**4**	**6**	**5**	**5**	**31**	**20**	**76**

Table 4: Distribution of clinical patterns of tinea relative to age and sex

Type of tinea	Sex	Age groups/years					Total	%
		≤ 41	40-31	30-21	20-11	≤10		
T.corporis	Male	2	5	6	17	7	37	28.43
	Female	1	3	2	5	7	18	13.71
T.capitis	Male	1	1	2	3	14	21	16.01
	Female				1	9	10	7.61
T.pedis	Male	1			1	1	3	2.28
	Female	4	2	2		1	9	6.86
T.manum	Male	3		1	1		5	3.81
	Female	3	2				5	3.81
T.unguium	Male	1	1	1			3	2.28
	Female	1		3	1	1	6	4.57
T.faciei	Male			1	1	1	3	2.28
	Female			1	1	2	4	3.02
T.cruris	Male			2		3	5	3.81
	Female	1		1			2	1.52
Total	131	18	14	22	31	46		100

Table 5: Concentration of SOD, CAT, IgA and IgE in patients with dermatophytes and healthy individuals.

Test	Group	Concentration Rate	Standard Deviation	P. Value
SOD(U/ml)	Healthy	1.72	0.210	0.016*
	Patient	1.30	0.525	
CAT(U/ml)	Healthy	0.34	0.061	0.001*
	Patient	0.19	0.130	
IgE(IU/ml)	Healthy	320.04	153.493	0.004*
	Patient	142.23	174.390	
IgA(ng/Ml)	Healthy	17.74	3.06	0. 11*
	Patient	19.39	2.18	

* Significant difference ≤ 0.05

Discussion

Results of present study show that most isolated fungus species belong to Trichophyton species, followed by genus Microsporum species, Zoophilic is also considered leading cause of ringworm, as it causes many types of ringworm such as ringworm, body, face, foot, mouth and hand. Animals play an important role in the spread and transfer of fungus to humans, as a result of direct and indirect contact with infected domestic animals such as cats, dogs and cattle and it is difficult to control and distinguish them as they do not show any symptoms of fungal infection[10].

Anthropophilic infection is caused by moving from one person to another through direct contact or use of contaminated instruments and clothing for the infected person, while the proportion of infection preferred Geophilic low may be due to the nature of the community from which the sample and most of the city, Fungi transmitted from soil to man or animal, causing skin injury when there are appropriate conditions, this finding is consistent with several studies including[1819].

The results of present study showed a significant decrease in values of SOD and CAT for patients with dermatophytes compared with control group. This decrease may be attributed to consumption of antioxidants enzymatic result of the increase of free radicals resulting from phagocytosis by white blood cells (WBC), especially Neutrophils and Monocytes against dermatophytes[2021]causing oxidative stress due to inflammation and destruction of the affected skin, or may return to the decline in the level of some elements such as Copper (Cu) and Zinc(Zn) which enters into the synthesis of these enzymes or acts as co-factorenzyme[2223].

WBC, especially Neutrophils and Monocytes as an immune response against infection, stimulate the production of Reactive Oxygen Species (ROS), leading to a change in oxidative metabolism, Free radicals increase the oxidative stress of cells, resulting in imbalances and imbalances between oxidative and antioxidant factors[9], which is considered an enzymatic (CAT, SOD) of the most important antioxidant enzymes, where the production of the enzyme CAT to resist the toxicity of hydrogen peroxide (H2O2) and the enzyme SOD to resist the toxicity of superoxide (O2) Phagocytic cells against microbes[24].

The current study showed a significant decrease in IgE for patients with dermatophytes compared with control group. The cause of IgE reduction may be due to T-Helper 1 activity in fungal skin infections[2526], leading to the production of interleukins such as INF-$^{\delta}$, IL-2, which inhibit the effectiveness of T-Helper2 and thus its inability to produce some interleukins such as ILL4 and IL5 important in the production of IgE,.

While the current study showed insignificant increase in IgA for patients with dermatophytes compared with control group that IgA inhibits the adhesion and penetration of the mucous membranes in body, which is one reason why the internal organs of skin are not infected with the fungal infections[2728].

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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In Situ Localization of Human Cytomegalovirus DNA and Translated Proteins of BRCA1 and BRCA2 Genes in Histological Specimens from Patients with Serous Epithelial Ovarian Carcinoma in Baghdad Province

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Abstract

HCMV has been detected in various types of tumors. Besides its well-describedoncomodulation, recently an oncogenic properties of HMCV per se as well asits direct transforming role in infected cells have been described.HCMV in serous ovarian adenocarcinoma and its relation to BRCA1and BRCA2 was scarcely studied.

The study was designed to examine cellular dysregulation mediated by the concordant protein expressions of BRCA1 and BRCA2 tumor suppressor genes with HCMV in tissues from ovarian cancers.

Eighty ovarian tissues were examined for HCMV-DNA and BRCA1 & BRCA2 genes expression. Those samples belonged to (40) patients diagnosed with ovarian cancer and (40) from apparently normal ovarian tissues. The detection of HCMV-DNA was done by chromogenic in situ hybridization (CISH) whereas the translated proteins of the expressed BRCA1 & BRCA2 genes by immunohistochemistry (IHC).

Positive signals of HCMV-DNA -CISH reactions in malignant serous epithelial ovarian tumors, was detected in 45% (18 out of 40)tissues and followed by the apparently healthy ovarian control tissues (12.5%,5 out of 40 tissues). The difference of the HCMV in ovarian cancers and control was highly significant. The translated proteins of the expressed BRCA1 & BRCA2 genes was detected by IHC in 60% (24 out of 40 tissues) of malignant serous epithelial ovarian tumors while no signal was reported in the control tissues. The difference between the percentages of BRCA1 as well as BRCA2proteins detection in ovarian cancer & control group was statistically significant (<0.05).

The significant detection of either HCMV o r*BRCA1 & BRCA2* genes expression in the studied ovarian cancer tissues could support a role for that virus along with these genes in ovarian carcinogenesis.

Keywords: *Serous Epithelial Ovarian Carcinoma, HCMV, CISH, IHC, BRCA1 & BRCA2.*

Introduction

Ovarian tumors are a heterogeneous tumors arising from different cell types while surface epithelial ovarian carcinoma (EOC) are the most frequent types representing 90% of all malignant neoplasms. Ovarian cancer is on the riseand is occurring in about one out of 57 women [(1)]. Iraqi cancer registry in 2005, has ranked ovarian cancers as the fifth of female cancers. Like other cancers, the ovarian carcinoma follows a multistep pathway involving activation of certain oncogenes and inactivation of tumor suppressor genes, as well as involvement of other genes and external mutagens[(2;3)]. The involvement of HCMV infection in epithelial ovarian cancer is an interesting issue in this regards.

BRCA1 and *BRCA2* tumor suppressor genes act as sensors of DNA damage and participate in DNA repairing processes. *BRCA* genes are expressed in the cells of breast and other tissues, where they help in repairing a damaged DNA, or destroying cells when DNA cannot be repaired. Therefore, if *BRCA* itself is damaged, the damaged DNA is not repaired properly and thus increasing risks of cancers [4].

Human cytomegalovirus is also associated on serological and molecular basis with the development and/or the etiology of several human cancers[5] via onco-modulationthat catalyzean oncogenic processes for a more malignant phenotype. HCMV infection might lead to protection of these tumor cells from apoptosis and modulating angiogenesis [6].

Many molecular method for identification of HCMV - nucleic acids are available, where chromogenic in situ hybridization (CISH) can be used with frozen cells and tissues, cytological preparations and fixed tissues, using radioactive- labeled probes or probes with non-radioactive labels such as fluorescent moieties- biotin-digoxigenin- or enzyme- conjugated probes [7-9].

BRCA1 and BRCA2 genes-germ line mutations were reported to lead forhigh life-time risk of ovarian cancers, which are the most significant as well as characterized genetic risk factors so far identified in the disease. BRCA1 and BRCA2 are responsible for 50% of all families containing two or more ovarian cancer cases[10].

Materials and Method

Eighty formalin-fixed, paraffin- embedded ovarian tissues were enrolled in this study; (40) biopsies from ovariancarcinoma as well as (40) apparently normal ovarian control tissue group.

The detection of *HCMV* by *CISH* kit (Zyto Vision GmbH. Fischkai, Bremerhaven. Germany). While, Immunohistochemistry/Detection system (Abcam. England) was used to demonstrate the *BRCA1 & BRCA2* expression (protein) in cells using a specific monoclonal antibodies.

Chi –square test was used to detect the significance between variables of our study. All the statistical analysis was done by SPSS program (Version– 21) & p value ($p>0.01$).

Results

Age Distribution Among Study Groups: The patient's ages ranged from 27-74 years with a mean of 41.215 years. The mean age of patients with malignant ovarian tumors (44.66 years) was higher than the mean age of the apparently healthy control(AHC)(37.77years). There was highly significant difference at ($p<0.01$) between different groups in age distribution.

Histopathlogical Grades of Malignant Ovarian Tumors: The results reveal non-significant differences at ($P>0.05$) between poorly differentiated grade and well differentiated grade, also non-significant difference was noticed between poorly differentiated and moderately differentiated ovarian carcinomas (Table 1).

Table 1: Grading of ovarian cancers group.

Ovarian Cancers		Total (N=40)	%	P-value
Grades	I	12	30	χ^2 test P=0.654 Non sign. (P>0.05)
	II	15	37.5	
	III	13	32.5	

Results of HCMV in Female Patients with Ovarian Tumors: Figure 1 shows In Situ Hybridization (CISH) for HCMV Deduction Benign Ovarian Tumors Using Digoxigenin-Labeled *HCMV* Probe, where 45%showed positive signals, **followed by** the apparently healthy ovarian control tissues **was 12.5%.** Statistically, significant difference ($p<0.05$) was found on comparing the percentages of HCMV DNA among the study groups.

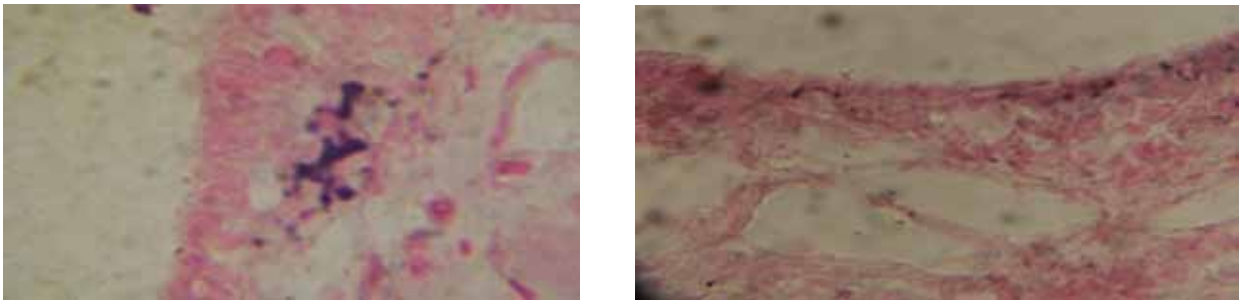


Figure 1:In Situ Hybridization (CISH) for HCMV Deduction Benign Ovarian Tumors Using Digoxigenin-Labeled HCMV Probe; Stained with NBT/BCIP (Blue)and Counter Stained by Nuclear Fast Red (Red). A. Negative HCMV–CISH reaction (40X). B. Positive HCMV-CISH reaction with low score and moderate signal intensity (40X).

The results of BRCA-1- IHC gene expression in Serous Epithelial Ovarian Tumors: BRCA-1 gene expressionwas detected by IHC test in 60% of malignant serous epithelial ovarian tumors. While, no signal was reported in the tissues of control group (Table 2).Statistical analysis of the BRCA-1 gene expression–IHC tests show highly significant difference (p>0.05).

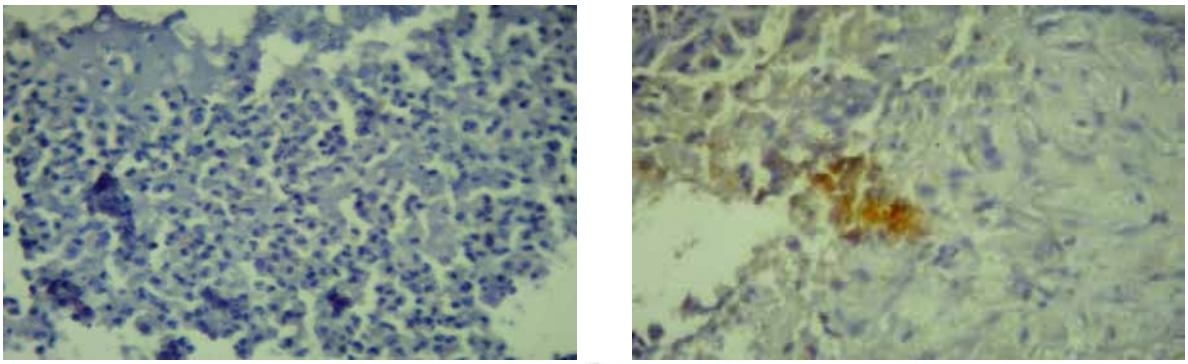
Table 2: The results of BRCA-1- IHC gene expression in ovarian tumors.

BRCA-1-IHC Gene Expression		Studied Groups		Pearson Chi-Square (P-value)
		Healthy Control	Serous Epithelial Ovarian Cancer	
Positive	N	0	24	P=0.003 highly sign. (P>0.05)
	%	0.00%	60%	
Negative	N	40	16	
	%	100%	40%	
Total	**N**	**40**	**40**	
	%	**100.0%**	**100.0%**	

The results of BRCA-2- IHC gene expression in Ovarian Tumors: BRCA-2 gene expressionwas detected by IHC test in 50%of malignant serous epithelial ovarian tumors.But no signal was reported in the control tissues group. Statistical analysis of the BRCA-2 gene expression –IHC tests show highly-significant difference (p>0.01) Table (3).

Table 3: The results of BRCA-2- IHC gene expression in Ovarian Tumor.

BRCA-2-IHC Expression		Studied Groups		Pearson Chi-Square (P-value)
		Healthy Control	Serous Epithelial Ovarian Cancer	
Positive	N	0	20	P=0.003 Highly sign. (P<0.01)
	%	00.0%	50%	
Negative	N	40	20	
	%	100%	50%	
Total	**N**	**40**	**40**	
	%	**100.0%**	**100.0%**	



A B

Figure 2: Microscopic appearance shows over expression of BRCA2 protein in surface epithelial ovarian tumors. Stained by DAB chromogen (brown) and counter stained with Mayer's heamatoxylin. A.surface epithelial ovarian tumor with negative BRCA2-IHC reactions (40X)B.Positive BRCA2-IHC signals of surface epithelial ovarian cancer (40X).

Correlations among of studied markers (wide spectrum HCMV, BRCA1, BRCA2) in patients with Serous Epithelial Ovarian Cancer.

HCMV: There is a strong positive relationship (with highly significant correlation) between HCMVand grade of ovarian cancers. {r = 0.83, P = 0.612,.(p <0.01)}. However, there are no significant correlations among HCMV and other markers. Also,a strong positive relationship (with highly significant correlation) between BRCA1 and BRCA2 marker in ovarian cancers {r = 0. 573, P = 000, (p <0.01). Finally a strong positive relationship (with highly significant correlation) between BRCA2 and age in malignant ovarian tumors {r = 0. 483, P = 0.02, (p <0.01)} (Table 4).

Table 4: Spearman's rho statistical testing to evaluate studied molecular markers in relation with HCMV infections in Serous Epithelial Ovarian Cancer

Spearman's rho		Age Groups/Year	Grade	HCMV	BRCA1	BRCA2
Grade	r.	-.135				
	P-value	.414				
HTLV-1	r.	.083	-.632**			
	P-value	.612	.000			
BRCA1	r.	.065	-.055	.000		
	P-value	.689	.740	1.000		
BRCA2	r.	.483**	-.067	-.105	.573**	
	P-value	.002	.684	.517	.000	

*Correlation is significant (P<0.05). **Correlation is highly significant (P<0.01).

Discussion

Patients with ovarian cancers have poor survival despite advances in molecular biology, diagnostic imaging, multidisciplinary surgical and oncological treatments[11]. In general, the aging increases incidence of the malignant changes in ovarian epithelial tissues and as such their incidence increased with age[12].

In this respect, ovaries of older women showed

higher morphological changes than the ovaries of younger women [13]. Ovulation and subsequent repairing lead to age-dependent changes (so-called ovarian ageing), this might represent a critical pre-neoplastic lesions [14].

Gong *et al*.,[15]reported that ovarian carcinogenesis involved some mechanical sequelae of ovulation, such as trauma or mitotic stimuli to the ovarian epithelium. Similar to pregnancy, women with later menarche might decrease the risk of ovarian cancers by decreasing lifetime number of ovulations.Cellular immune responses in the resolution of viral infections and that deficiencies in cell-mediated immunity increase the likelihood of disease persistence or progression in those older women (waning immunity), as well as intransplant recipients, HIV patients and patients receiving immunosuppressive drugs [16].

Elucidating the potential role of HCMV in epithelial ovarian cancers is of great interest given the availability of antiviral therapies that may be active in this disease. Chromogenic in situ hybridization proved powerful methodfor revealing specific genetic markers as well asgene expression in a morphologically preservedtissue context [17].

Joseph *et al*., [11] found that 40% -80%of ovarian cancer tissueshave CISH expressions of HCMV (IE- and pp65-genes expressions).These observations indicatethe occurrence of reactivation of latent HCMV within the tumor as both viral proteins could be detected in tumor tissue sections,although unlikely (and cannot being excluded) the virus has infected the tumor on later occasions. This supports a previous report by Shanmughapriya*et al*.,[18] who HCMV-glycoprotein DNA by polymerase chain reaction in 50% of ovarian cancer tissues.Previous studies implied a potential role for inflammatory factors in the processof ovarian malignancy [19] while others revealed that Inflammation is a key factor in the reactivation of latent HCMV. The increased production of inflammatory factors)such as IL-1β, IL-6, IL-8, tumor necrosis factor-α, transforming growth factor-β, viral IL-10, prostaglandins and leukotrienes) in active HCMV infection may aggravate the inflammatory microenvironment [20].

HCMV-pp65 contributes also inimmunosuppression by downregulation of the interferon response. The activity of HCMV in a tumor may promote disease progression and prevent desired effects of chemotherapy in some cancer patients. This viral ability delay or prevent apoptosis so as to prevent the therapeutic action of chemotherapy in HCMV-infected tumorcells [21]. Despite a limited number of specimens in this study, the currentfindings may indicate a role for HCMV in ovarian cancers. Further studies should focus on validating these findings in a larger cohort of patients.

Cancer risk of *BRCA1*and *BRCA2*mutations is inherited in a dominant fashion.BRCA1/2 absence functions are associated with risk for developing epithelial ovarian cancers: 40% - 50% in patients with BRCA1-mutations and 20% - 25% in patients with BRCA2-mutations [26].

Identification of *BRCA* mutations in this substantial proportion of the studied Iraqi patients indicates that these genes still play an important roles in the ovarian carcinogenesisamong the general population. The current results are supported by the meta-analysis results of families by Antoniouet al., [26] & Pal et al., [27] where they found the life-time cumulative risks for ovarian cancer was estimated to be 40–53% in those carriers with BRCA1mutation and 20– 30% in those carriers with BRCA2 mutation.

Conclusion

The significant detection of either HCMV or *BRCA1 & BRCA2* genes expression in the studied ovarian cancer tissues could support a role for that virus along with these genes in ovarian carcinogenesis.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Collective Learner Deficits as a Function of Predictive Behavior of Young Football Players

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Abstract

The change in behavior during the performance of movements and mathematical skills is related to the educational and training principles of most motor sentences. There is no doubt that the movements of players in the game must be coordinated and understand and expect each player moves his teammates in the field of play. Accordingly, the main objectives of the research are as follows:

1. Knowledge of the relationship between collective behavior and collective learning deficits in the research community.
2. Know the percentage of the contribution of the total learner deficit in the conduct of the community in question.
3. Predicting the planning behavior of the research community in terms of collective learning deficit.

To achieve these objectives, the researcher used the descriptive method in his survey method and study of associative relations. The research tools were represented by the 30 young players from the Samawah Sports Club/Iraq, as well as the means of collecting data. After the series of field procedures to verify the validity of the learner's disability scale, the researcher proceeded with the imaging procedures and using the appropriate statistical means to process the results to serve the research and achieve the objectives, the researcher devised a predictive equation through which to predict the behavior of the schematic, in terms of collective learning deficit, that the behavior of the schematic is linked to a real relationship with the disability of the learner collective.

Keywords: *Collective learner, predictive and behavior.*

Introduction

The change in behavior through the performance of movements and mathematical skills is related to the educational and training principles of most motor sentences. There is no doubt that the movements of players in the game must be coordinated and to understand each player expects the moves of his colleagues in the field of play, it is necessary to find out the extent of the deficit learner collective and we find great importance to predict the behavior of the plan, the current study.

The theoretical importance of this study lies in the development of a cognitive framework for trainers on the relationship between the behavior of football and the collective learner disability, the contribution of the collective learner deficit to the behavior of the planner, the predictive behavior of the football players,

The practical importance of this study is illustrated by:[1]

- Their findings and recommendations, which may help to answer some of the questions about the feasibility of predictive behavior in football through the deficit learner collective.
- Define the appropriate objectives and means that contribute to the development of the performance of the behavior of football planners.

Research Aims:

1. Knowledge of the relationship between the behavior

of the planner and the inability of the collective learner, for young football players belonging to the club Samawa Sports/Iraq.

2. Knowledge of the percentage contribution of the deficit learner collective, in the conduct of the planners of football players in the club Samawa Sports - Iraq.
3. Predicting the behavior of the planners of the young football players belonging to the Club Samawah Sports/Iraq, in terms of the deficit learner collective.

Materials and Method

The researcher used the descriptive approach - the study of associative relations - to suit the nature of the study and its objectives.

Search Tools: The researchers used the following research tools to reach the results and achieve the objectives.

Research Community: The research community is represented by young football players from the Samawah Sports Club/Iraq, with a total of (30) players.

Devices and tools used in the search:

- Foot balls.
- Digital video camera type (Sony 560 X Zoom) speed (25) image/Sec.
- Software and applications.
- Football field.
- Manual Calculator.
- Personal computer (Lab Tub).
- Office equipment (sheets and pens).
- Registration test results form.

Field Research Procedures:

Conductive Test:

The purpose of the test: Know the level of knowledge of the players in the conduct of the game during the performance of the game

The Crisis Tools: Test forms on the number of experts (performance evaluation), football field (Diwaniyah Youth Club), video cameras, stopwatch

Test Time: 45 minutes.

Game Performance Assessment System: For the purpose of evaluating the performance of the game we use the system of performance assessment of the game developed by Stephen, Judith and Lida, 2006, which was designed to match the open and individual games (7) paragraphs on the movements of the player technical and planning during the game and includes the system form observation analysis of the game in a manner that makes it easy for the observer to stabilize all cases And variables that occur during the game, for the purpose of giving a real picture of the performance of the game and has divided the cases of play into two main cases:[2]

- Appropriate performance level.
- Improper performance at level.

In order to validate the performance evaluation with statistics in the observation form, the Lakers' test scale can be followed and measured at five levels:

- (5 degrees) Very good, good performance (appropriate).
- (4 degrees) Good performance Good (appropriate).
- (3 degrees) Average performance appropriate (appropriate).
- (2 degrees) Poor performance (inappropriate).
- (1 degree) Very poor performance (inappropriate).

System designers point out that it can be used with football. The researcher or observer can delete or modify or add some paragraphs to suit the requirements of the game.

The rules governing the performance of the game:

- **The right move (adaptation to the requirements of the game) (Adjust):** It moves the player in an aggressive or defensive manner as required in the flow of play and is related to the speed of movement and can also move the player in a smooth, accurate and fast and as required by the state of play, which leads to the implementation of appropriate motor behavior.
- **Decision making: (Decision Making):** Which is the process of making the right decision on what works and in which direction is, which is the scientific guidance of the ball and exploit the weaknesses of the competitor and invest the space to his advantage and score a point or score a goal.

The player must choose the appropriate place and time to make his decision true and on the contrary the performance is inappropriate.

- **Skill Execution: (Skill Execution):** It is intended to assess the performance efficiency of the skill to be performed and the correct technical performance and to certain degrees of appropriate and inappropriate performance (determination of skill level).
- **Support:** It means the appropriate move to support the colleague and receive a ball from him or to lock the opponent or fill the gap to allow the opportunity for a colleague to enter the arena of the opponent or move to maintain the skill.
- **Coverage: (Cover):** It is intended to fill the vacuum of the colleague when the attack or provide defensive assistance to the player who makes the game or move with him on the ball and fill the opposite space and the performance of duty instead of his colleague for a limited time.

In order to obtain the scientific basis for the system used to assess the player's performance, Stephen, Judith and Linda have found the sincerity of the system that measures the player's level and laid the foundations of science through their research in the United States of America on football. They pointed out that there is a high honesty in the use of the system on these games and obtained stability (0.68) in football.

Characterization of the learner's disability test: The collective learning disability measure consists of (55) paragraphs with (7) paragraphs for effort, (7) capacity items, (7) preparation paragraphs, (9) for units, (8) cases for perseverance, (9) for stability.

Pilot Study: The examination of the validity of the procedures used to conduct the collective learning disability tests, the behavior of the schematic and the video filming, the availability of the conditions and the implementation of these conditions, is a basic requirement and its realization necessitated conducting a survey on 25/6/2018 on a sample of (12), Randomly selected players from Al Muthanna Sports Club - Al Shabab.

The results of the researcher revealed the achievement of all the purposes for which the experiment was conducted, indicating the good response of the players and their rush to carry out the test, the appropriate time for him and the best output and organization, how to conduct and apply and record the results, as well as his health in the measurement of learning deficit and collective behavior My plans. The survey also revealed the safety of the procedures used in photography, in terms of distance of the camera.

Main Experience: After the completion of the exploratory experiment and obtaining its results, through which the validity of the measure of (Collective Learner Deficit) and the safety of the imaging procedures to test the dispositional behavior, the researcher conducted his main experiment on 5/7/2018.

Results

The development of the equation of predictive behavior, in terms of the deficit of the collective learner of young football players: Finding the correlation between the learner's collective deficit and the behavior of the young football players:

Table 1: Shows correlation coefficients between search variables

Variables	Coefficient of correlation	Correlation nature	(t) value		Statistical significance
			Calculated	Tabulated	
Acting tactical-Collective Disability	0.935-	Simple	11.185	2.074	Sig.

When reviewing the results of the above table, the correlation coefficient between the two search variables (the dispositional behavior) and the total learner deficit reached (-0.935). In order to verify the significance of the correlation, the t-code was used. The values of (t), calculated (11.185), are greater than the tabular value of (2.074), at the degree of freedom (18) and the significance level (0.05) This gave the researcher the opportunity to include the independent variable under the regression model in order to predict the dependent variable.

"The meaning of a correlation between [two variables] is that they share the measurement of one phenomenon, which means that one of them is different from the other."[3]

Table 2: Shows the correlation coefficients between the investigated variables and the amount of confidence

Variables	Coefficient of correlation	Nature of correlation	Contribution Ratio
Acting tactical - Collective Disability	0.935-	Complex	0.875

Extracting quality indicators of linear regression equation model:

Table 3: Shows the quality indicators of the linear regression equation model

Variables		Contribution Ratio	(F) Value		Statistical significance
Independent	Dependent		Calculated	Sig.	
Collective Disability	Acting tactical	0.875	63.080	0.000	Moral

The value of the explanatory factor (contribution ratio) was (0.875) and this indicates that the collective learning deficit contributed (87.5%) to the variable (the dispositional behavior). It also explains the variance the researcher finds that this ratio is good and this indicates the quality of conciliation model - the remaining percentage (13.5%), due to other factors not included in the model.

The same table indicates that the value of (F), calculated at (63.080), is a function at the level of significance (0.000). This indicates the significance of the simple linear regression model, so the model represents the relationship between the two variables under the best representation.

Extraction of coefficients regression equation:

Table 4: Shows the coefficients of regression coefficients and the significance of model parameters

Transactions		Correlation		(t) value		Statistical Significance
Nature of Factor	Parameter Value	Nature	Amount	Calculated	Sig.	
Fixed limit (A)	24.044-	Complex	0.935-	2.691	0.025	Moral
Fixed limit B1	0.168			7.924	0.000	Moral

Table (4) shows the significance of the gradient coefficient (A), where the value of (T) calculated by (2.691), a function at the level of significance (0.025) and the results of the table to the significance of the intersection coefficient (B1) Which was tested by (t), which came in (7.924) and this value function at the level of indication (0.000). The appearance of the slope parameter (A), as well as the tilt coefficient (B1), reflects the importance of the cumulative learning deficit variables. This indicates the quality of the estimation of these parameters in the regression model, which makes the model highly efficient for the purpose of predicting the measured values.

The development of the equations of predictive behavior in terms of collective learning deficits: From the above, the predictive equation of (the schematic behavior) of young football players belonging to Samawah/Muthanna, in terms of collective learner deficits, can be used using the multiple linear regression equation as follows:

$$Y = A + B\,1 \times X\,1$$

Whereas:

(Y) Represents the expected value of the schematic disposition

(A, b) represent linear regression coefficients, which are constant values

(X1) represents the independent variable (collective learning deficit)

Thus, the main objective of the third research was achieved in part through the development of a predictive equation for the "schematic behavior" in terms of the collective learning disability of young football players belonging to the Samawah Sports Club/Iraq.

Discussion

The results shown in tables (1, 2, 3 and 4) show that there is an inverse relation between the total learner deficit and the schematic behavior. The greater the total learner deficit, the less the behavior of the schematic and vice versa. And the lack of knowledge on the nature of the factors that cause their collective learner deficits and their lack of knowledge and access to the nature of compatibility with the self and with the team as an integrated unit as well as with the surrounding environment and the need to work on the situation of compatibility with all these variables,[4] whether during training or competition, all these factors contribute significantly to the work to provide the appropriate atmosphere in changing their negative and false ideas and responses and understanding the factors affecting the formation of this phenomenon in the players and benefit from it positively,[5] and certainly it was Does not provide the factors that help players to take advantage of their different abilities (physical, technical and psychological) to exploit collectively "Optimal help the athlete to exploit his physical abilities and skills, personal preparations and the possibilities of his environment to the extent that qualify these possibilities (t) which leads to increased compatibility with himself and his society".[6]

And that the behavior of the plan is the exchange of roles between the players and the extent of interaction among them through the collective play in the field of the stadium,[7] whether this in training and competition and any inability to occur for this interaction and roles of the exchange between the members of one team will lead to not show the behavior of the best in the case " To recognize the strength of team building, because the role and status of each player are determined in the light of mutual relations, whether it is dynamic or social and the various phenomena of cooperation and competition and harmony and control and subjugation and alliance also appear in light of the interaction that occurs between members of the team".[8]

Conclusions

Through the results and in light of the objectives and the methodology used and within the sample of the research and from the data collected by the researcher and in the framework of statistical treatments, it was possible to reach the following conclusions:

1. To devise a predictive equation by which to predict (the act of action), in terms of collective learning deficit.
2. The percentage of contribution of the collective deficit in the tactical behavior of the football players in the club Samawah Sports - Iraq, large.
3. The dispositional behavior), is linked to a functional relationship with the collective learner deficits.
4. Collective learner deficits explain an acceptable proportion of the behavior of the young football players belonging to the club Samawah Sports.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Organizational behavior of Camp Leaders from Scout Team Leaders

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Abstract

The educational process includes many difficulties between the teacher and the learner and reflect those difficulties, especially in the field of Scout as the Scout leadership has its components and characteristics that make it capable of organizing the behavior of the Scout camps. From here, the researchers set their research goals in order to identify the organizational behavior of the camp leaders from the perspective of the scout teams.

The research community of the officials and officials of Scouts teams participating in the Scouts camps established by the Directorate General of Sports Education/Scouts Department for all governorates for the academic year (2018-2019) of (76) responsible and responsible. After the data collection and processing statistically reached the most important conclusions:

Validity of the measure of organizational behavior, which was prepared by the researcher in measuring the degree of organizational behavior of camp leaders from the perspective of officials Scout teams in Iraq.

Keywords: *Organizational Behavior, scout and team leaders.*

Introduction

The modern era is the era of rapid developments that accompanied scientific knowledge. Education is one of the main pillars of this development because of its interest in the individual as the goal and the means. On this basis, education works to achieve this development for individuals and societies and to promote and promote them better in all fields.

Organizational behavior refers to the interpretation and management of individuals 'attitudes, such as individuals' attitudes towards prevailing management style, satisfaction or job dissatisfaction, employee attitudes towards promotion policies and others. Therefore, the study of organizational behavior is concerned with the interpretation and management of the behavior of individuals in organizations. Since its inception, the scout movement has adopted the principle of non-discrimination between individuals in faith, sex or color. Its activities spread throughout the world. The practice of scouting activities in the educational and social ways affects the individual and gains sound attitudes and values that make him compatible with him and with the members of the society in which he lives. Various scouting activities play an important role in the development of different interests among students of different age groups.[1]

Scout leader is the individual entrusted with the responsibility of leading a group of children or young people in the Scout Movement between the ages of eighteen to thirty-five and many as the scout leader had previously worked in the ranks of the scout movement as a scout or scout or scout or advanced mobile.

Research Aims:

1. Prepare the organizational behavior measure of the

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leaders of the camp from the viewpoint of scout officials.

2. To identify the reality of organizational behavior among camp leaders from the perspective of officials Scout teams.

Research Hypotheses: The camp leaders are highly empowered in terms of the organizational behavior of the Scouts camp management.

Materials and Method

The researcher followed the descriptive approach in order to achieve the goal of research in the preparation of organizational behavior measures and to identify the reality of organizational behavior among camp leaders from the perspective of scout teams and to achieve the imposition of research enabling the camp leaders to a high degree of organizational behavior of the scout camp management and by describing the views expressed by the individuals involved in the current research variables and analyzing them in order to determine the relations between them. The following is a presentation of the procedures adopted in this regard.

Community and sample search:

Research Community: The current research community consists of the officials and officials of the scouts teams participating in the Scouts camps established by the Directorate General of Sports Education/Scouts Department for all governorates for the academic year 2018-2019 (76) responsible and responsible

Sample of Pilot Study: The sample of pilot study consisted of (10) Scout team officials from outside the application sample

Sample preparation and application: The researcher relied on a sample of participants in the Qatari Scouts Camp for gifted and gifted in the Sunni province of Diwaniyah, according to the General Directorate of Sports Education and school activity from 26-26/2/2019 in the age of (76) official and official of the Scouts teams (Advanced Scout/Advanced Guide).

Sample preparation and application: The researcher relied on a sample of participants in the Qatari Scouts Camp for gifted and gifted in the Sunni province of Diwaniyah, according to the General Directorate of Sports Education and school activity from 26-26/2/2019 in the age of (76) official and official of the Scouts teams (Advanced Scout/Advanced Guide).

Tools, devices and devices used in research: The success of research in achieving its objectives depends on several factors, the most important of which is the proper and appropriate selection of means to obtain data, so choosing the right tools is a key factor in research [(3)].

In order to achieve the research objectives, the researcher used the following tools, tools and devices:

1. Scientific and Arab sources and references.
2. Observation.
3. Questionnaire.
4. Electronic Information Network.
5. Electronic calculator type (ispeero)/2.
6. Personal interviews.
7. Pencils.
8. Data registration form.

Field Research Procedures: To achieve the objectives of the current research requires the preparation of a measure of organizational behavior, so the researcher follow the following steps:

Procedures for the preparation of a measure of organizational behavior[2]: After the researcher was exposed to a number of tests related to organizational behavior. (9), the second area is the organizational conflict and the number of paragraphs (9), the second field (9) the third area is the organizational culture and the number of paragraphs (8). The five-step scale is adopted: ((Strongly agree (5) Degrees _ I agree (4) Degrees _ Neutral (3) Score) for positive paragraphs and negative ones. The total score of the scale ranges from (26-130) degrees.

Preparation of the Organizational Behavior Scale: Since the test was originally intended for an environment other than the sports environment, the researcher had to modify the scale to be appropriate for the current research sample. They were scouting teams. The researcher adjusted the scales to fit the nature of the research sample. The modified scale was then presented to a group of experts and specialists in the field of mathematical management, testing, measurement and mathematical psychology to express their views on the validity of the amendments made on the scale.[3]

Determining the validity of paragraphs of the Organizational Behavior Scale: This procedure

requires obtaining the approval of a group of experts and specialists in the field of sports on the validity of the preparation of the paragraphs of the measure, so the researcher prepared the form of the measure of organizational behavior in its initial form and the preparation of new paragraphs to suit the members of the research sample, was presented to a group of experts and specialists, Then use (Chi square) to identify the differences between the approvers and non-approved experts and keep (26) paragraph according to the opinion of experts and table (1) shows that.

Table 1: Shows the original and revised paragraphs and the value of the Kay box for expert opinions

Sr.No.	Agree	Disagree	Chi Square	Significance
1	15	0	15	Good
2	14	1	11.267	Good
3	13	2	8.0667	Good
4	15	0	15	Good
5	15	0	15	Good
6	15	0	15	Good
7	15	0	15	Good
8	14	1	11.267	Good
9	15	0	15	Good
10	15	0	15	Good
11	14	1	11.267	Good
12	15	0	15	Good
13	15	0	15	Good
14	14	1	11.267	Good
15	15	0	15	Good
16	12	3	5.4	Good
17	14	1	11.267	Good
18	15	0	15	Good
19	13	2	8.0667	Good
20	14	1	11.267	Good
21	15	0	15	Good
22	15	0	15	Good
23	15	0	15	Good
24	15	0	15	Good
25	15	0	15	Good
26	15	0	15	Good

Table (1) shows that all the paragraphs were accepted by the experts (26), because the value of their squares was greater than their numerical value of (3.84) at the level of freedom (1) and the level of significance (0.05).All the paragraphs were accepted by the 26 experts, because the value of their square squares was greater than their tabular value of (3.84) at the degree of freedom (1) and the level of significance (0.05).

Prepare instructions for the measure of organizational behavior: After making the adjustments

to the scale according to the opinions of the experts, the standard was finalized. The researcher prepared the instructions for the measurement paragraphs in the same manner and the instructions based on the organizational behavior measure, which explains to the supervisors how to respond to the paragraphs (I strongly agree, agree, neutral, disagree, disagree) Strongly agree) Weights (5-4-3-2-1) were given respectively positive paragraphs and reversed negative paragraphs.[4]

The main experience of the measure of organizational behavior: After the scale became ready in terms of paragraphs and instructions, the researcher began to apply the scale and the number of paragraphs (26) paragraph on the sample of the (76) officials representing the sample of the preparation on Wednesday, 20/2/2019 at noon for the purpose of completing the preparation and for the purpose of analysis His statistics.

Table 2: The discriminatory ability of the test used in the research sample and its statistical evidence

Paragraph number	(t) calculate	Sig	Type of significance	Paragraph number	(t) calculate	Sig	Type of significance
1	2.83	0.000	special	14	2.56	0.000	special
2	1.88	0.000	special	15	2.53	0.000	special
3	2.23	0.000	special	16	3.12	0.000	special
4	2.76	0.000	special	17	2.41	0.000	special
5	2.55	0.000	special	18	3.52	0.000	special
6	2.45	0.000	special	19	4.24	0.000	special
7	3.43	0.000	special	20	3.37	0.000	special
8	2.50	0.000	special	21	2.12	0.000	special
9	2.15	0.000	special	22	2.43	0.000	special
10	3.66	0.000	special	23	2.76	0.000	special
11	2.73	0.000	special	24	2.87	0.000	special
12	2.48	0.000	special	25	2.84	0.000	special
13	4.67	0.000	special	26	4.43	0.000	special

Table 3: The correlation coefficient between the score of the paragraph and the total score of the measure of organizational behavior

Paragraph number	The value of the correlation coefficient	Paragraph number	The value of the correlation coefficient
1	0.67	14	0.62
2	0.65	15	0.67
3	0.64	16	0.76
4	0.71	17	0.64
5	0.54	18	0.53
6	0.56	19	0.57
7	0.58	20	0.54
8	0.53	21	0.56
9	0.63	22	0.63
10	0.54	23	0.62
11	0.51	24	0.53
12	0.72	25	0.62
13	0.66	26	0.53

Results

Table 4: The mean, the mean medium and the calculated of(t) value of the research sample of the organizational behavior measure

The scale	Sample	Mean	The mean medium	SD	(t) calculated	sig	Type of significance
Organizational behavior	76	107.23	78	7.85	3.65	0.000	Moral

By comparing the mean with the mean medium of the organizational behavior measure, it was found that there were significant differences. Thus, the t-test was tested to determine the statistical significance of these differences.[5] It was found that the calculated value of the scout teams was (3.65), (0.05). This means that the difference is statistically significant and this result can be explained in light of the fact that organizational behavior is an area that is interested in knowing all aspects of human behavior in organizations through the systematic study of the individual, In organizational positions and the study of manna (1) organizational behavior is one of the areas of human relations that bind a group of people to a particular work and human relationships are important factors in enhancing confidence in the souls of the human being.[6]

To provide an appropriate and encouraging work environment for the exercise of the job with every ability to excellence and high level of achievement, the human nature tends to humanity and wants to be all the atmosphere and transactions in the environment of life and the process is filled with the spirit of humanity away from the spasm and transcendence and the coolness of dealing, Scout camps are part of the human activity of life, which show the effectiveness and vitality in human relations and cooperation in achieving the goal of Sami and it focuses on individuals rather than on machines or techniques, which is normal because individuals are those who have a sense of feeling and others, In addition, individuals are emotionally and morally responsive when an emergency situation occurs in the organization to work together to find the appropriate solutions that emerge from this circumstance.[7] The environment in which the organization meets, These organizations are able to create conditions conducive to the strengthening of human relations, which in turn helps to stabilize the state of work in the spirit of one team or the so-called collective action. One team encourages the organization to increase attention to the workers in a way that will satisfy all their needs and meet their demands because they have shared their dedication to achieving the goals of the organization.

The human relations are increasing and motivating the workers to make efforts beyond the efforts required to achieve the work the results of these efforts will be great because they will result from the collective action that resulted from the positive conditions that human relations have created. It has been confirmed that human relations are clearly manifested in dealing with all levels of the organization's employees. Encouraging others to achieve for the purpose of their reward and can emphasize the performance of social duties outside the work and urged everyone to do so and this is one of the interests of the Scout Movement and so the departments that follow the principle of Humanity will reap the fruits of that nourish by gaining appreciation of others and friendliness in addition to the benefit of their abilities and skills of the highest level and this explains for the camp leaders at a high level of organizational behavior.[8]

Conclusions

1. Validity of the measure of organizational behavior, which was prepared by the researcher in measuring the degree of organizational behavior of camp leaders from the perspective of officials Scout teams in Iraq.
2. The leaders of the Scout camp in Iraq enjoyed a good amount of organizational behavior.
3. Organizational behavior has a significant impact on the leaders of the camp from the perspective of officials Scout teams in Iraq.
4. Predictability of the organizational behavior of the camp leaders from the perspective of the scout teams in Iraq.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of

both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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The Effect of External Feedback Using (Wilson X) Balls in Improving the Correct Accuracy of Basketball Jumping

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Abstract

This research aims to identify the effect of external feedback using (Wilsonx) balls in improving accuracy scoring from a specific point during jumping to Karkhbasketball sports club. In addition, the coach participated in putting the training instructions for each player according to (Wilson x) data to improve performance. The researchers used the experimental approach to study the problem of the research. We used deliberate method of selection a sample of twenty applicant players of Al-Karkh Sports Club. About 90 percent of the original research community, 18 players, were divided into two equal groups, experimental and control, whereas the rest are excluded for the purpose of exploratory experiment. After the main experiment and tests were completed, Excel was used for statistical data processing to reach the results, after which the results were presented and discussed. The results show existence of a significant improvement in the accuracy using our suggest method in the scoring of basketball jump compared with the previous techniques. The results also proof that Wilson x balls associated with external feedback is significantly enhanced the scoring skill of basketball jump.

The researchers recommend using the balls (Wilson x) to Iraqi's basketball clubs coaches because of their role in improving the accuracy of scoring skills. Also, they recommend the need to use modern educational tools and equipment in order to keeping up with the corresponding evolution in education and training.

Keywords: *Special exercises, Performance endurance, Ability, Accuracy and jumping.*

Introduction

The long steps of science development and technological revolution are reflected in various areas of life includingsports science. A good planning through using scientific researches with extraordinary unfamiliar results creates new boundless horizons of opportunities in the field of physical education. Identifying new acquisitions of information and skills, with no doubt, contributes in developing and achieving the best results. Research in the field of physical education is so dynamic and demanding since it requires following all what is innovative in the modern technology. Motion learning is one of these important sciences on which both trainers and learners depend on achieving the desired motion.[1]Motor learning deals with human movement in general and sports movement in particular through studying and analyzing andidentifiesdifferent aspect of motion[2].Feedback is one of the most important processes to facilitate motion control[3]. External feedback is the information that learner receives from the trainer or from the training apparatus.[4]

Basketball has been one of the fastest-growing sports in the recent years. It has become increasingly popular, making it one of the most popular games in many countries of the world including our beloved country. It is one of the sporting events that require targeted scientific planning, especially the basic skills, such as aiming the target. "Learning and improving them

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– aiming target - is important for winning points during matches and hence the key to winning basketball games. The scoring process is the result and the main goal of all basketball player's other skills.[5]Scoring during jumping is one of the most important types of aiming skills since it is effective and influential in the scoring process.Most players maintain and improve on such skill because itis only tool in scoring points in basketball.

The researchers believe that the modern devices start to have prominent and influential role in developing motion performance in most clubs and teams.Hence, the importance of this research is become obvious since we highlight and proof the dominant role of using modern learning method in learning and improving the motion performance of the athletestoward reaching achievement points.

Through the follow-up and observing many games, we noted existence of obvious mistakes in the process of scoring during jumping for most basketball team in Iraq, in particular Karkh Sports Club players. Most of these mistakes are there due lack of using modern educational method in the process of improving and developing motion aiming performances kills. The researcher sought to find a modern scientific learning method which could have a positive impact towards improving players skills of motion control, scoring accuracy skill through using basketball (Wilson x) balls.

Materials and Method

The researchers used the experimental approach in dealing with the research problem as it is more appropriate to the nature of the research and reaching the results.

Research community and Samples: The sample of the research consisted of players from the Karkh Sports Club (for the category of applicants). 20 players were selected in a deliberate manner and divided into two equal groups, experimental group and control group. The members of each one of these groups were selected randomly with their officers by drawing lots according to the test scores of the sample. The research sample was 90% of the original research community where the excluded players were used for pre-test selection.

Table 1: Sample equalization of the experimental and control group

Sample	AM	SD	Calculated (t)*	Significant
Control	20.1	1.3	0.28	Random
Experimental	19.9	1.7		

* At the level of significance (0.05) and the degree of freedom (18).

Tools and Devices are used in the Research:

- Basketball court.
- Wilson x balls number (10(.
- Basketball hoop.
- Whistle.
- Stopwatch.
- Stationery.
- Training cones.
- Measure Tape.
- Dell Laptop Type (1).
- Smart mobile phone (1).

Research Test and purpose: Jumping test from the front-left of the free throw line and then moving semi – circular to the center-right. The purpose of the research is to measure the accuracy of scoring through jumping.

Procedures and performance description: The procedure will start by drawing three points in the form of small circles with diameter of (15cm) as markers of the three areas where the test is performed and as follows:

a. The first mark 30 cm left of the free throw line.

b. The second mark is the middle of the free throw line and the distance (90 cm) from the free throw line towards the three-point line.

c. The third mark 30 cm right of the free throw line

Performance description will be as follows:

a. The player takes the standing position at the first mark scoring point.

b. The player performs scoringduring jumping with one hand towards the basket without touching the board (direct score).

c. Each player shoots 15 throw performed by three groups divided equally and shoot from one of the marked points, five balls for each group.

The recorder calls the players' name and records the results of the shoots and the referee stands near the player to hand the ball and supervisesthe correctness of the performance.

Scoring Method:

- The player is counted two degrees when the ball enters the goal (successful shot).
- The player counts one score for each shot in which the ball touches the ring and does not enter the basket.
- The player's score is equal to the sum of the points he gets in the specified throws.

Note: Maximum test score (30(

Experimental Test: The researchers conducted an exploratory experiment on Friday, June 30, 2017, with the players of Al-Karkh Sports Club, the category of applicants and were later excluded from the same research. The aim of the exploratory experiment was to identify the obstacles and difficulties that may face the two researchers during the sample Pre-test. Furthermore, it is used to identify the quality of the researchers support team, checking the best way to have the test and the process done, in addition to know the time of the application tests and if it is suitable for the sample of our research.

Pre-Tests: The researchers conducted the pre-tests at 7 pm on Saturday, 1/7/2017 and under the supervision of researchers and coaches of Al-Karkh Sports Club. As far as possible, the researchers took into consideration the variables in terms of time, place and the supporting team for their survival in the post-tests. The parity between the control and experimental groups was carried out in the results of the pre-tests of the two groups in order for the researchers to refer the difference in performance level to the variable independent study.

Main Experience: The main experiment included the implementation of the vocabulary of the educational curriculum of the experimental group as of Sunday, 2/7/2017 using exercises based on the data of balls.) Wilson x) under the supervision of the researchers and the control group applied the curriculum followed by the same coach, the number of educational units for the entire period of the research is (40) units of education with a rate of (120) minutes per unit.

Post-Tests: The tests were carried out on the sample of the research at 7 pm on Saturday, 2/9/2017. The researchers ensure same conditions and temporal and spatial circumstances during the pre-tests. We further use the same assistant team to identify the improvement extent in skills under the same study condition and exclusively through independent variable.

Results and Discussions

First we may refer that we have used Excel for statistical data processing to reach the results. Table (2) illustrates the pre-test results for scoring through jumping skills for basketball players for both control and experimental groups. From the table (2) we can see that both the control and experimental groups› members hold almost the same equivalent skills and performance. Hence, both groups will start application of the curriculum from the starting point one.

Table 2: Mean, the standard deviation and the (t) value for the pre-test of the control and experimental groups in scoring during jumping test of basketball

The skills	Control (Pre)		Experimental (Pre)		Calculated (t)*	Significant
	Mean	STD. EV	Mean	STD. EV		
SBTJ*	19.9	1.7	20.1	1.7	0.28	Not-sig

* At the level of significance (0.05) and the degree of freedom (18)., * SBTJ: Shoot of a Basketball Through Jumping

Table 3: Show the mean, standard deviation and the T value for the pre-test and post-test of the control in scoring during jumping test of basketball

The skills	Pre-Test		Post-Test		Calculated (t)*	Significant
	Mean	STD. EV	Mean	STD. EV		
SBTJ*	19.9	1.7	23	1.4	4.29	Not-sig

* At the level of significance (0.05) and the degree of freedom (18)., * SBTJ: Shoot of a Basketball Through Jumping

Table 4: The mean, standard deviation and the (t) value for the pre-test and post-test of the experimental test in scoring during jumping test of basketball

The skills	Pre-Test		Post-Test		Calculated (T)*	Significant
	Mean	STD. EV	Mean	STD. EV		
SBTJ*	20.1	1.3	25.1	1.19	8.68	Sig

* At the level of significance (0.05) and the degree of freedom (18)., * SBTJ: Shoot of a Basketball Through Jumping

Table 5: The mean, standard deviation and the T value for the post-test of the control and experimental test in scoring during jumping test of basketball

The skills	Pre-Test		Post-Test		Calculated (T)*	Significant
	Mean	STD. EV	Mean	STD. EV		
SBTJ*	23	1.4	25.1	1.19	3.58	Sig

* At the level of significance (0.05) and the degree of freedom (18)., * SBTJ: Shoot of a Basketball Through Jumping

The results from Table (3) show that there are slight differences with a statistical significance between the pre and post-test of the control group. The researchers refer these differences to the training period for the players and the training course that was submitted by the coach independently, without any intervene.

Table (4) and table (5) show significant differences with clear statistical significance between the control and the experimental groups with a clear advantage for the experimental group. We attribute this superiority to the large role provided by the modern technology that used in the educational curriculum, Wilson X. This technique significantly improves the accuracy of scoring skill of the players of the experimental sample, especially with the use of external feedback whose characteristics of support, independence and informatics.[6] The functions of the external feedback is to stimulate learners and increases their motivation to continue to achieve their goal of enhancing information about the nature and direction of their mistakes and it proposes ways to correct these errors.[7]

The trainer relied on the received data from the scored balls for each performed player. The trainer develop a specific exercises for each player based on his performance which is in conflict to what usually follow by the control sample by assigning the same exercises for all players. In addition, this technique helps improving the accuracy of scoring for the experimental sample members.[8]

Conclusion and Recommendations

Through the results of our research, we reached the following conclusions and recommendations:

a. The results showed there were significant superior advantages for the post-test compared with the pre-test for the accuracy of the scoring of the basketball during jumping.

b. Wilson x with the external feedback that are used in the research has a great role in improving the accuracy of the skill of the scoring of basketball jumping.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Assessment of the Determinants (Mental-Emotional) and the Level of Referee's Iraqi Handball Under the Program (GRTP)

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Abstract

The researchers dealt with part of this problem, namely the study of the assessment of psychological determinants in particular and their relationship with the level of Iraqi rulers according to the system (GRTP). The aim of the research was to identify the (mental-emotional) determinants and the level of Iraqi handball referees according to the GRTP system. (Mental-emotional) assessment and performance of Iraqi governors under the GRTP system.

The research community is determined by the rulers of the Iraqi League of (35) judges and a sample of them (30) was chosen randomly and also (5) referees for the exploratory experiment. After the approval of the validity of the paragraphs and testing by the experts, the researchers set up instructions to answer the paragraphs of the scale, as the correct answer is to develop instructions that facilitate the answer to the correct answer was emphasized in words and clarity of meanings and emphasis on accuracy and honesty by answering and hiding The real purpose of the scale and the flags of the examinees that their answers will be confidential and for the purpose of scientific research only. From the conclusions reached, the following conclusions can be drawn that most rulers have psychological determinants and an average level of assessment.

Keywords: *Assessment, mental, emotional and GRTP.*

Introduction

The evaluation of psychological determinants is one of the scientific topics that many concerned in studying the effective role in the field of sports, especially as they constitute a wide range on which sport depends. These include assessing psychological determinants (mental and emotional) to be present at the handball referees for the speed of the game and the many variables that occur within the stadium, which requires a great mental preparation of the referees.[1]

The assessment of psychological determinants is an important requirement for the referee and all the stimuli that occur to him. For the details of the game, he has to turn his attention from one exciting to the other, so that he will ensure the continuation of the game and thus respond to these stimuli in the course of the game according to the technical position he determines in the decision In the right manner leads a successful match of the game reflects the level, so the importance of the study in the relationship between the assessment of psychological determinants and the level of performance of the rulers to find out the important aspects that raise the level of performance of the rulers.[2]

The success of the match is seen through the success of the referee in its leadership with a high level of performance. By observing the referees and watching the refereeing of the Iraqi handball matches, there is a difference in the performance of the referee to referee between the game and the game in some of the decisions taken, which affects the level of arbitral performance in the referee . This variation, difference and sometimes fluctuation in the arbitral level of the existence of several reasons, including the background of sports governance and follow-up of the game and experience, academic and scientific level and external partnerships and arbitration and development courses as well as the physical and

mental abilities and abilities of each rule compared to others, all these variables can contribute to the success or failure The referee in his leadership of the match.[3]

The researchers will address part of this problem, namely the study of the assessment of psychological determinants in particular and their relationship with the level of Iraqi rulers according to the system (GRTP).

Research Aims:

1. Identify the parameters (mental-emotional) and the level of Iraqi handball referees according to the system (GRTP).
2. Assess the determinants (mental-emotional) and performance level of the Iraqi governors according to the GRTP system.

Hypothesis: There are real differences in the determinations (mental - emotional) and the level of evaluation of Iraqi rulers according to the system (GRTP).

Research methodology and field procedures:

Materials and Method

The nature of the problem to be studied determines the nature of the approach. The researchers used the descriptive approach in both the survey and associative method.

Research Community: The research community is determined by the rulers of the Iraqi League of (35) judges and a sample of them (30) was chosen randomly and also (5) referees for the exploratory experiment.

Devices and tools used in the search:

- Stopwatch number (1).
- Portable type calculator (Dell) number (1).
- Stationery (papers - pens).
- Large sound device type Chinese number (1).
- A legal handball field.

Information gathering method:

- Arab and foreign sources.
- Tests and measurements.

Field Research Procedures:

Test Procedures: Evaluation of the determinants (mental - emotional): The researchers used a measure of the assessment of mental determinants (mental - emotional), which was built and codified Ayman Hani Jubouri (Which do not always occur, do not occur often, sometimes occur, occur often, always occur) and grades (4,3,2,1,5) are given respectively for each positive paragraph and (1,2, 3,4,5) respectively for each negative paragraph, the highest score on the scale is (150) and the lowest score is (30) degrees.[4]

In order to apply the scale, the researcher presented the scale (see appendix 1) to a group of experts and specialists (see appendix 2), for the purpose of evaluating and judging it in terms of its validity in what was put for it. After the experts and specialists were exposed to the paragraphs of the scale and test, (Chi square) calculated for the agreement of experts and specialists and accept the nomination of paragraphs, the value of (Chi square) calculated greater than the value of the (3.84), as shown in tables (1).

Table 1: The number of approbations and the values of (Chi square) and the moral significance of the scales of the psychological determinants assessment

Scale	Number of experts approved	Number of non - approving experts	(Chi square) calculated	Significance
The determinants (mental-emotional)	5	0	5	Moral

After the approval of the validity of the paragraphs and testing by the experts, the researchers have developed instructions to answer the paragraphs of the scale, where the correct answer is to develop instructions that facilitate the respondent the correct answer where it was emphasized the simplicity of words and clarity of meanings and emphasis on accuracy And honesty by answering and hiding the real purpose of the scale and the flags of the examinees that their answers will be confidential and for the purpose of scientific research only.

The pilot study of the assessment of psychological determinants (mental-emotional): After setting up the

instructions for the scale, the researchers conducted the exploratory experiment on Thursday, 15/11/2018 in the Babylonian Education Hall to reveal the following:

1. To ensure that the instructions and the standard clauses of the rulers are clear.
2. Identify the time taken to answer the meter.
3. To identify the conditions of application of the scale and the attendant difficulties.
4. The researcher shall have practical training in order to identify for himself the negatives and positive aspects that he encounters during the main test.
5. Extraction coefficient of stability.

The experiment revealed the following:

1. The instructions were clear by the sample members.
2. The paragraphs were clear and not ambiguous.
3. The scale was suitable for the sample.
4. The application time was between 12-18 minutes.
5. Alternatives to the response were appropriate for the level of the sample members.
6. The stability coefficient has been extracted so that the scale is ready for application and consists of (60) paragraphs.

The Scientific Foundations of Determinants (Mental-Emotional):

A. The standard of truth is the most important factor for test and measurement quality tests. The standard or true test is defined as a test that accurately measures the phenomenon that it is designed to measure and does not measure anything in its place or in addition to it.

Honesty has several meanings that vary according to the use of the test and the truth is that the test measures what is being set for it, that is, the honest test measures the function that it claims to measure and does not measure anything else instead or in addition to it.

1. **Authenticity of content:** This type of honesty aims at knowing the extent to which the test or measure represents the aspects of the attribute or the attribute to be measured, whether the test or the measure measures or measures a specific aspect of the phenomenon, the extent to which its content matches what it wants to measure, Experts in the field that the test tries to measure.[5]

Researchers have verified the validity of the scale through the content or content validity index, which is often made by means of a rationale for the existence of the attribute, capacity or capacity involved to verify whether or not the proposed measurement instrument is actually measuring it. A presentation to a group of experts and specialists,(2) to validate the scale.

B. Stability of the scale: The stability concept is one of the basic concepts in measurement and must be provided in the scale to be valid for use. 2 The stability coefficient of the test was found by testing and re-testing for the test and test on the survey sample. The test was conducted on 15/11/2018. (R) (0.93) for the first section and (0.95) for the second section.

Referee Review (GRTP): The researchers selected the refereeing test (GRTP) approved by the International Federation of Handball and the tests These tests are standardized tests of the experts of the game International Federation is:

1. A set of questions in the handball law.
2. Video cases in handball law.
3. High-capacity physical tests (CHTRL).

The main experience of the Psychological Determinants Assessment (Mental-Emotional) and GRTP: The researchers applied the determinants (mental-emotional) and GRTP test on the 30 sample individuals representing the Iraqi Premier League referees for the 2018-2019 sports season on 5/12/2018 during the refereeing session in Babil Governorate.

Setting Levels for Testing (GRTP): Therefore, in order to evaluate the referees according to a certain level, standard levels of GRTP were established as shown in Table (2).

Table 2: The standard levels and limits of raw grades and their significance in the GRTP test.

The level	They set it in raw grades	Scale significance
The first	0-14	Very low
The second	15-28	Low
The third	29-42	Average
The fourth	43-56	High
Fifth	57-70	Very high

Results

Assessment of the determinants (mental-emotional) and the level of evaluation of the referees according to the program (GRTP) and the relationship between them: With regard to the first objective of the research, which is the assessment of determinants (mental - emotional) and the level of referees according to the program (GRTP) of handball referees was calculated the total score of each rule, the highest score obtained by the judgment on the scale of psychological (emotional) is (300) and lower The results showed that the highest score was obtained (271) and the lowest score (168) for the results of the sample. In order to know the nature of the assessment of the psychological determinants of the sample, (21.66) and by standard deviation (0.91), while the second part (21.66) and standard deviation (0.91), or The emotional side that appeared equal to (29.00) and standard deviation (1.05), all of which are higher than the theoretical center of the scale of (180), as shown in Table (3).

The highest score obtained (55) and the lowest score (7) for the results of the adult sample and in order to know the nature of the evaluation reality of the sample The mean of the sample was calculated as 39.29 and with a standard deviation (4.96). When compared to the levels, they were found at the intermediate level.[6]

Table 3: Results of the sample on the scale of assessment of psychological determinants (mental-emotional) and the level of evaluation of referees according to the program (GRTP)

Tests	Mean	SD	(t) calculated	Sig.	Significance
Assessment of determinants (mental)	21.166	0.912	6.79	0.000	Moral
	29.000	1.051	8.81		
Assessing determinants (emotional)	200.23	7.95	6.88		
Evaluation of judges according to GRTP program	39.29	4.96			

Table (3) shows that the value of t calculated at the level of significance (0.05) and the degree of freedom (29), which means that the handball rules have mental and emotional determinants and a good level in the test (GRTP) and can be explained by psychological variables and their importance and impact Because the psychological determinants mean controlling the internal and external emotions that are exposed to them in learning the various skills and situations, especially in daily life, which is almost normal because it. The more rulers can control they bring what they want and delete what they want and reduce many mental disorders of social and functional origin, such as anxiety, depression and stress whenever they give their best in competitive situations and are at best, as well as they seek a high standard for their performance and make achievement a personal goal for them (1), And what we went from is quite likely that the current sample was approximately midpoints in both GRTP.[7]

The researchers see the rulers to be characterized by good psychological determinants to match the arbitral variables in handball that need appropriate mental processes and abilities and must have a state of balanced awareness that avoids individuals slipping in the maze of different and interconnected situations and does not make them follow a clear vision to accept the psychological and emotional phenomenon that they have, Unfortunately, they are not open to the world of ideas, feelings, painful feelings and unpleasant experiences of the individual, so they suffer the reality more than others and cannot experience the experience at the present moment in a balanced manner.[8] They also do not have a flexible range of mental ability that allows a good and open vision of all mental and sensory experiences. "The assessment of psychological determinants requires the person to understand himself and to monitor his negative thoughts and feelings and to open up and live them rather than to hold them in consciousness, as well as not to launch negative judgments of self".[9]

Conclusions

1. Most of the referees have psychological determinants and an average level of assessment.
2. There is a positive relationship between the

assessment of psychological determinants and their performance according to GRTP program.

3. The greater the assessment of psychological determinants and the performance of judges, the better the results.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Complications of Cardiac Catheterization of Congenital Heart Diseases in Pediatrics

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Abstract

The role of the pediatric catheterization laboratory has evolved in the last decade as a therapeutic modality, also remains an important tool for anatomic and hemodynamic diagnosis of heart defects.

The aim is to assess the frequency of complications among children undergo cardiac catheterization and study the profile of complications and their relation with different variables.

Descriptive prospective study was done in Cardiology Center in Baghdad, Ibn Al-Bittar Hospital on children with congenital Heart disease who received cardiac catheterization between 1 May 2018 and 1 February 2019.Data collected for patients (included age, gender, weight, type of congenital heart defect, type of procedure performed either therapeutic or diagnostic, catheterization number, time when complication occurred and type of complication).

Of 612 patients (328 females, 53.6%), complications occurred in 32 (5.2%), with complication frequency increased among patients aged ≤ one year (13.3%). Total 154 (25.2%) of children presented with ventricular septal defect, the most common complications were arrhythmia 5 (15.6%), followed by device emboli zed, cyanotic spell, cardiac standstill and cold right lower limb (thrombosis/ischemia) (each of them was 4, with a percentage of 12.5%) .Death occurred only once (0.16%). Patients who had therapeutic catheterization and developed complication were 28 (8.2%) while 4 (1.5%) who had diagnostic catheterization developed complication. Ninepatients (18.4%) who had more than one catheterization developed complication. The higher proportion of complications seen among children who suffered from aortic stenosis (6.25%) and coarctation of aorta (9.3%).

The frequency of complications is 5.2%.Most common complications were arrhythmia, cyanotic spell,device embolized, cardiac stand still and cold lower limb. There is a significant association between the frequency of complications and patients with age below 1 year. Patients with therapeutic catheterization had higher risk of complication than those with diagnostic catheterization. As the number of catheterization procedures increased in each patient, the patient had a higher risk of complications.

Keywords: *Complications, catheterization, congenital heart disease.*

Introduction

Cardiac catheterization has revolutionized the management of pediatric cardiac disease. Both therapeutic and diagnostic procedures are associated with some risks because of their invasive nature. Cardiac catheterization associated complications including arrhythmia, massive bleeding, heart perforation, cardiac tamponade, thromboembolism, shock, hypoxemia and vessel occlusion remain a major concern for performing the procedure[(1)]. A large multicenter experience with life-threatening events in congenital cardiac catheterization

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was reported a low incidence of life-threatening events (2.1%) and mortality (0.28%) despite the complexity of modern patients and procedures[2]. Centers in western countries have reported various complications of cardiac catheterization since the mid-1970s with the overall complication rates ranging from 8.8–24% [3-8]. Over the last decade, the use of cardiac catheterization as a primary treatment modality in children with congenital cardiac lesions has increased. However although there has been a considerable improvement in device design, equipment and the skills of the interventionist, associated risks continue to complicate these procedures. This is particularly true with the expansion of the pediatric cardiac catheterization which has been shifted from a primary anatomic hemodynamic diagnostic tool to therapeutic intervention one. So, the anesthesiologist together with catheterization team needs to be familiar with all types of emergent adverse events and their specific management protocols to maintain a high level of patient care with minimal complications. These adverse events may be catheterization related events, access related events, sedation related events, transfusion related events and events related to special intervention technique. Adverse events were defined as adverse events related to the catheterization procedure, identified during or after the procedure resulting in a change in patient condition, life-threatening if not treated, requiring major intervention, such as invasive monitoring or major transcatheter bailout procedure and resulting in death and emergency surgery or failure to wean from extracorporeal membrane oxygenation [9,10].

Complications encountered in cardiac catheterization laboratory:

- **Cardiovascular complications:** Arrhythmias, cardiac Perforation, low cardiac output & hypotension, embolism, valvular damage, paroxysmal pulmonary artery hypertension crisis (PPHC).
- **Respiratory complication** hypoventilation, pneumothorax.
- **Vascular complications:** Bleeding, hematomas, acute arterial occlusion, vascular thrombosis, retroperitoneal hemorrhage, arteriovenous fistula, pseudoaneurysm, infection: cellulitis at the site of access is rare.
- **Others:** Hypothermia, blood Loss, complications related to contrast injection[11].

Aim of Study:

1. To assess the frequency of complications among children undergone cardiac catheterization.
2. Study the profile of complications and their relation with different variables.

Materials and Method

Descriptive prospective study for children with congenital heart disease who needed catheterization.

The study was done in Ibn Al Bittar Hospital between the period of 1st of May 2018 to the 1st of February, 2019. Informed consents were obtained from the parents of children. Critically ill children, those with circulatory insufficiency symptoms scheduled for examinations on an urgent or emergency basis. After the diagnostic or interventional procedure, patients were sent to the postoperative care unit or recovery room and observed for several hours. Those conscious, with efficient respiration and stable circulation (appropriately to the heart defect and pre-procedure status) were transferred to the cardiac intensive surveillance unit. Procedures were classified as diagnostic or interventional.

Data collection and study design

Data collected for patients with age ranged from 1 day to 16 years.

A questionnaire was performed, in which direct interview was done between the patient and their relative and the doctors involved to collect data, which included the following: Name, Gender, Age, Weight, Date of admission, Diagnosis (type of congenital heart disease), Type of procedure being performed (therapeutic or diagnostic), Catheterization no. (First, second, etc), Time when the complication occurred, Type of complication occurred.

Complications were defined as any anticipated or unanticipated event from which injury could have occurred or did occur, potentially or definitely because of performing the catheterization. Events were recorded at the time of identification, either at the time of the case or later if determined to be related to the procedure (follow up performed for 2 weeks after catheterization).

+Verbal permission was obtained from each patient and family prior to collecting data. Names were removed and replaced by identification codes. All information kept confidential .data used exclusively for the research purposes.

Statistical Analysis: The data analyzed using Statistical Package for Social Sciences (SPSS) version 25. Pearson's Chi–square test was used to assess statistical association between patients' clinical characteristics and complication of catheterization. A level of P – value less than 0.05 was considered significant.

Results

From the 612 patients who had catheterization, only 32 (5.2%) of them developed complications of catheterization. The age of patients was ranging from 1 day to 16 years with a mean of 6.03 and standard deviation of ± 4.33 years. 50% of patients were aged > five years.

Regarding gender, the proportion of female 328 (53.6%) was more than male 284 (46.4%) with female to male ratio of 1.16:1. According to congenital heart defects, 154 (25.2%) of children presented with VSD. ASD seen in 135 (22.1%) and 96 with PDA (15.7%) (figure 1).

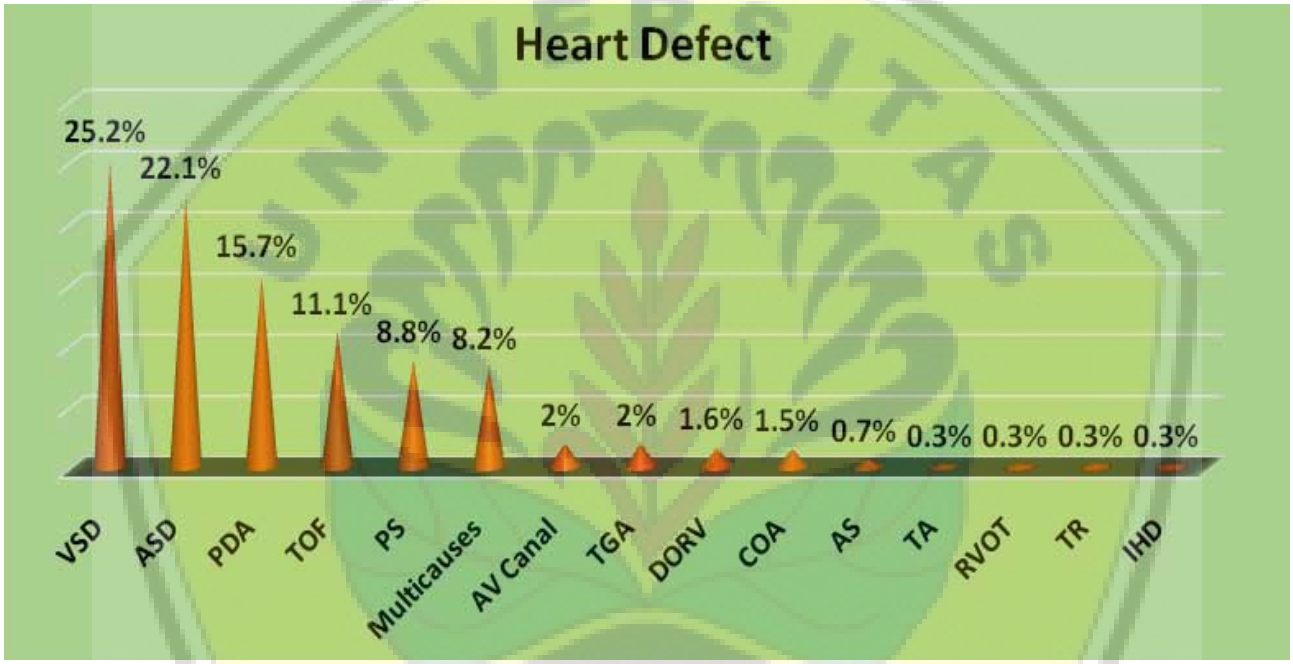

Figure 1: Distribution according to types of heart defects

Therapeutic cardiac catheterization was done for 340 (55.6%), while the remaining 272(44.4%) had diagnostic catheterization. The majority of patients, 563 (92%) required one operation and 48 (7.8%) had two operations, while there was one (0.2%) required three cardiac catheterizations (patient was 14 years old male with coarctation of aorta. Regarding types of complications, the most common complications were arrhythmia,5 (15.6 %), followed by device embolization, cyanotic spell, cardiac standstill and cold right lower limb (thrombosis/ischemia) (each of them was 4, with a percentage of 12.5%) .Death occurred in only one case (0.16 % of all patients). As shown in Figure 2.

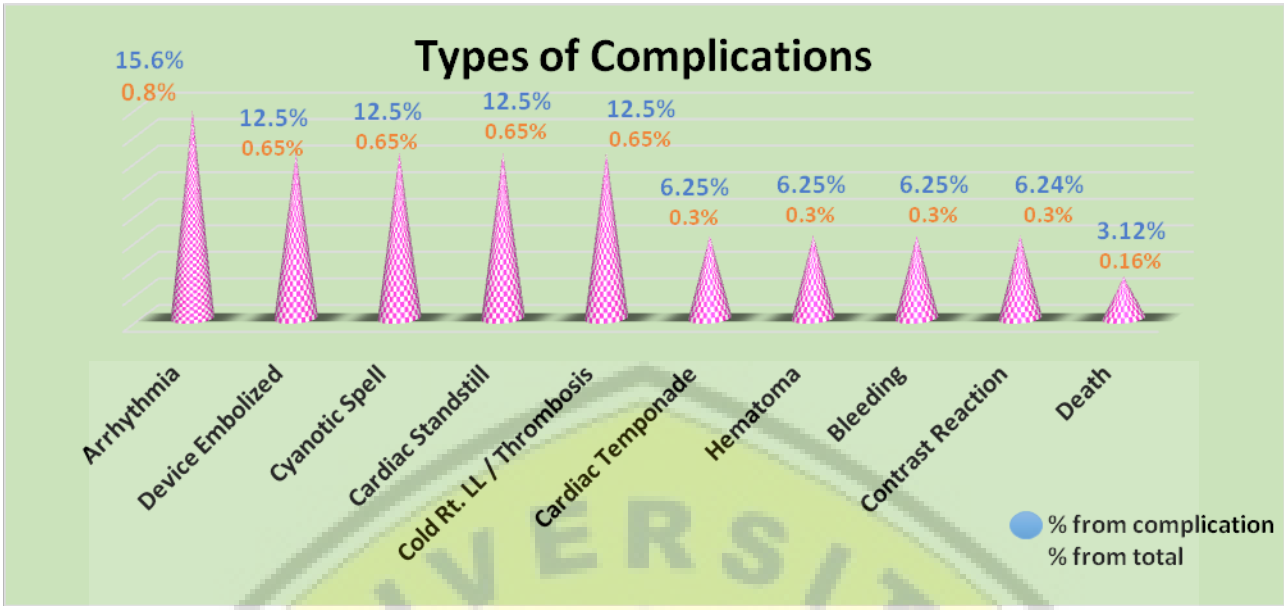

Figure 2: Distribution of study patients according to types of complications

Concerning time of occurrence of complications, 13 (40.6%) of these complications occurred within the 1st 24h after catheterization . The current study showed that in VSD, main complications were (cardiac standstill, contrast reaction, hematoma, valve damage).

In ASD (device embolization, arrhythmia).In PDA (bleeding from site of entrance and cardiac tamponade). As shown in Figure 3.

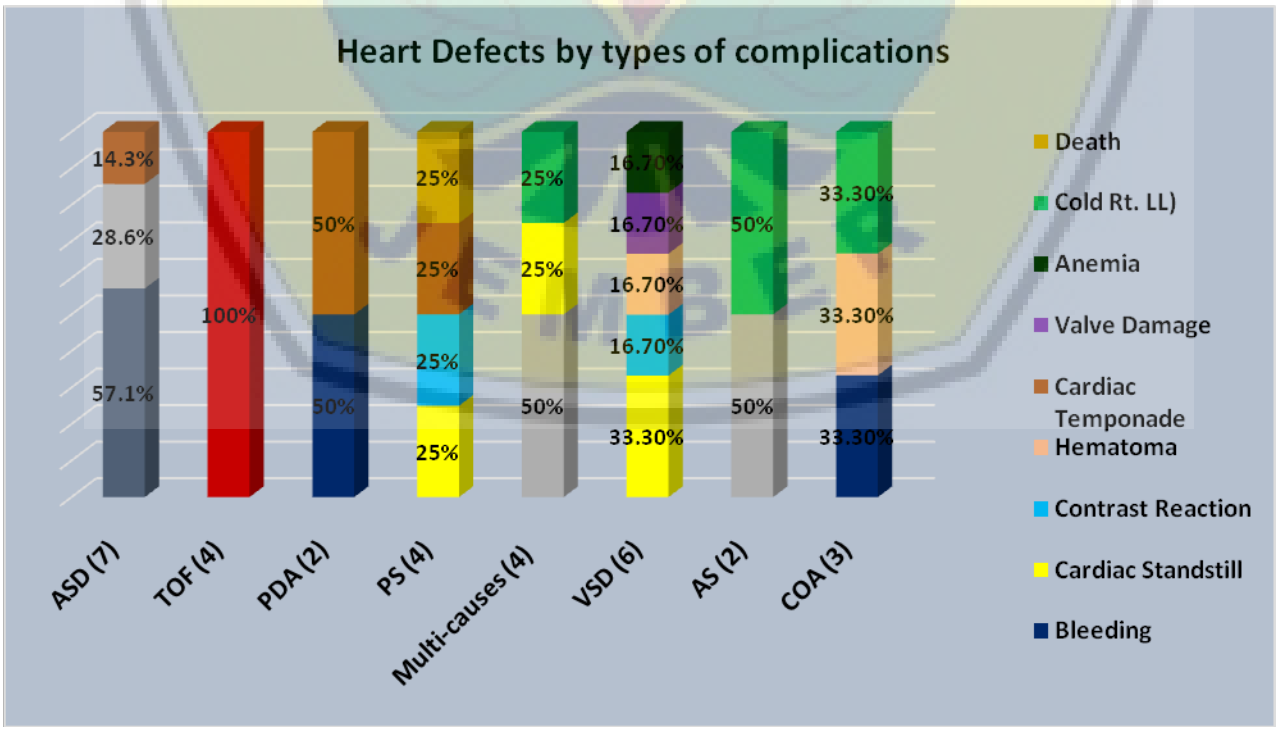

Figure 3: Relationship between heart defects and types of complications

The study showed that complications frequency was among patients aged ≤ one year (13.3%) with significant association (P=0.001). As shown in Table 1

Table 1: Association between complications and age of patients

Variable	Complications		Total (%) n= 612	P- Value
	Yes (%) n= 32	No (%) n= 580		
Age (Years)				
≤ 1	12 (13.3)	78 (86.7)	90 (14.7)	0.001
1 – 5	6 (2.8)	210 (97.2)	216 (35.3)	
> 5	14 (4.6)	292 (95.4)	306 (50.0)	

We found that, the patients who required therapeutic catheterization had a significantly higher risk (P=0.001) of complication than those who required diagnostic catheterization.

As the number of catheterization procedures increased in each patient, the patient had a higher risk of complications (P=0.001). As shown in Table 2.

Table 2: Association of complications with types and number of catheterization procedures

Variable	Complications		Total (%) n= 612	P- Value
	Yes (%) n= 32	No (%) n= 580		
Type of Catheterization				
Therapeutic	28 (8.2)	312 (91.8)	340 (55.6)	0.001
Diagnostic	4 (1.5)	268 (98.5)	272 (44.4)	
Number of Catheterization				
One	23 (4.1)	540 (95.9)	563 (92.0)	0.001
More Than One	9 (18.4)	40 (81.6)	49 (8.0)	

The higher proportion of complications was among children who suffered from AS 2 (6.25%) and COA 3 (9.3%), with significant association (P=0.001) between these two types of heart defect and developing of complications. Insignificant association was seen between complications of cardiac catheterizations and each of ASD, TOF, PDA, PS, VSD and multi-causes heart defect .As shown in Table 3.

Table 3: Association between complications and heart defects

Variable	Complication		Total (%) n=612	P- Value
	Yes (%) n= 32	No (%) n= 580		
ASD				
Yes	7 (5.2)	128 (94.8)	135 (22.1)	1.0
no	25 (5.2)	452 (94.8)	477 (77.9)	
TOF				
Yes	4 (5.9)	64 (94.1)	68 (11.1)	1.0
No	28 (5.1)	516 (94.9)	544 (88.9)	

Variable	Complication		Total (%) n=612	P- Value
	Yes (%) n= 32	No (%) n= 580		
PDA				
Yes	2 (2.1)	94 (97.9)	96 (15.7)	0.123
No	30 (5.8)	486 (94.2)	516 (84.3)	
PS				
Yes	4 (7.4)	50 (92.6)	54 (8.8)	0.451
No	28 (5.0)	530 (95.0)	558 (91.2)	
Multi-Causes				
Yes	4 (8.0)	46 (92.0)	50 (8.2)	0.358
No	28 (5.0)	534 (95.0)	562 (91.8)	
VSD				
Yes	6 (3.9)	148 (96.1)	154 (25.2)	0.390
No	26 (5.7)	432 (94.3)	458 (74.8)	
AS				
Yes	2 (50.0)	2 (50.0)	4 (0.7)	0.001
No	30 (4.9)	578 (95.1)	608 (99.3)	
COA				
Yes	3 (33.3)	6 (66.7)	9 (1.5)	0.001
No	29 (4.8)	574 (95.2)	603 (98.5)	

Discussion

In the current study, the frequency of Complications of catheterization were 5.2%, the most frequent complications were arrhythmia (15.6%), followed by device embolization, cyanotic spell, cardiac standstill and cold right lower limb (thrombosis/ischemia) (12.5% for each of them).Agreement with Mehta et al study in 2008, incidence of total complications (7.8%), in which most common complications were vascular, which was statistically significant, followed by arrhythmias .Significant complications requiring surgical intervention did occur[12].

Disagreement observed in comparison to Lee et al study in 2016,as noticed the incidence of complications was 16.2%. The most frequent overall complication was fever, followed by gastrointestinal complications such as vomiting, respiratory complication, vascular thrombus and vascular bleeding in which the most common severe complications were arrhythmias requiring cardio version or pacemaker (1.55%)[11]. The documentation of patients follow up plays a role in this discrepancies of results.

Another different results observed in Jayaram et al study in 2017, in which major adverse events occurred in a rate of 1.8%. The most were cardiac arrest, unplanned cardiac surgery and subsequent cardiac catheterization due to a complication during the initial cardiac catheterization procedure[13].

The discrepancies observed among the above mentioned studies in regard to complication may attributed to sample size enrolled in each study, in addition to many factors play an important role in sever complication, as: skill of the doctor, the equipment of the center and the proportion of therapeutic catheterization performed.

In the current study, higher proportion of complications seen in children presented with AS (6.25%) and COA (9.3%) with significant association (P=0.001).

Jayaram et al study in 2015, showed that complication of cardiac catheterization was the highest in patients with history of single ventricle (27%), with a significant association found between complication and the heart defect the patient had (P<0.001)[14].

Lee et al study in 2016 showed that patients with severe underlying structural heart defect had a significantly higher risk of complication than those who had mild to moderate structural heart defect [11].

In the current study, patients aged ≤ one year had the higher proportion of complications (13.3%), which agree with Mehta et al study in 2008, in which 16% of complications occurred in children < 6 months of age[12].

Also in other study, major adverse event after cardiac catheterization in Jayaram et al study in 2015 were significantly observed among patients aged less than one year to 18 years (42.1%) and 26% between one month and one year. A total of 19,608 cardiac catheterizations were performed,over a duration of 2 years and adults were included in this study.[14].

In the current study, Therapeutic cardiac catheterization was done for 55.6% of children. Patients required therapeutic catheterization had a significantly higher risk of complication than those required diagnostic one.

Agreement observed in Mehta et al study in 2008, interventional 58%, in which found that interventional procedures were more commonly associated with a major complication [12] .

Disagree with Lee et al study in 2016, which noticed that cardiac catheterization used for diagnostic purposes in majority of patients (61.7%), while interventional (38.3%)[11].

Difference observed among studies determined by many factors, as: the number of patients included in each study, congenital disease of them, intervention performed and type of procedure accomplished, as found that balloon dilation procedures have been reported to have more complications with aortic valve dilation, ranging from 24 to 50% [15].

Longer procedure time, using anticoagulants, may cause increase risk of complications in interventional catheterization.

The current study showed that as the number of catheterization procedures increased in each patient, the patient had a higher risk of complications (P=0.001).

Agreement with Lee et al study in 2016 which showed that the probability of overall complications in catheterization >3 times was 1.70 times higher than the first or second catheterization (p=0.009) [11].

Conclusion

1. The frequency of complications is 5.2%.
2. There is a significant association between the frequency of complications and patients with age below 1 year.
3. Patients who required therapeutic catheterization had a significantly higher risk of overall complication than those who required diagnostic catheterization.
4. As the number of catheterization procedures increased in each patient, the patient had a higher risk of complications.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Impact of Thyroid Dysfunction on Control of Diabetes Mellitus

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Abstract

Diabetes mellitus (DM) refers to a group of common metabolic disorders that share the phenotype of hyperglycemia. There are two broad categories of DM, designated type 1 and type 2. Thyroid hormones affect glucose metabolism via several mechanisms. Thyroid disorders and DM are the two most common endocrine diseases reported in clinical practice and each can influence the other. During hyperthyroidism, the half-life of insulin is reduced together within crease hepatic glucose production and increase in glucose gut absorption. In hypothyroidism, reduced glucose absorption from gastrointestinal tract is accompanied by diminished hepatic glucose Production.

The aim is to assess effect of thyroid dysfunction on control of diabetes mellitus.

This is a cross sectional study enrolled 60 patients with diabetes mellitus and thyroid disorder; 16 male (26.7%) and 44 female (73.3%) with a mean age of 47.2±13.6. The patients were collected from center of diabetes and endocrine disease in Al-Najaf and Al-Manathera center during the period from April (2018) to December (2018).the effect of thyroid dysfunction on glycemic control has been evaluated using HbA1c as marker of control.

There was a significant relationship between HbA1c and thyroid status in both hyperthyroid and hypothyroid patients. No significant difference was observed in the distribution of thyroid disorder between the two types of DM and among different age groups, but significant difference was reported between female and male diabetic patients.

Thyroid dysfunction inform of hyperthyroidism and hypothyroidism associated with poor glycemic control in diabetic patients.

Keywords: *Diabetes mellitus, thyroid; HbA1c.*

Introduction

Definition of DM: Diabetes mellitus is a clinical syndrome characterized by hyperglycemia due to absolute or relative insulin deficiency. The chronic hyperglycemia of diabetes is associated with long-term complications of various organs, particularly the eyes, kidneys, nerves and blood vessels. Several distinct types of DM result from a complex interaction of genetics and environmental factors [(1)].

Classification of DM:

Diabetes can be classified into the following general categories[2]:

1. Type 1 diabetes (due to absolute insulin deficiency)
2. Type 2 diabetes (due to a progressive β-cell secretory defect on the background of insulin resistance).

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3. Gestational diabetes mellitus (GDM)
4. Specific types of diabetes like, such as neonatal diabetes and maturity-onset diabetes of the young (MODY).

Epidemiology of DM: The latest estimates show a global prevalence of 382 million people with diabetes in 2013 and expected to rise to 592 million by 2035. Type 2 diabetes accounting for the majority (>85%) of total diabetes prevalence [3].

Hypothyroidism: Hypothyroidism is one the common endocrine disease caused by deficiency of thyroid hormone. It usually results from primary thyroid disorder with inadequate thyroid hormone production. Subclinical hypothyroidism occurs in the clinical setting of high a serum TSH level and normal serum FT4 concentration[4,5].

With the exception of iodine deficit areas, Hashimoto's thyroiditis is the most common cause of hypothyroidism. The prevalence of hypothyroidism in the developed world is about 4-5%. The prevalence of subclinical hypothyroidism in the developed world is about 4-15 %[6].

Clinical features of hypothyroidism range from asymptomatic patient to life threatening condition. The most common symptoms are decrease alertness, fatigue, cold intolerance, obesity, menorrhagia and hoarseness of voice, but clinical presentation varies with age and sex[7].

Hyperthyroidism: The term thyrotoxicosis and hyperthyroidism are used interchangeably and refer to state of excess thyroid hormone activity. Hyperthyroidism has a prevalence of 1% to 2% in women and 0.1% to 0.2% in men[8].

Graves' disease is the most common Cause of thyrotoxicosis, followed by toxic multinodular goiter (TMNG) and toxic adenoma (TA). Other causes are thyroiditis and gestational hyperthyroidism. Drug-induced thyrotoxicosis has been associated with amiodarone and iodinated contrast [9].

Graves' disease is an autoimmune disease characterized by formation of antibodies that stimulate TSH receptors to cause excess secretion of thyroid hormones. This results in hyperplasia of thyroid follicular cells and goiter. The cause of Graves' disease is not known, but genetic and environmental factors may play role, such as smoking, stress and dietary iodine [10].

Relation between thyroid dysfunction and diabetes mellitus: The prevalence of thyroid disease in diabetic patients was reported to be 13.4% with higher prevalence (31.4%) in female. Type 2 diabetic patients as compared to (6.9%) in male patients [11]. The prevalence of thyroid disorder in T2DM patients was reported to be 16% in Saudi Arabia[12]. Diabetes mellitus and Thyroid disorders are the two most common endocrine diseases reported in clinical practice. Diabetes and thyroid diseases have been shown toinfluence each other [13].

Thyroid stimulating hormone (TSH) level is inversely related to the insulin resistance and function of β cell, this relation can be explained by counter-regulatory effect of thyroid hormones on insulin action. These observations reveal that glucose intolerance is tightly associated with thyroid dysfunction [14].

Aim of the study: To assess the effects of the thyroid dysfunction on glycemic control in diabetic patients.

Materials and Method

This is a cross sectional study enrolled 60 patients with diabetes mellitus and thyroid disorder; 16 male (26.7%) and 44 female (73.3%) with a mean age of 47.2±13.6.

The patients were collected fromthe center of diabetes and endocrine disease in Al-Najaf and Al-Manathera center of diabetes during the period from April to December (2018).

Inclusion Criteria:

(1) T1DMor T2DM

(2) Previousor current diagnosis of thyroid disorder

Exclusion Criteria:

(1) History of thyroid surgery

(2) Pregnancy.

The patients were exposed to the questionnaire about the onset of diabetes mellitus, duration of the diabetes mellitus, type of treatment, the history of the thyroid disorder and type of treatment. Patients were informed about the study and verbal consent was obtained.

All patients were evaluated for glycemic control by HbA_{1c} and for thyroid status by TSH.Venous blood samples were drawn from all patients enrolled in the

study. $HbA1_C$ assay, was tested using NycoCard ™ READER II instruction manual, (NycoCard ™ $HbA1_C$). The TSHassay, was tested using a mini VIDAS assay, companynameis (BIOMETRIEUX).

Statistical Analysis: SPSS® Software (version 23.0 for Linux®) was used to perform statistical analysis. Qualitative data are presented as numbers and percentages, while continuous numerical data are presented as mean ± standard deviation. Comparison of study groups was carried out using chi-square test for categorical data and using Student's t-test for continuous data. Correlations were assessed using Pearson's product-moment correlation coefficient. P value of < 0.05 was considered statistically significant.

Results

The demographic data of the study population are illustrated in table 1.

Table 1: Demographic data of the study population

Gender	Male	16	26.7
	Female	44	73.3
Age	47.2±13.6		
Type of DM	Type 1	20	33.3
	Type 2	40	66.7
Initial thyroid	Hypothyroid	30	50.0
Disorder	Hyperthyroid	30	50.0

There was no significant difference in the prevalence of thyroid disorder between type 1 and type 2 DM as shown in table 2.

Table 2: The relation between types of DM and thyroid dysfunction

Type of DM	Hypothyroid	Hyperthyroid	P-value
Type 1	8 (26.7%)	12 (40.0%)	0.273
Type 2	22 (73.3%)	18 (60.0%)	

Chi-square = 1.20, d.f. = 1, P-vaule = 0.273

There was significant effect of thyroid dysfunction on glycemic control. Hyperthyroid patients had the worst control among the collected patients in this study. Table 3 and figure 1.

Table 3: Comparison between type of DM and thyroid status

Thyroid Status (TSH)	No.	HbA1c (Mean±SD)	P-value
Hyperthyroid (<0.2)	13	10.36 ± 2.28	< 0.001
Euthyroid (0.2 – 4.5)	31 7.67 ± 1.58		
Hypothyroid (>4.5)	16	9.38 ± 2.16	

ANOVA F = 9.76, P-value < 0.001

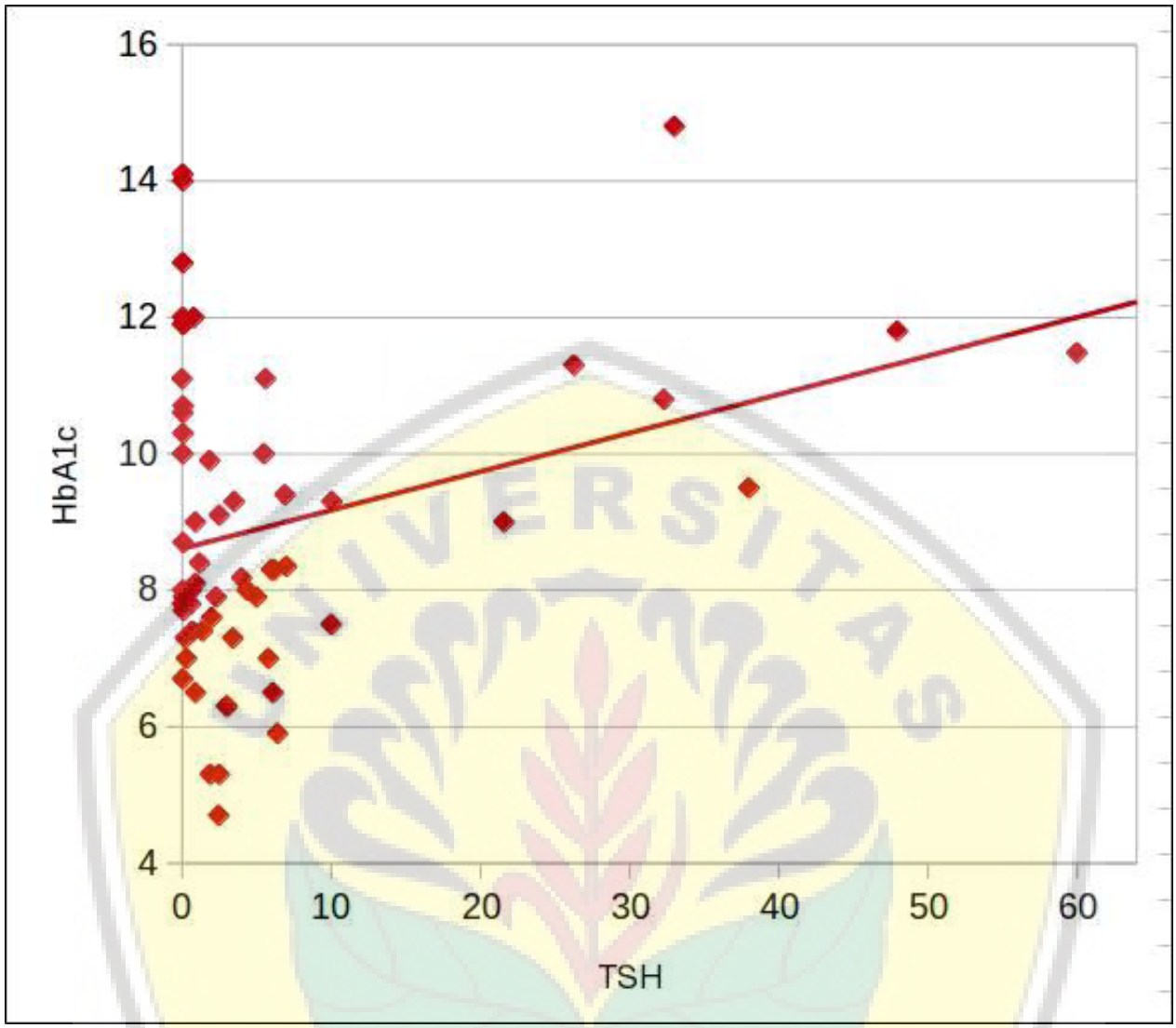

Figure 1: Scatter plot diagram showing the relationship between thyroid function test and HbA1c

In this study there was no significant relation between age of diabetic patients and thyroid dysfunction, however significant relation was observed between the gender and thyroid dysfunction. Table 4, 5.

Table 4: Comparison between age group and thyroid dysfunction

Age Group	Thyroid Disease		Total
	Hypothyroid (n=30)	Hyperthyroid (n=30)	
20 – 45	12 (40.0%)	13 (43.3%)	25 (41.7%)
46 – 65	18 (60.0%)	17 (56.7%)	35 (58.3%)

Chi-square = 0.07, d.f. = 1, P-value = 0.800

Table 5: Comparison between gender and thyroid disorder

Male	12 (40.0%)	4 (13.3%)		16	(26.7%)
Female	18 (60.0%)	26	(86.7%)	44	(73.3%)
Total	30 (100%)	30	(100%)	60	(100%)

Chi-square = 5.45, d.f. = 1, P-value = 0.020

Discussion

The present study revealed that poor control diabetes mellitus is more common among patients with thyroid dysfunction than in age matched patients with diabetes mellitus and euthyroid. These results highlighted the need for further investigations for thyroid dysfunction among patients with poor diabetic control.

Across sectional study done by Maxon et al (2011) in the USA revealed increased hyperglycemia in patients with Hyperthyroidism[15].

Hyperthyroidism has long been associated with hyperglycemia and different mechanisms are suggested including, reduced half-life of insulin due to increased insulin clearance rate, an enhanced release of biologically inactive insulin precursors and increase glucose absorption from the gut[16]. Moreover hyperglycemia, in hyperthyroidism, is aggravated by elevated hepatic glucose production and increased glycogenolysis [17]. These effects are responsible for worsening of subclinical DM and exaggeration of hyperglycemia in T2DM [18].

Evidence supporting glucose impairment in patients with hypothyroidism. Jiang et al. (2011) who studied a total of 1534 Chines adult, and found a higher TSH level in patients with metabolic syndrome compared to those in the non-metabolic syndrome group and concluded that subclinical hypothyroidism may be a potential risk factor for metabolic syndrome [19].

Bhattacharjee R et al (2017) in India, found baseline HbA1c levels were significantly higher in hypothyroid patients compared to control individuals despite similar glucose levels [20].

In hypothyroidism, reduced glucose absorption from gastrointestinal tract accompanied by diminished hepatic glucose production; in addition to reduced renal clearance of insulin, leads to diminished insulin requirements[21].

Lastly recurrent hypoglycemic episodes are reported in patients with hypothyroidism and T1DM and replacement with thyroid hormones reduced the fluctuations in blood glucose levels [31].

Conclusion

Thyroid dysfunction in form of hyperthyroidism and hypothyroidism associated with poor glycemic control in diabetic patients.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: Self-funding

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Estimation Ferritin Levels and the Correlation with Serum Iron Levels, Enzyme Liver and Excretory Function of Liver in B-Thalassemia Major

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Abstract

The study was designed to evaluate the medical relevance of ferritin levels with Iron levels, liver enzymes and Bilirubin levels and alkaline phosphatase (ALP) levels in beta-thalassemia patients. Blood samples were taken from thalassemia departments of a ministry of healthy hospitals. Forty three children with thalassemia (study group) and Forty three healthy controls (group control). We found that significantly increased ferritin level, measured as an index of iron overload, was demonstrated in thalassemia ($p< 0.01$). The mean serum iron level in children with thalassemia was significantly higher than the control group ($p< 0.02$). In addition, the mean serum liver enzymes levels [glutamic-oxaloacetic transaminase (GOT) and glutamic-pyruvic transaminase (GPT)], bilirubin levels, ALP levels in thalassemia patients was significantly higher than the control group. Moreover, a positive connexion was also observed between ferritin levels and iron levels and also, we found a positive connexion between liver enzyme level, bilirubin levels and ALP levels with ferritin levels in the beta thalassemia patients

Keywords: *Ferritin, Bilirubin, alkaline phosphatase, glutamic-oxaloacetic transaminase, glutamic-pyruvic transaminase.*

Introduction

Thalassemias are hereditary anemia due to a lack of production of one of the two protein chains of hemoglobin, alpha and beta-globin, in which the nature of causal mutations is very varied, ranging from point mutation to broad deletions.[1,2] The hemoglobin abnormality is the inhibition (β) or the decrease (β) quantitative synthesis of β chains whose structure remains unchanged. B-thalassemiais widespread in the Mediterranean, but also in South-East Asia, Black Africa, India and China. The prevalence is unknown, but the incidence of severe forms would be 100,000 births per year.[3]

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Beta-thalassemia is a genetic disorder of Hb, a substance found in RBC that carries oxygen through the body. Beta-thalassemia are of variable severity: some forms cause no symptoms and others are life-threatening. Severe beta-thalassemia (so-called major and intermediate) are characterized by anemia (lack of red blood cells and hemoglobin).[3,4] This results in pallor, a great fatigability, sometimes vertigo and breathlessness. Anemia can be accompanied by various complications (growth problems, bone deformities...). rely on the riskness of the anemia, the first signs will appear in early childhood (between 6 and 12 months) or later. In major forms, routine regular blood transfusions are necessary to allow normal growth and activity.

Conventional treatment of thalassemia major involves two main therapeutic modalities: blood transfusion and iron chelation treatment.[5] Both of these measures had a major impact on the life expectancy of patients. Transfusions can restore an acceptable amount of red blood cells and thus make the signal of anemia disappear or significantly diminish. However,

repeated transfusions have a serious side effect, hence cumulation of iron in the body of patients. Indeed, with each transfusion, the body receives a quantity of iron (contained in the normal hemoglobin of the red blood cells transfused) important.[6] If the red blood cells received are gradually eliminated, the body eliminates very badly the iron. The latter, accumulating in the organs, becomes toxic, disrupting the normal functioning of the organs affected (heart attack, fibrosis and cirrhosis of the liver) and may be the cause of death (including cardiac arrest). Hormonal disorders are the most common (sex hormones, diabetes, hyperthyroidism).[7]

Iron accumulation in the body (iron overload) occurs in thalassemia individuals. In people with thalassemia intermediate, this overload is mainly related to greater absorption of iron by the digestive system. [8]

The overload is earlier and more severe in thalassemia major, where it is mainly due to regular transfusions. Excess iron in the blood accumulates in different parts of the body (especially the heart, liver and hormone-producing glands) and can lead to complications in adulthood.[9] The accumulation of iron in the hormone-producing glands can lead to diabetes, delayed growth or puberty, early menopause, etc. Several treatments for this overload exist (see the chapter "What are the risks"). Finally, iron overload becomes, with the years, the central problem of the disease and the treatment.[(10,11)]

Therefore, iron overload influence on liver enzyme (AST and ALT) accumulation of iron can be status as reflected serum ferritin.[(12,13)]In my study was undertaken to evaluate theassociation between serum ferritin levels with serum ironlevels, liver enzyme (GOT and GPT) and the ability of excretion liver (ALP and Bilirubin).

Materials and Method

Patients and Sampling: Samples were collected from patients whom consulted the "Thalassemia Center" in the Babylon Hospital – Babylon Governorate – Iraq for the care and treatment thalassemia patients. 43 transfusion dependent beta-thalassemia subjects were selected in the present study during the period of October 2018 to January 2019. Forty three (43) healthy men and women donor were recruited to serve as controls.

Blood Samples: Five milliliters of blood were collected in morning from fasting subjects. The serum was obtained by leaving the blood samples to clot, centrifuged at 3000 rpm for 10 minutes. After centrifugation, aliquots of serum was stored at -20ºC until use for biochemical tests.

Determination of total Iron: The determination of total Ironin the serum was achieved by colorimetric method with the (Randox, UK) kit.

Determination of serum Ferritin: Serum Ferritin concentration was assayed using a commercial kit (Biosystems, Spain). The concentration of serum Ferritin in ng/ml was determined by the following formula.

Serum ferritin (ng/ml)=(A2-A1)sample/(A2-A1) standard x C

Where A1 =first absorbance, A2=second absorbance and C=standard concentration.

Determinations of liver enzyme: Assessment of serum GOT colorimetrically: Serum GOT is measured by a colorimetric method using commercially available kit (Giesse).

Assessment of serum GPT colorimetrically: Serum GPT is measured by a colorimetric method using commercially available kit (Giesse).

Determination of total Bilirubin and ALP: Serum TBil and ALParemeasured by a colorimetric method with Biolabo kit (France)

Statistical Analysis: The results are expressed as mean ± SD (1SD). Statistical analysis was performed using student's *t*-test; *p* values <0.05 were considered significant.

Results

Children with thalassemia had significantly higher Ferritinlevels and serum iron levels ($p<0.01$, $p>0.05$),respectively thancontrols, in table (1), which suggested elevated iron overload and the presence of increased ROS in thalassaemiapatients. In Fig(1), significant positive correlation was found between serum Ferritin levels and serum iron levels ($R^2= 0.90$, $p<0.05$).

The serum liver enzyme (GPT, GOT) level s tended to increase in these patients, the mean value of GPTand GOT in patients were (40.27±15.2 and 38.48±14.1) (U/ml) while the mean value for control were 7.91±1.2and 8.09±2.3 (U/ml), respectively. Liver enzymelevelswere found to be higher in patient group compared withcontrols with P value of less than0.05 as shown in Table (I) and also, shown in Fig (2)and Fig(3),

significant positive correlation was found between serum Ferritin levels and liver enzyme levels. The Total serum bilirubin (STBIL) levels and serum alkaline phosphate (ALP) levels to were elevated in these patients, the mean value of TBILand ALP in patients were 1.94±0.63 mg/dl and 195.09±79.93 U/L while the mean value for control were 0.64±0.03mg/dl and 83.61±37.41 U/L, respectively. TBIL levels were found to be higher in patient group compared with controls with P value of less than 0.05 as shown in Table (I) and also, shown in Fig (4), significant positive correlation was found between serum ferritin levels and TBIL enzyme levels. Also, ALP levels were found to be higher in patient group compared with controls with P value of less than 0.05 as shown in Table (I) and also, shown in Fig (5), significant positive correlation was found between serum Ferritin levels and liver enzyme levels.

Table 1: The mean values of ferritin, Iron, liver enzyme (GOT and GPT), bilirubin and ALP in serum of patients in thalassemia and controls

Variables	Mean of value	Std. Deviation	P<0.05
serum ferritin of controls (ngm/ml)	55.66	41.74	0.01
serum ferritin of patients (ngm/ml)	3131.25	2658.52	
serum iron (umol/L) of controls	19.74	3.2	0.02
serum iron (umol/L) of patients	26.72	4.2	
serum GOT(U/ml) of controls	7.91	1.2	0.01
serum GOT(U/ml) of patients	40.27	15.2	
serum GPT(U/ml) of controls	8.09	2.3	0.02
serum GPT(U/ml) of patients	38.48	14.1	
serum bilirubin (mg/dl) of controls	0.64	0.03	0.04
serum bilirubin (mg/dl) of controls	1.94	0.63	
serum ALP(U/L) of controls	83.61	37.41	0.03
serum ALP(U/L) of patients	195.09	79.93	

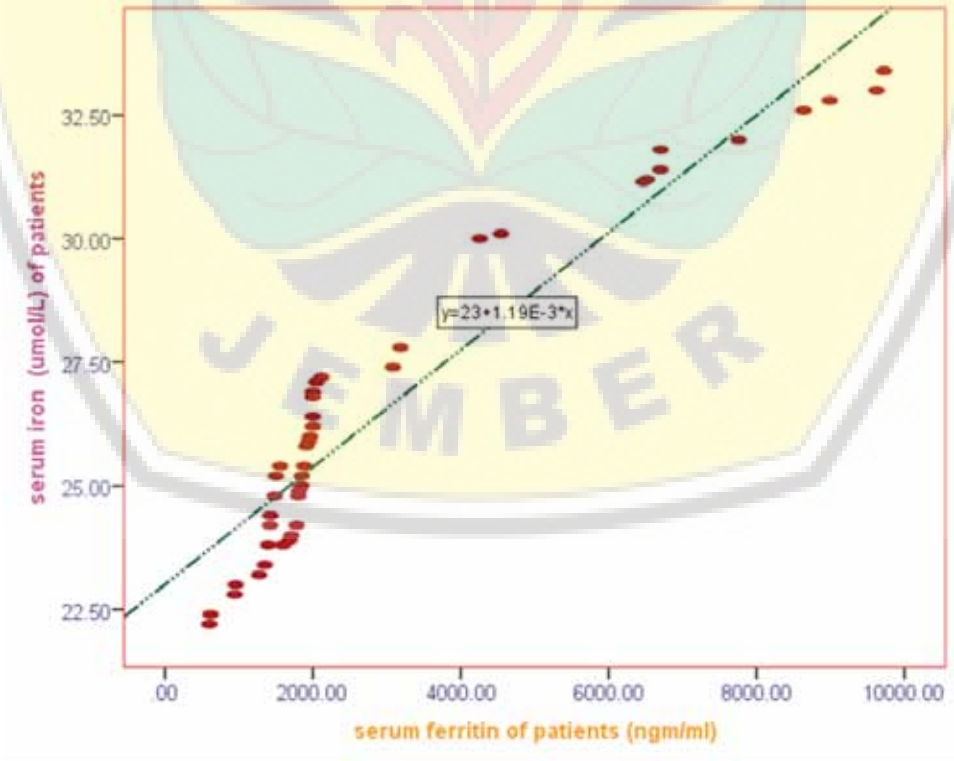

Fig (1): Correlation between serum ferritin and iron levels in thalassemia (n=43, R^2= 0.9, p< 0.05)

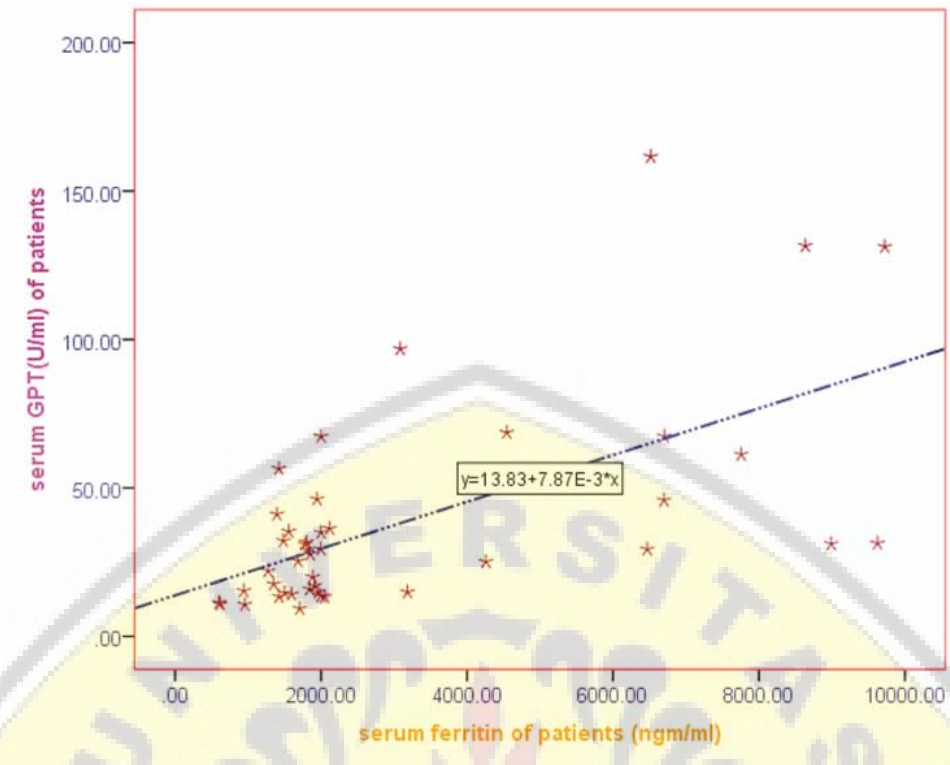

Fig (2): Correlation between serum ferritin and GPT levels in thalassemia (n=43, R^2= 0.7, p< 0.05)

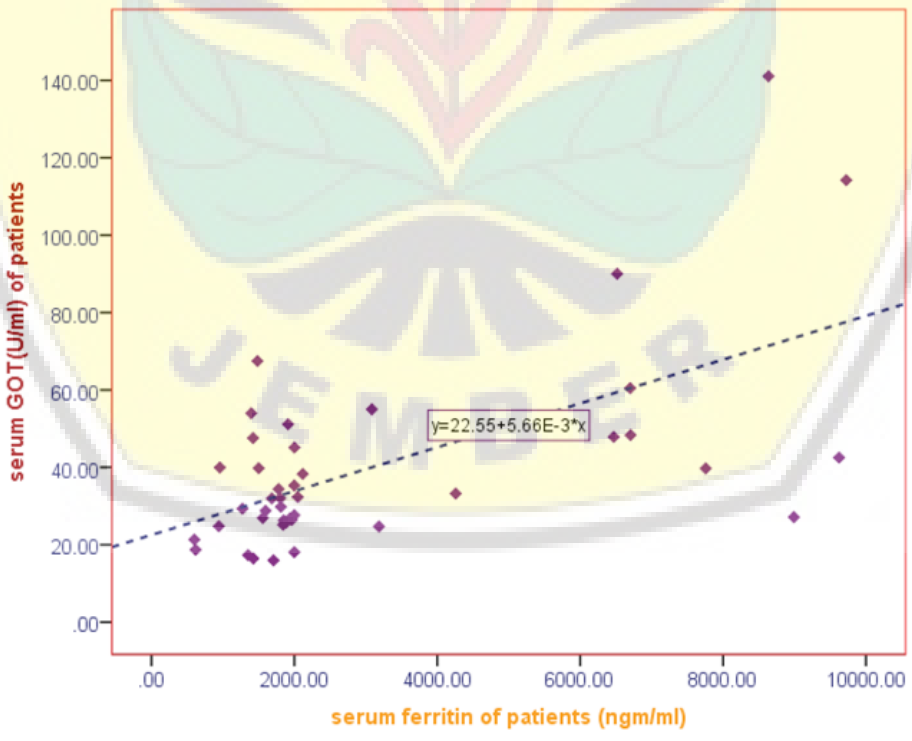

Fig (3): Correlation between serum ferritin and GOT levels in thalassemia (n=43, R^2= 0.59 , p< 0.05).

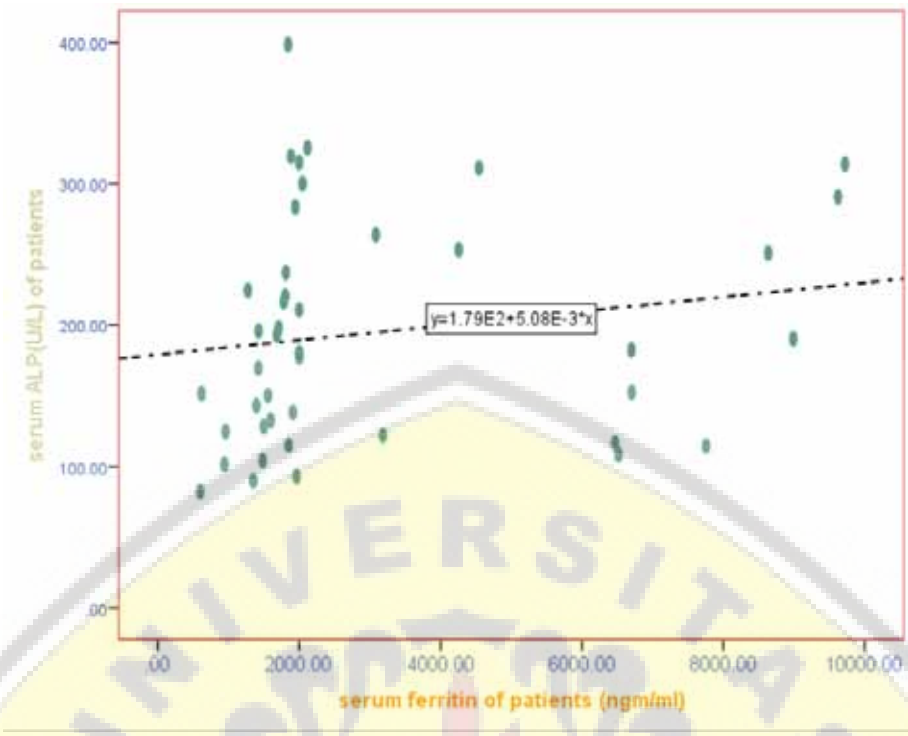

Fig (4): Correlation between serum ferritin and bilirubin levels in thalassemia (n=43, R^2=0.54, p< 0.05)

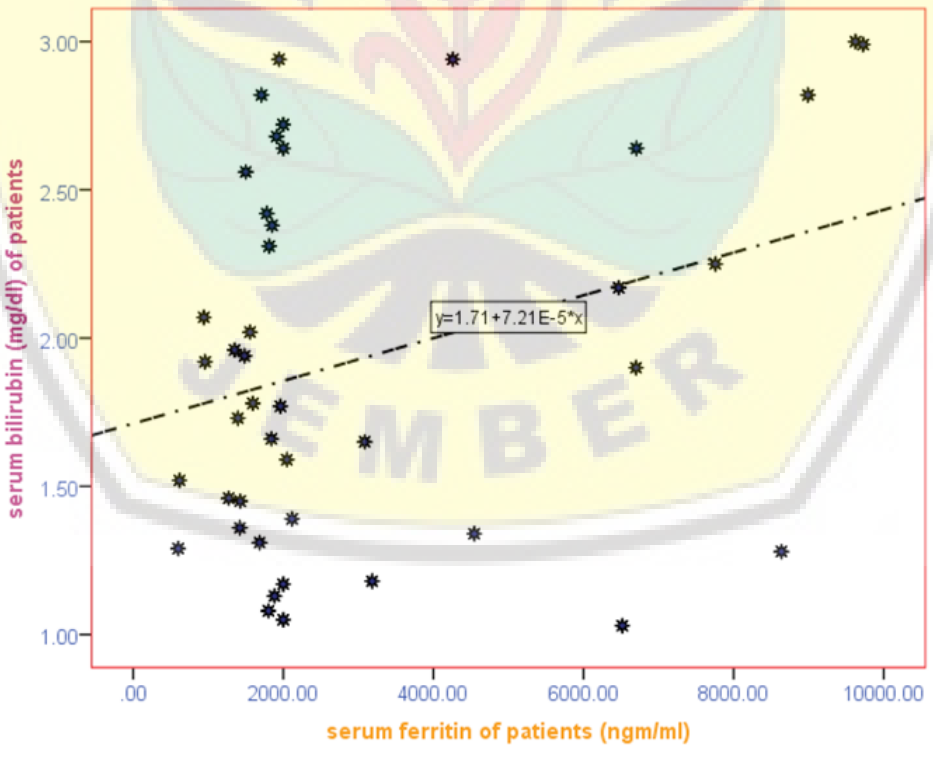

Fig (5): Correlation between serum ferritin and ALP levels in thalassemia (n=43, R^2= 0.52, p< 0.05)

Discussion

Blood transfusions can restore an acceptable amount of red blood cells, making the symptoms of anemia disappear or decrease significantly. However, repeated transfers have a serious side effect: they lead to iron build-up in the patient's body. The latter, accumulated in organs, becomes poisonous and disrupt the normal functioning of the affected organs (heart attack, fibrosis and cirrhosis of the liver, where iron will interact with hydrogen peroxide and free radicals lead to liver damage and reduce its effectiveness.

The suggestion that serum ferritin (SFer) may be taken into account as a biomarker ofiron overload in exposed populations has been recently. Porter JB.is able to demonstrate that in thalassemia patients there were the correction between serum ferritin and levels of body iron withiron overload. In our study, we found theSFer elevated in thalassemia patient with controlIn other report,[14] Nadeem I et alfound SFer in patient thalassemiais very high ferritin levels in tow center of thalassemia.[15] Ameli Metalconducted The mean SFer was significantly higher compare with controls. This study similar finding were seen by Rameshwar L et al who observe SFer were increased in β-thalassaemic children.[16,17]However, repeated transfusions have a serious side effect: they produceto cumulation of iron in the body of patients.

Excess iron is toxic to many tissues, including the liver, endocrine organ and heart, leading to a series of complications which cause morbidity and mortality in this patients.[18]

The iron overload lead to formation of ROS such as superoxide anions ($O^{\cdot}2^{-}$), hydroxide radical($^{\cdot}OH$) and hydrogen peroxide (H_2O_2) which induces oxidative stress in thalassemia major patients via Fenton reaction.[19]

$$Fe2+ + H_2O_2 \rightarrow Fe3+ + OH^{\cdot} + OH^{-}$$

Naithani et al found that markers offree radical injury such as MDAwas significantly elevated in thalassemia compared with control.[20] Similar study by Talat who suggested MDA levels are elevated in serum of patient with thalassemia in Hilla.[21] In our study, A significant increase in serum total Iron concentration (p<0.005) in β-thalassaemia major patients compared to controls and positive correlation between SFer and serum total iron. Our findings are in agreement with the other researchers.[22,23]

In our study, we found the SGOT and SGOT elevated in thalassemia patient with control. This is in agreement with the results of other studies, they found liver enzyme SGOT and SGPT are elevated due to damaged liver byiron overload in liver cells.[24,25] Therefore the cumulation of iron influence on the liver enzyme because the iron have toxic effect on the liver cell.

Salama K et al suggected the correction between liver enzyme with iron overload in major thalassemia.[26] Our study, we found the positive correction between liver enzyme and ferritin because iron over load can be status reflected as ferritin. Israa I. M.et al observed the similar study fromour study, they conducted the positive relationship between SGPT with iron overload.[27] The other report that proposed there are the correction between GOT and GPT in serum of thalassemia patients with ferritin level when the ferritin level are above 1000ng/ml.[28]

The patient of β-thalassemia had dysfunctions of liver led to elevate SBIL and ALP because the liver cell undergo damage by iron accumulation in which the reactive oxidative species are elevated therefor our study observe the BIL and ALP are elevated and positive correlation with ferritin levels. In present study, our findings are in correspond with most ofthe earlier studies suggesting the BIL are raise in β-thalassemia patient compare with control.[28] Sultana N. et al. concluded BIL elevated led tohemolysis of red blood cells in Majored thalassemia.[29] Israa et al found serum BIL and ALP level in patient with major thalassaemia was significantly lower than the healthy group.[26]

From this point of view, our finding suggested that elevated ROS depend onthalassemia progression may be due, at least in part, to the catalyzation of oxidative stress depend on iron load reflected by ferritinled to damage liver cells and then very sensitive indicators for liver function.

Conclusions

Our finding shows that thalassemia is associated not only with elevated iron levels but can be increased ferritin levels. A systematic investigation of factors associated with increased damage of the liverwithin the correlation of ferritin with enzyme liver (GPT and GOT) and the ability of excretion liver. We also suggest that formation of ROS increased present in thalassemia may be resulted from iron levels and ferritin levels as an index of iron overload.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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The Effect of Cross-Training Associated with the Technique of (Cryotherapy) in Some Components of Lipids and Hormone Cortisoland the Enzyme (Lipase) in the Female Participants in the Fitness Courses

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Abstract

The study addressed the topic of training participants in fitness courses without relying on improvement and control of some lipid components and hormones in means of the accompanied cross-training technique of (Cryotherapy). The problem was reflected in the lack of effective improvement of the level of physical fitness of the female participants in these fitness courses. The study, therefore, aimed to see how this program affects both the percentage of fat and body mass (BMI) as well as the hormone cortisol and the lipase.

The researchers used the experimental method to solve the problem and applied the search to an intentional sample of (15) participants in the Green Apple Fitness center, aged between (32-38) years. The researchers used the cross training of the Cryo technique, carried out in three training sessions (45-60) minutes each for (12) weeks. The program is accompanied by four (Cryotherapy) units per week each of (50-70) minutes in coordination with the training program. The researchers arrived at several conclusions, which are appropriate for the cross-training with Cryotherapy technique for female fat loss and stimulating the activity of hormone cortisol and the lipase enzyme.

Keywords: *Cross training, Cryotechnique, hormone and enzyme, some fat ingredients.*

Introduction

The individual health in community is one of the first tasks for researchers and academics in the world. He who plans to make devices or manage the right life is human. So the development of ideas contributes to solving the problems of society based on the evolutionary need of such devices to generate the need first, to test and measure it secondly and to work for prevention third. To achieve this, the process of linking the requirements of the urgent need, such as the use of devices with the correct programs, as a preventive and often therapeutic preventive method has placed physical and health programs and medical devices on social media channels and precisely on the internet in order to be recognized by women and men alike. Work is underway, yet under specialized instructions which a specialist, to achieve the goal that perhaps leads to weight decrease or fat dissolution or assume physical ability, especially for women who need physical strength to sustain life first and to achieve full health that helps achieving accountable life priorities.[1]

In view of what is mentioned, women are no longer receptive to sporting activity or nutritional slimming programmes; this is illustrated in the apparent lack of voluntary participation in the fitness courses. Women,

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instead, have headed to beauty shops and clinics hence the problem has become bigger. This problem has to be addressed, as the researchers work to interlink physical and nutritional programs and the use of (Cryotherapy) to contribute together to solve one of the most difficult problems, namely the optimum use of physical, nutritional and health programs. The problem is also associated with the medical work which is subject to the cultural intellectual knowledge that women accept and under which they operate in order not to stumble into the reluctance to participate in the physical fitness and nutrition programs.[2]

Cross-training is one of the most popular and effective method of training in physical capacity development. Moran Wemaglin explains that cross-training has been used in some way in the history of sports. Some studies suggests that cross-training is a method of training that combines two or more activities in the exercise program and is designed specifically for the development of fitness and the provision of necessary comfort for stressful muscle groups, reduce the infection rate, eliminate the boredom in training and reduce the risk of developing combustion resulting from participation in individual training programmes. Also points out that cross-training is a strategy used by trainers to organize the training program and fitness activities. So some studies point out that cross training helps to deliver Substantial improvements for endurance during aerobic exercise, anaerobic as well as for elements of strength, speed, endurance, flexibility and agility, all of which will affect the athletic performance of the specialist activity.[3]

The aim of the study is to develop a cross-training programme based on the scientific basis.And then set suitable periods of time for (Cryotherapy) that is coordinated with the training program. The study also aims to find out the values of each of the search variables (percentage of fat, BMI, body mass, cortisol and enzyme lipas). Finally it attempts to identify differences in the tribal and sediment tests of the search variables. The researchers have imposed statistically significant differences in the research variables (lipid ratio, body mass, BMI). Also, there are statistically significant differences in the hormone cortisol and lipids.

Methodology

The researchers used the experimental method as it suits the nature of problem solving. A sample of 15 volunteer women from Green Apple Center were intentionally. They all were subject to the design of the one group. The sample specifications were the height (1.66 m, ±0.05) whose weights range (86.9+) kg.. The age was (36.8) years. The research tests included the following:

1. Lipid percentage test (gaskill,2007, p167)

The following equation was used to obtain the results as follows:

Percentage of fat = }(body weight – body weight without fat)/body weight{x 100]

2. Body mass index (BMI) test: (andersone. 2011. p164)

The variable results are obtained according to the following:[4]

$$\text{Body mass index} = \frac{\text{Weight}}{\text{Square length in meters}}$$

$$\text{BMI} = \{ M/(l)^2 \}$$

3. Body mass: This indicator is obtained by measurement of the weight and length.

4. Test of obtaining the results of the hormone cortisol and enzyme (lipase)

After the tested sample member sits on a chair in resting status, 5cc blood is transfused in special tubes before and after the completion of the training program. This blood is handed over in a special case to the specialized laboratory by the tester. It is treated to get Values variables in this respect.

The researchers conducted a pilot experiment dated 3/12/2018, which was intended to identify errors and test method, after which the researchers conducted the pretests dated 6/12/2018 with the help of a specialist physician and a specialized physical fitness staff. The main experiment, dated 8/12/2018, lasted until 9/3/2019, as described in the chart below.

Table (1): Shows the training program

T	Week	aim	Time	Target areas for the Ferraio	Training intensity
1	First	Cryo	45 Min.	Buttocks – abdomen – arms	
2	Second	Comfort	-		
3	Third	Fitness	60 Min.	Two Gyro and breathing devices	60-80%
4	Fourth	Comfort	-		
5	Fifth	Cryo	50 Min.	Buttocks – abdomen – arms	
6	Sixth	Comfort	-		
7	Seventh	Fitness	60-80 Min.	Of a comprehensive	60-80%
8	Eighth	Fitness	60 Min.	Oxygen-Roasting	60%
9	Ninth	Cryo	60 Min.	Buttocks – abdomen – arms	
10	Tenth	Comfort	-		
11	Eleventh	Fitness	60-80 Min.	Public and private force	80%
12	Twelfth	Fitness	60 Min.	Oxygen-Roasting	60%

Afterwards post tests were performed on 11/3/2019 under the same time conditions and requirements of the pretests.

Results and Discussion

Table (2): Means, & the standard deviations and the T- value for the tests of the research variables.

Variables	The pair test		Post Test		Mean diff.	SD diff.	Calcu. value (t)	Level of significance	The result
	Mean	SD	Mean	SD					
Lipase Enzyme	121.16	4.26	178.8	7.8	57.64	5.88	9.8	0.000	Sig.
% Fat	0.43	0.02	0.284	1.73	0.144	0.03	3.9	0.000	Sig.
Body Mass	86.9	1.34	77.6	1.77	9.3	1.6	5.8	0.000	Sig.
BMI	37.127	0.783	32.03	0.135	5.09	1.03	4.9	0.000	Sig.
Cortisol	12.7	0.70	16.86	0.91	4.16	1.12	8.7	0.000	Sig.

*Statistical significance under 14(df) and error level ≤ 0.05.

The former table shows that the enzyme (lipase) has improved clearly and for the benefit of the CRTs test as well as the percentage value of fat and body mass and the variable (BMI) well as the (cortisol) variable.[5] In the light of that improvement, the researchers believe that the Cryotherapy was partially influential as in the percentage of fat and body mass and (MBI) due to the effect of freezing and cracking and even the death of fat cells and their non-moving from the place of fat concentration that is targeted in the abdominal area,[6] buttocks and muscle area (triple muscle). Besides, following the instructions for food was also one of the reasons for the appearance of the results (moral) and this is confirmed who says "Obesity management relies heavily on reducing Calories taken by food and drink and wasting more of them in sports ".[7] This is another indication of the emergence of moral differences as the training program and units and the time of each unit and the type of training and its severity increase the leakage of fat.[8] This means Cryotherapy is helpful in freezing, cracking fat cells with the support of sports activity. "Regular exercise of sports," it is believed, "increases energy consumption, resulting in decreased body fat.[9]

Moreover, the appearance of the moral difference of the cortisol hormone is to synchronize the organized sport program which targets and increases "the concentration of cortisol hormone and leads to the speed of metabolism".[10]

As for the appearance of moral differences of the enzyme (lipase) it is known that this enzyme of the analyzer (interference in the interactions within the body and help in the use and analysis of nutrients (lipase) that turns fat into fatty acids and clerrol".[11]

In short, this is the result of the interaction between the response of the sample and assisting them in working with instructions and adhering to the organized sporting activity, which facilitated with that scientific technique the emergence of these results.[12]

Conclusions

The Cryotherapy technique accompanying the training programme contributed to reducing the fat rate and improving the MBI and the body mass. The impact of the training program is the stimulation of the cortisol hormone and the Lipas and contributed to increasing metabolism and lowering the fat ratio. Periods and time of use of the Cryotherapy technique contributed to the improvement and level of scalability of the participants. The researchers recommended the use of modern techniques with the specialized training program that contributes to reducing the level of fat in the body. Adhering to the food regulations with modern technologies and the training program improves the level of women in all directions. and conduct similar research but on other samples and levels.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Study the Impact of Selenium in Women with Osteoporosis in Al-Anbar Governorate

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Abstract

Osteoporosis is one of the bone diseases that lead to fractures . The aim of this study is the effect of selenium on osteoporosis. This study was conducted on women in Anbar Governorate. The study includes (60) women aged 25-65 years. 15 women were taken as control groups aged 25-35 years and 45 women with osteoporosis.

The results obtained from the measurement of selenium concentration showed significant difference (p£0.05) in the level of selenium in women with osteoporosis is comparing with a control group.

Keywords: *Osteoporosis, Selenium, Bone, Bone mineral density.*

Introduction

Selenium is a chemical element with symbol Se and atomic number 34.Selenium salts are toxic in large amounts, but trace amounts are necessary for cellular function in many organisms, including all animals. Selenium is an ingredient in many multivitamins and other dietary supplements. It is a component of the antioxidant enzymes glutathione peroxidase and thioredoxin reductase.(1)

Selenium plays a role in the action of the thyroid gland and in every cell that uses thyroid hormone. It may also prevent Hashimoto's disease, in which the cells of the body attack the thyroid gland. (2)

In biochemical systems, selenium was found in amino acids selenomethionine, selenocysteine and methylselenocysteine. In these compounds, selenium plays a role similar to sulfur. Another organic compound that occurs naturally is dimethylamine. Selenium is a nutritional component of nutrients that acts as an adjunct to the work of antioxidant enzymes, such as glutathione peroxide.(3) (4)

The group of glutathione peroxidase enzymes (GSH-Px) stimulates certain reactions that act to remove the reactive oxygen in hydrogen peroxide and organic hydrobroxides.

$$2GSH + H2O2 \text{ ---- } GSH\text{-}Px \rightarrow GSSG + 2\ H2O$$

The thyroid gland uses a selenium component, which acts to stimulate the thyroid gland and secrete various thyroid hormones as the T3 hormone is one of the most important thyroid hormones, controlled by the total metabolic rate in the body. Without selenium, the T3 hormone cannot be produced and can be catastrophic to a wide range of body systems.(2)

Selenium is a rare element in the human body. Humans need very little selenium. Only about 50-200 µg is needed. Selenium can be toxic if more than 400 micrograms are taken. Selenium deficiency is rare. Although selenium has some beneficial effects on the human body, it has some harmful effects and should be eaten very little.

Sources of Selenium: Selenium is found in meat and grains. Selenium can be obtained from nuts, brewer's yeast, broccoli, whole rice, chicken, dairy products, garlic, onions, liver, black honey, salmon, tuna, seafood, vegetables, wheat germ and whole grains. Selenium-containing herbs: chamomile, spinach, garlic, parsley, peppermint and others. And best sources Nuts Brazilian nuts.(5)

1	Atomic Absorption Spectrophotometry Analytic JENA NOV AA 350 with Hydrad System Germany 2012
2	Triton x-100
3	Ammonium dihydrogen phosphate
4	(HNO_3) Nitric acid
5	Water

Method

Preparation of Work Solutions:

1. 10% of Triton were prepared by taking 10ml of the material and put in a 100ml volumetric flask or by taking 5ml of the material and put in a 50ml volumetric flask.
2. 20% of the ammonium dihydrogen phosphate were prepared by taking 20 gram of the substance and dissolve it in distilled water (free of ions) and transfer to a 100ml volumetric flask or by taking 5gram the substance and dissolve it in distilled water (free of ions) and transfer to a 25ml volumetric flask
3. In volume flask 500 mL were added 400ml of iodized distilled water and were added 1 ml of concentrated nitric acid and were added 25 ml of 10% Triton x-100 and add 5ml of (20%) ammonium dihydrogen phosphate. The volume was supplemented to the mark by distilled water free of ions and mix well to ensure the homogeneity of the mixture within the volumetric flask and the solution was used to measure the toxic elements in the serum.

Procedure: Were drawed 500µl (0.5ml) of the samples and transferred to a Volumetric flask (10ml). The volume was supplemented to the mark by the pre-prepared dissolving solution (10% Triton x-100 and nitric acid (HNO3) and (20%) of ammonium dihydrogen phosphate and ion-free water).

Were prepared standard solutions of stock Se (1000ppm) and were prepared different concentrations standard solutions for the work of the standard curve. Concentrations of prepared solutions were as follows:25ppb; 50ppb; 75ppb; 100ppb

The samples were measured on the hydrad system at wavelength (196nm) and at 900C° and 10mA (1.0nm) slil width.

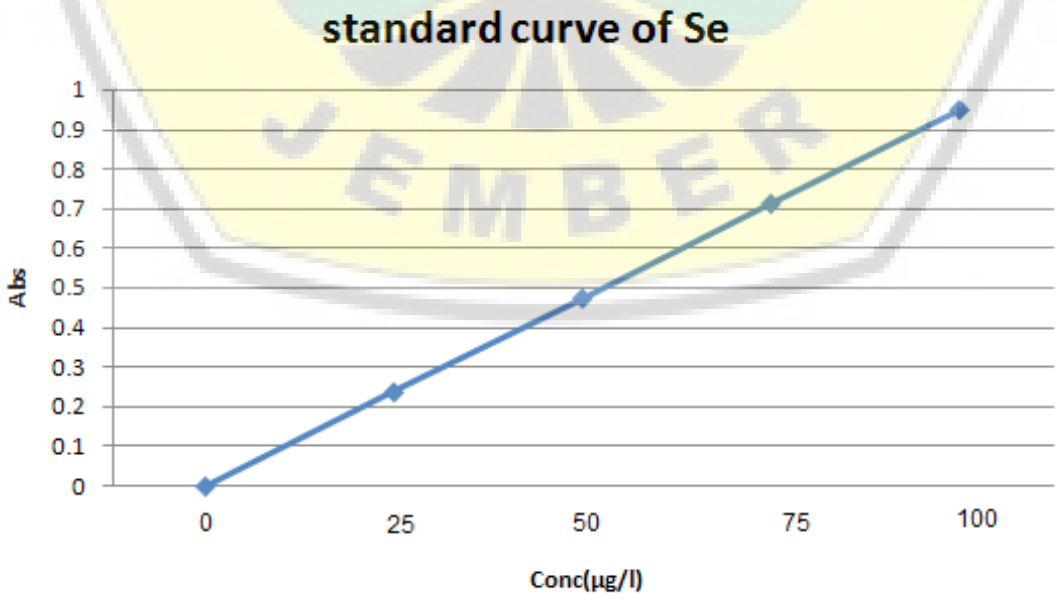

Figure (1): The standard curve for estimating selenium

Results and Discussion

A statistical analysis was performed to compare results of the control group and women with osteoporosis, the following results were obtained.

Table (1): Levels of Selenium in patients with osteoporosis and control group

Factor		Mean	Std. Deviation	T Test	P_value
Se (ppb)	Patient	60.27	15.67	-2.283	0.026
	Control	70.56	13.32		

The value of mean ± S.D (60.27±15.67) in (p£0.05) in patients with osteoporosis while the value of mean ± S.D (70.56 ± 13.32) in control group it mean that there was a significant difference in the value of p where (p£0.05) in patient with osteoporosis comparing with control group .Due to the lack of concentration of selenium causes a decrease in selenium proteins. It is known that what is not Less than nine selenoid proteins are Osteoblastic in the human fetus.[6][7][8]

These proteins act to protect bone cells from oxidative stress in the bone the excess in intracellular reactive oxygen species (ROS) are thought to contribute to the development of osteoporosis by inhibiting Osteoblastic differentiation of bone marrow stromal cells (BMSCs).[9][10][11]

There is a relationship between concentration of selenium and bone mineral density (BMD) the low selenium concentration leads to decreased bone mineral density (BMD) and therefore osteoporosis.[12]

Results obtained with previous results.[12][13]

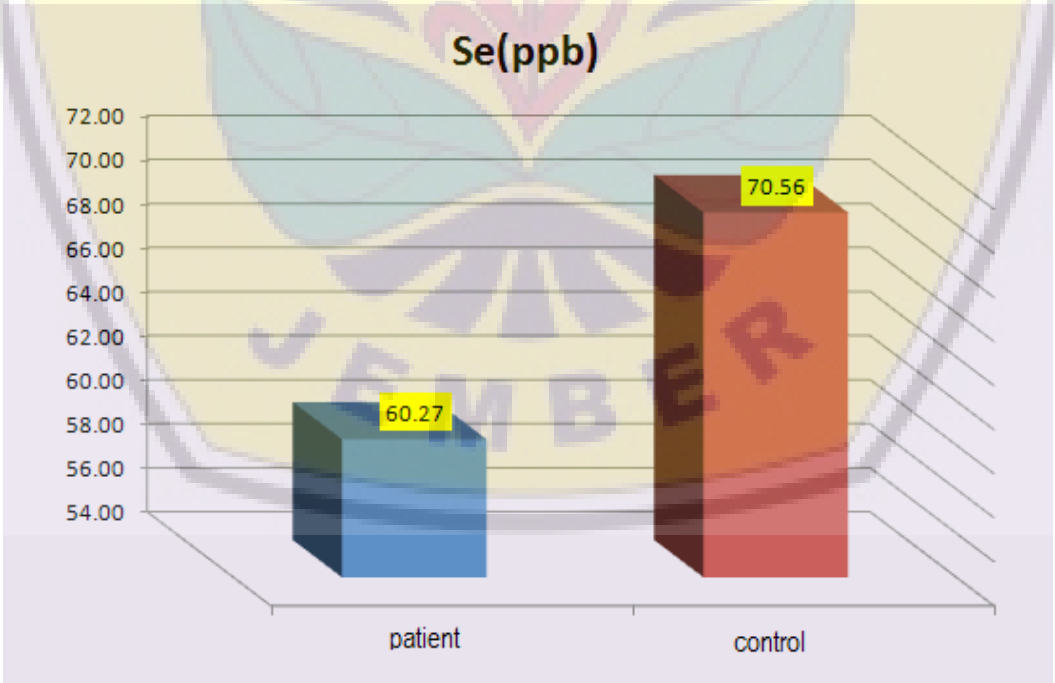

Figure (2): Serum selenium for the group of women with osteoporosis and control group

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

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The Impact of the Method of Teaching the Mediator Different Speed and Mental Training to Teach Some of the Offensive Skills for Beginners in Handball

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Abstract

The aim of this study is to compare the effect of the teaching method (the explanation and the typical presentation) carried out by the control group and the method of the mediator according to the speed of presentation of the motor model and mental training conducted by the pilot group in the education of beginners

The experimental method was used to design the two groups of pre-and post-test tests. The study was conducted over a period of five weeks. After processing the data of the pre and post measurements, the results were obtained. The most important results were: The presentation of the motor model along with the mental training results in superior learning for beginners as a result of the use of the video presentation with different operating speeds of performance, providing learners with an ideal mental vision and integrated mental training before they go to the playroom to apply it practically.

Keywords: *Teaching method, technological medium, speed training, mental training and handball.*

Introduction

We all aspire to reach the beginner learner to the best level of knowledge and skills and requires that continue to search for the best teaching method that fit the capabilities of learners and their needs and the content of education and its objectives, "The adherence to one method or method of learning may not achieve all the objectives and the existence of variance in the level of individual differences And the difference of learners in the ability and comprehension on the perception and perception of motor performance ".[1] and that the best method of teaching are that are very influential and leave the impact of learning in the learner and make it involved and interacting in the educational process, recalling, "A positive only if the learner or interactive".[2]

It is important to make the learner interactive with the lesson material to obtain the integrated motor perception of the skill to be learned and in all its details and then perform the movement with correcting the error and install the correct mental performance through training mentally and thus show performance as physical behavior is true and this is what we seek.

It is noticeable in our work as teachers that we do the dynamic model or to show it using video, the performance is fast and negatively affects the formation of the first image of the learner to hide the fine details, the novice gets a mental image is incomplete and does not achieve the main purpose in education.

In our review of the teaching literature in the Faculty of Physical Education-Anbar University we found missing rings in teaching using the method of order (explanation and presentation of the model) and the model is presented by the same teacher and in the best case is used video tutorial and the speed of the normal presentation, which is equal in how fast the performance of the model from In both cases, the speed of motor performance exceeded the perceptions of junior learners with no interest in mental training, which reflected negatively on the levels of learners when evaluating them. The researchers suggested an assessment of the levels of learners for the last three years and after obtaining them officially from the results of the evaluation were divided between the six official levels of assessment (acceptable, intermediate, good,

very good, excellence) and the largest dispersion ratio (mean - acceptable - average).[3]

The importance of the research is to suggest a method of teaching the different technological medium as well as mental training as a new contribution to teaching as well as in solving the problems of teaching mentioned above.

Research Aim: To identify the effect of the method of teaching using the technology of different speed and mental training and compare its results in a way teaching the matter (explanation and presentation of the model)

Hypothesis:

1. There were significant differences in favor of post measurements of control and experimental research groups.
2. There are significant differences in favor of the results of the experimental group using the different speed and mental training technology.

Research Methodology: The researchers used the experimental approach.

The Research Sample: A random sample of (35) non-practicing students of the handball game from the second stage in the Faculty of Physical Education - Anbar University for the academic year 2017-2018 (23 of Division A - 12 of Division B) by 58.333% of the total research community (60) Learned.

Table (1): Shows the amount of dispersion in the levels of the second stage students in the handball course

Levels of appreciation	2015-2014		2016-2015		2017-2016	
	Number of learners	Ratio	Number of learners	Ratio	Number of learners	Ratio
Good-Excellence	7	30.4%	15	53.572%	36	49.315%
Failed-intermediate	16	69.6%	13	46.428%	37	50.685%
Total	**23**	**100%**	**28**	**100%**	**73**	**100%**

Homogeneity of the Sample: The values of homogeneity were examined and the values of the torsion coefficients within the level (±3) were an acceptable indicator of homogeneity as shown in Table (2).

Table (2): Shows homogeneity of the research sample

Sr. No.	Basic variables	Mean	Medium	SD	Skewness*
1.	Age	20,685	21	0,932	0,233
2.	The weight	66,714	65	4,950	1,121
3.	Length	174,514	174	4,434	0,096
Variables affecting performance					
1.	The explosive power of the arms	5,072	4,950	0,682	0,157
2.	The explosive power of the legs	30,771	30	5,380	0,024
3.	Special compatibility in handball	12,628	13	1,848	0,779
4.	Accuracy of handball shoot	6,257	6	1,291	0,792

* Moderate (±3)

Tests used:[4]

1. Push a medical ball for the farthest distance to measure the explosive force of the arm
2. Vertical jump of stability to measure the explosive force of the upright legs.
3. Test the numbered circuits to measure your compatibility in the handball.
4. Test the accuracy of the shoot of the jump to measure accuracy.

Procedures of the experiment:

Pre Test: Carried out during the period from 11-18/2/2018 recorded homogeneity data and evaluate the pre performance of the main research variables

Execute the experiment:

Control Group: The Spectrum of Teaching Styles introduced by Muston and Ashworth" method was used over a five-week period with two teaching units per week (90 minutes).

Experimental group: The technological medium used the different speed to display the kinetic model to the Gantt training program over a period of 5 weeks and two learning units per week (90 minutes).

Post-test: Was carried out in the period 18-21/4/2018 and recorded the data of performance evaluation skills and the same method of pre testing.

Results

View, analyze and discuss results:

Table (3): Shows the results of the pre and post performance evaluation of the control group

Sr. No.	Variables	Performance evaluation	Pretest		Posttest		Mean diff.	SD.diff.	(t) calculated	Sig.*
			Mean	SD	Mean	SD				
1.	Handling from above shoulder level	10 Min.	2.782	1.085	5.739	1.214	2.956	0.976	14.528	0.000
2.	Simple deception		2.347	0.486	3.782	1.277	1.434	1.471	4.675	0.000
3.	Complex deception		2.217	0.735	3.347	1.495	1.130	1.217	4.453	0.000
4.	Shoot from above the shoulder level		2.826	1.114	6.782	1.380	3.956	1.021	18.575	0.000

* Morality below error level (0.05) in front of the degree of freedom (23-1 = 22)

Table (4): Shows the results of the evaluation of the pre and post-performance of the experimental group

Sr. No.	Variables	Performance evaluation	Pretest		Posttest		Mean diff.	SD.diff.	(t) calculated	Sig.*
			Mean	SD	Mean	SD				
1.	Handling from above shoulder level	10 Min.	2.750	0.965	6.682	0.728	3.932	1.205	11.300	0.000
2.	Simple deception		2.500	0.674	5.900	0.960	3.400	0.722	16.305	0.000
3.	Complex deception		2.250	0.452	4.933	1.263	2.683	1.120	8.294	0.000
4.	Shoot from above the shoulder level		2.500	0.904	7.091	0.473	4.591	0.748	21.239	0.000

* Morality below error level (0.05) in front of the degree of freedom (23-1 = 22)

Table (3) and (4) show that there are significant differences between the evaluation of the pre and post performance of the control group as well as the experimental group and the evaluation of the post-performance of both groups.

The positive results of the effectiveness of both method in teaching are attributed to the fact that each method of teaching has its administrative and organizational aspects and its tools that influence the teaching and motivating the learners.[5]the learners interact with each other according to their ability and inclination to accept the appropriate method in education. They are all aimed at improving the learner's level and imparting the experience and practical knowledge of the that "method and method of teaching are very important in the educational process and that these method and method affect the speed of learning and the degree of saturation in learning",[6] and agree with the results of the research that the method of teaching physical education "regulate the interaction of learners in educational situations to acquire educational and educational experiences related to the goals of physical education".[7]and also agree with the view in "The successful method of teaching is to reach the desired goal and achieve The purposes of the lesson with the least time and effort and the most appropriate means ".[8]

Table (5). Shows the values of the computational environment, the standard deviations and the calculated value (t) and the significance of the differences between the results of the control and experimental research groups to evaluate the post-performance in the main search variables

Sr. No.	Variables	Performance evaluation	Control group		Experimental group		(t) calculated	Sig.*
			Mean	SD	Mean	SD		
1.	Handling from above shoulder level	10 Min.	5.739	1.214	6.682	0.728	2.460	0.019
2.	Simple deception		3.782	1.277	5.900	0.960	5.033	0.000
3.	Complex deception		3.347	1.495	4.933	1.263	3.130	0.004
4.	Shoot from above the shoulder level		6.782	1.380	7.091	0.473	0.748	0.460

* Moral and below error level (0.05) in front of the degree of freedom (23 + 12-2 = 33)

Table (5) shows that there are significant differences in the evaluation of the post-performance between the control and experimental groups and in favor of the results of the experimental group for the large arithmetic mean of their research variables. Thus, the hypothesis of alternative research was achieved: "There are significant differences in favor of experimental group results using the different speed and mental training medium",[9] Zero indicates the effectiveness of the teaching method of the experimental group.

Table (6). Shows the magnitude of the effect

Sr. No.	Variables	Control group	Experimental group
		ETA square	ETA square
1.	Handling from above shoulder level	0.46	0.50
2.	Simple deception	0.22	0,90
3.	Complex deception	0.45	0.73
4.	Shoot from above the shoulder level	0.65	0.88

Table (6) show that Effect size of the teaching method of the control group (0.22-0.65) means that (22-65%) of the effect on the teaching of the search variables is explained by the effect of the order method (explanation and typical presentation) The ratio is not explained by strange factors. It is clear from the same table and shape that Effect size of the experimental group teaching method (0.50-0.90) means that (50-90%) of the effect on the teaching of the search variables is explained by the effect of "The remainder of the ratios are unexplained and due to strange factors and the observed effect size data finds a significant increase in the proposed method And his superiority".[10]

The researchers attributed the positive results of table (5) and (6) to the method of teaching the experimental group to the effectiveness of the administrative and organizational aspects. The effective tools harnessed the available resources for teaching in accordance with the content of the lesson and the requirements of the educational situation and the needs, tendencies and attitudes of the learners. (0.70X) (0.30X). It provided a clear, meaningful and integrated picture of the parts of the skill and its sections. The learner was able to understand the small parts of the skill and to connect them to each other and to form the correct motor image of the performance. Where he confirms whenever the information provided with meaning and purpose has diminished the need for repetition to save them and the division of information displayed becomes a catalyst to increase the learner's capacity to address them and absorbed through the organization of such information.[11]

The positive results of the method of teaching the experimental group are attributed to the good organization and implementation of mental training in terms of the time it is given and the number of times it is implemented in proportion to the learner's need to take the right mental perception and training, thus strengthening and strengthening the mental motor program to show in the form of the correct motor behavior of the performance when performing it that mental training is one of the method used in the educational process of motor skills, which affect positively through the effectiveness of mental training factors in relaxation and training through observation, thus proved an unquestionable success in raising the level of Disease .[12] The results also agree with the reference that "mental training is closely related to learning in general and in the field of learning locomotion in particular, where mental training adds a cognitive aspect of performance in terms of seeing the full performance and then recall the image to return it fully or fragmented and training to correct Performance or increased arousal for optimal performance ".[13]

Conclusions

1. The effectiveness of both the teaching method (explanation and presentation model) and the method of teaching using the medium different speed of the presentation of the motor model and mental training in the education of beginners some of the offensive skills in handball.
2. The emergence of a difference in the results of the evaluation of the post-performance of the control and experimental research groups and for the benefit of the pilot that uses the mediator according to the speed of presentation of the model and motor mental training.
3. The method of teaching using the mediator is different than the speed of presentation of the motor model and the proposed mental training in the differential difference in the size of the positive effect.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

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Study of the Therapeutic Role Against Diabetes for Olive Oil, Soybean Oil and Sesame Oil on Some Standards of Male Reproductive System of Local Rabbits

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Abstract

The Aim study of the physiological and histological effects of olive oil, sesame oil and soybean oil against diabetes on the male reproductive system. In this study, males of local rabbits whose weights ranged from 1500 to 1800 grams were randomly divided into 8 treatments, each of which included five rabbits. The first group consisted of the control treatment, where the standard diet and normal water, the second group, the group of diabetes induced by the aloxane and the third group, the group of sugar-induced aloxane + olive oil (1.25 ml/kg body weight) (And the fourth group is the group of sugar-induced aloxane + sesame oil (5 mg/kg body weight) The sixth group olive oil group (1.25 ml/kg body weight) The Seventh group sesame oil group (0.5 ml/kg body weight) Group Eight soybean oil group (5 mg/kg body weight).

Treatment of male rabbits with aloxane resulted in a significant reduction in the concentration of FSH, LH and testosterone hormones compared with control group. While the dosage of rabbits treated with aloxane sesame oil, soybean oil and olive oil to a significant increase in the concentration of FSH hormones.

The treatment of healthy rabbits with sesame oil, soybean oil and olive oil significantly increased the concentration of LH compared with the control group.

As well as through the histological sections of the testicle in the group of infected diabetic animals shows the ST spermatozoa and the primary PS and secondary sperm cells did not complete the maturation process with the presence of AV grease and necrosis in some seminal tubules. The histological sections of the assay for the group of diabetic animals treated with olive oil show primary PS cells with the cessation of sperm maturation at this stage. The histological sections of the testicular group of animals and the treatment with soybean oil are shown to be normal. The whole sperm S is shown clearly in the testis tissue of the group of animals affected by diabetic and treated with sesame oil. The stages of semen formation appear within the semen.

Keywords: *Diabetes, olive oil, soybean oil, sesame oil.*

Introduction

It is worth mentioning that diabetes has a large share in the trend of researchers to use plants in the treatment of this disease, as the plants used various forms and extracts and recently discovered many of them, especially that has a significant role in the control of diabetes[1] and the focus of researchers on diabetes It is one of the most common diseases.[2,3] The importance of olive oil, health and nutrition through epidemiological studies conducted in different parts of the world can contribute olive oil to maintain the health of patients with diabetes and to protect them from the complications of this disease and the resulting disorders[4,5].

Soybean is one of the most famous legumes. It is a plant that possesses oil seeds. It is spread in many parts of the world. It has many nutritional uses. Chinese people have used it for thousands of years in extracting oil and used it in the pharmaceutical industry. Soybeans have

many benefits and most importantly, are an excellent source of vegetarians, to get their essential amino acid needs. Increases breast size for women,. Protects against osteoporosis. Prevents atherosclerosis and reduces high blood pressure. Reduces the accumulation of body fat[6].Sesame and scientific name Sesamum Indicum is a herbaceous plant belonging to the family Sesame and the length of about 70 cm. The sesame plant has opposite leaves, white and pink flowers, with small, shiny oval-shaped ovary seeds. Sesame seeds are collected in wallets of 3.5 cm each. The sesame grows in India, China, Japan, Egypt and Latin America and is harvested in the middle of the summer. For its taste and aroma, it is a pleasant, odorless plant that can retain its nutritional value for two years. Sesame seeds contain many minerals, Magnesium, calcium, copper, iron and phosphorus at high concentrations, giving it many medicinal and therapeutic properties. It is useful in treating many respiratory problems such as breathlessness, asthma, chest pains.[7]

Materials and Method

Animals Used: In this study, males of local rabbits, whose weights ranged from 1500 to 1800 grams, were placed in metal cages with metal covers and dimensions (120 x 60 x 60 cm). The animals were subjected to laboratory conditions from a light cycle divided by 12 hours of light And (12) hours of darkness

Design of experiment by mouth for 30 days. Each group has 5 animals

1. **Group 1:** The control group
2. **Group 2:** group of diabetes mellitus with aloxane
3. **Group 3:** The group of diabetes induced by the aloxsan + olive oil included were treated by giving the group a standard meal and after 21 days were injected olive oil (1.25 ml/kg body weight) by mouth.
4. **Group 4:** Group of diabetes induced by the aloxsan + sesame oil included were treated with this group given a standard meal and after 21 days were sesame oil (0.5 ml/kg body weight) by mouth.
5. **Group 5:** Group of diabetes induced by the aloxsan + soybean oil. Five animals were treated with a standard meal and after 21 days soybean oil was reduced by 5 mg/kg orally.
6. **Group 6:** Olive oil group. Five animals were treated with olive oil (1.25 ml/kg body weight) orally
7. **Group 7:** Sesame oil group. Five animals were treated with sesame oil (0.5 ml/kg body weight) orally
8. **Group 8:** Soybean Oil Group. (5 mg/kg body weight)

Statistical Analysis: The data were analyzed by SAS method software according to one-way (ANOVA) followed by Duncun multiple range test were used at level of statistical significancy at ($P<0.05$) for comparison of different parameters between the different groups of this study[8].

Results and Discussion

Hormonal Variables:

Table (1): Concentration of LH and FSH and serum testosterone in serum

Standards / Group	LH (mIU/ml)	FSH (mIU/ml)	Testosterone (ng/ml)
Control	4.03±0.32 b	±1.640.25 a	2.42±0.28 a
The control of an infected treatment with aloxane	2.17±0.12 e	0.8±0.19 b	1.18±0.12 b
Controlled control of treatment with aloxane + sesame oil	3.68±0.22 bc	1.62±0.18 a	2.44±0.22 a
Controlled control treated with aloxane + soybean oil	3.07±0.15 d	1.45±0.16 a	2.31±0.17 a

Standards / Group	LH (mIU/ml)	FSH (mIU/ml)	Testosterone (ng/ml)
Controlled treatment treated with aloxane + olive oil	3.56±0.7 c	1.63±0.22 a	2.42±0.32 a
Olive oil	4.61±0.17 a	1.67±0.3 a	2.47±0.31 a
Sesame oil	4.84±0.23 a	1.74±0.26 a	2.48±0.21 a
Soybean oil	4.52±0.27 a	1.69±0.22 a	2.44±0.28 a

- Values represent the arithmetic average ± standard error.
- The vertically different letters mean a significant difference at a significant level ($P \leq 0.05$).
- Number of animals 5 per group.

The results of Table (1) showed that There was a significant decrease level of FSH, LH and testosterone P (0.05) inthe treatment of male rabbits with aloxane (G2)compared to the control group. The study coincided with the study of Eleiwa *et al*. (2010) [9]and the Saha *et al*. (2015)[10] on rats and Shah and Khan (2014)[11] and Mansi et al. (2014) [12] and Trindade et al. (2013)[13]

Moreover that is a disease Diabetes affects the gonads and leads to toxic accumulation leading to dysfunction in the hypothalamus and pituitary gland[14]. Diabetes also affects hormones follicles stimulating hormone-FSH and luteinizing hormone -LH-[15][16] while the treatment of rabbits treated with aloxsan sesame oil and soybean oil and olive oil to a significant increase in the concentration of hormones FSH, LH and testosterone compared to the group treated with Aloxsan where taking a quantity of healthy fats such as olive oil and sesame oil ensure adequate levels of cholesterol to produce testosterone, where there is a strong relationship between the consumption of a high diet in healthy fats and the production of testosterone. And the regulation of healthy rabbits sesame oil, soybean oil and olive oil to a significant increase events In the concentration of LH hormone compared with control group. A study Modaresi *et al*(2011)[17] showed a significant decrease in the hormone testosterone in the group that received 20% of their soybean diet compared with the control group. And a significant increase in the group that received 30% and 50% soybeans in their diet compared with the control group [18].

Histological study of the testicle

Control Group:

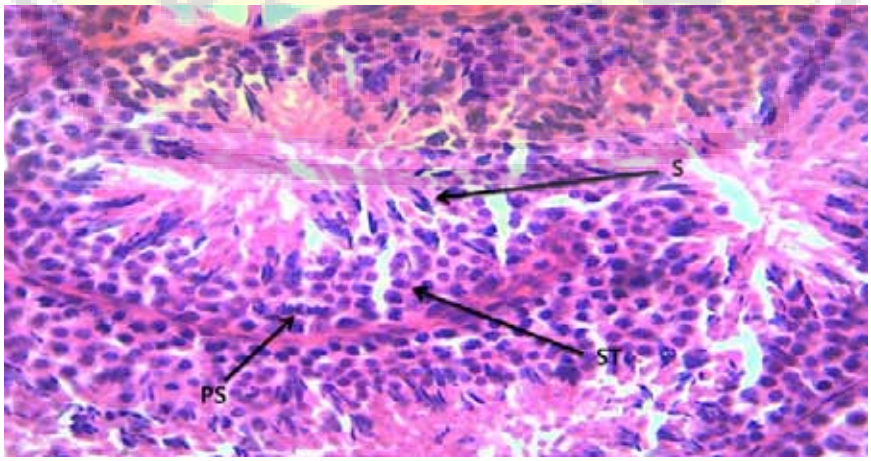


Image (1): A section in the testis of the control group rabbit shows the ST spermatozoa, the mature sperm S and the primary sperm cells PS H & E 400X.

A: Diabetes Group

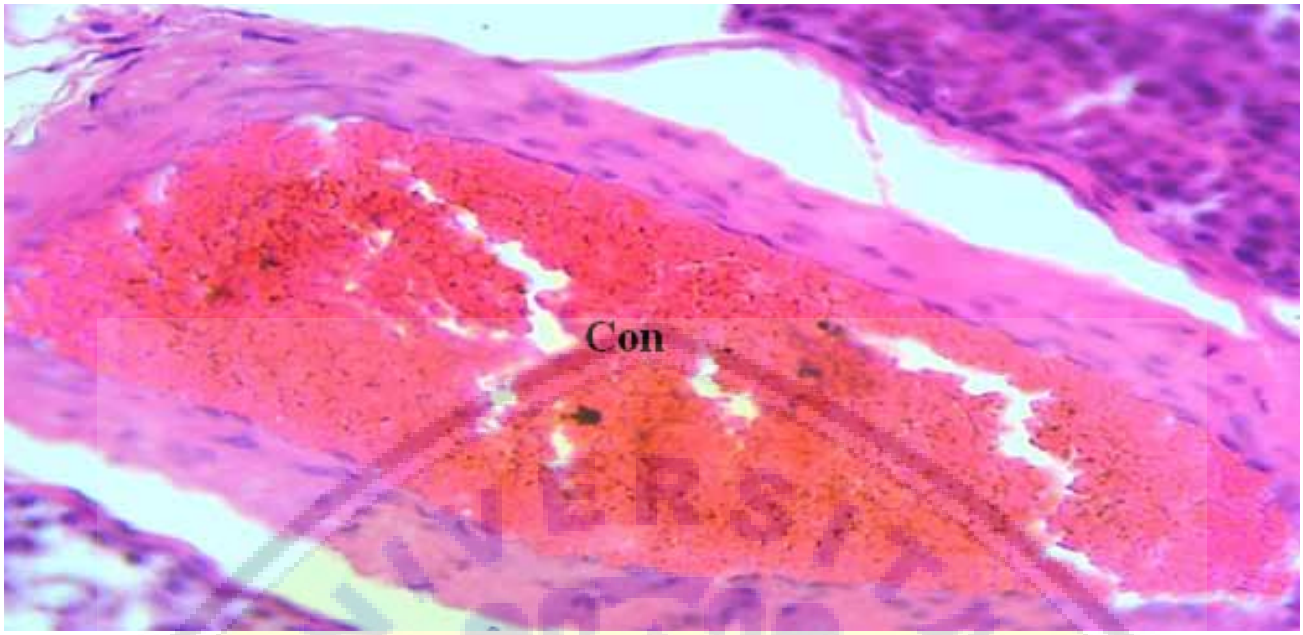
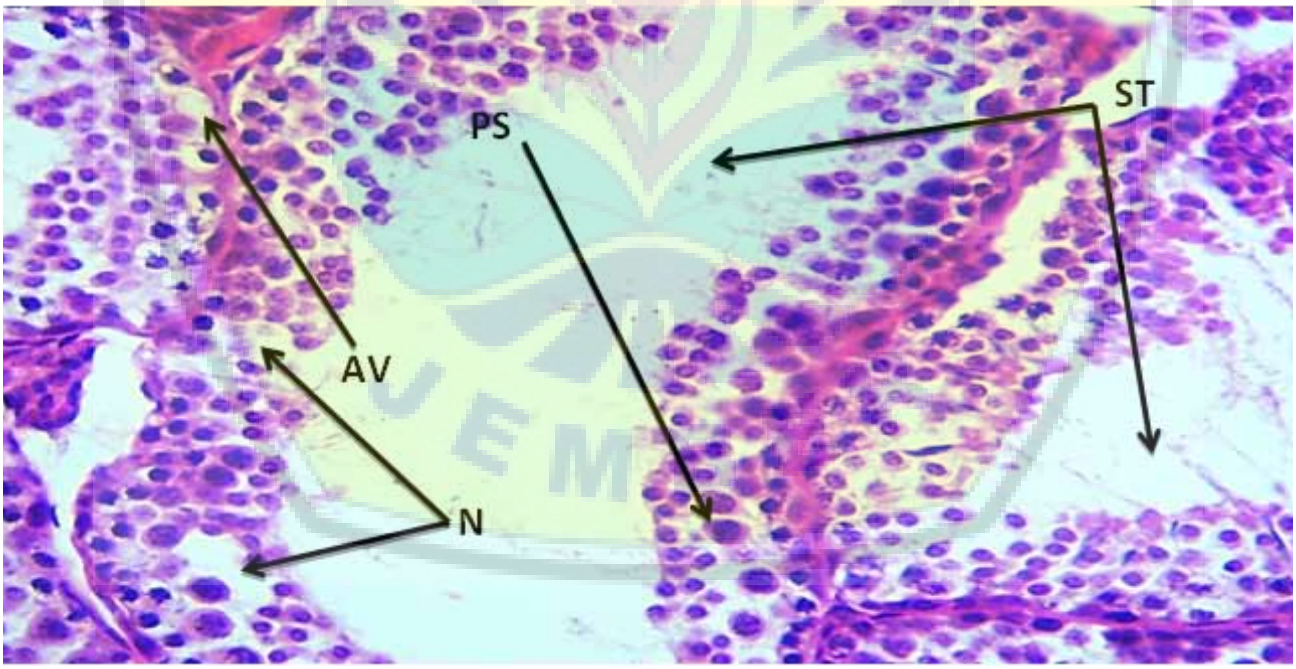


Image (2-A) A section of the testis tissue of a group of animals suffering from diabetes only shows acute blood congestion in a blood vessel Con H & E 400X.

B: Diabetes Group:



(2-B) Sections of the testis tissue of the group of animals infected with diabetes only shows the ST spermatozoa and the primary PS and secondary sperm cells did not complete the maturation process with the presence of AV grease and necrosis in some of the spermatic tissues N H & E 400X.

Diabetes and treated with olive oil group:

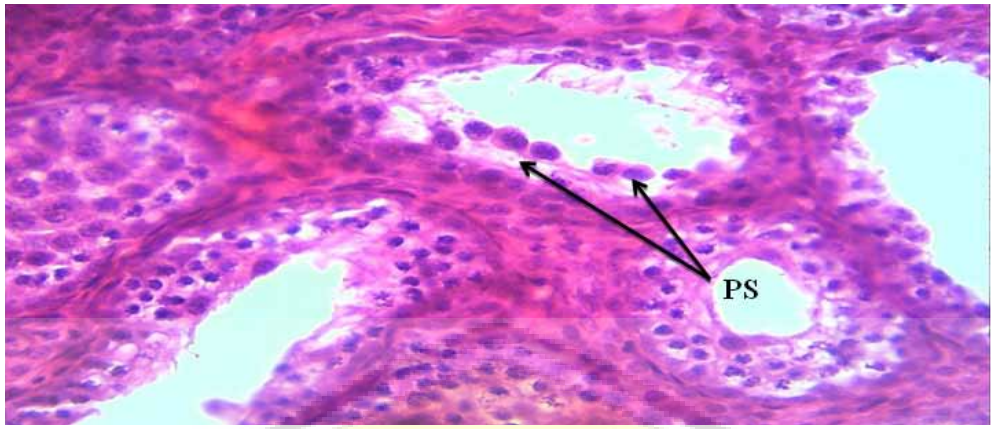


Image (3) Sections of testicular tissue of the group of animals infected with diabetes and treatment with olive oil shows the primary sperm cells PS with the cessation of maturity of the sperm at this stage. H & E 400X

Diabetes and treated with soybean oil group:

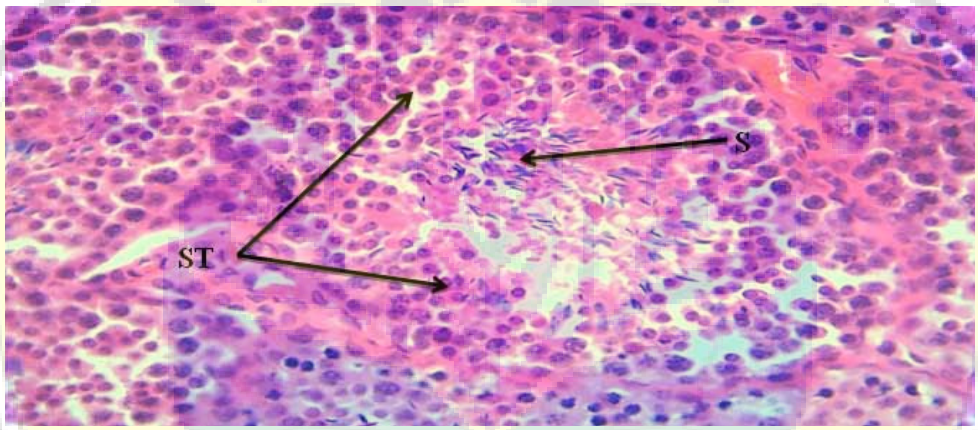


Image (4) Sections of testicular tissue of the group of animals infected with diabetes and treatment with soybean oil. H & E 400X.

Diabetes and treated with sesame oil group:

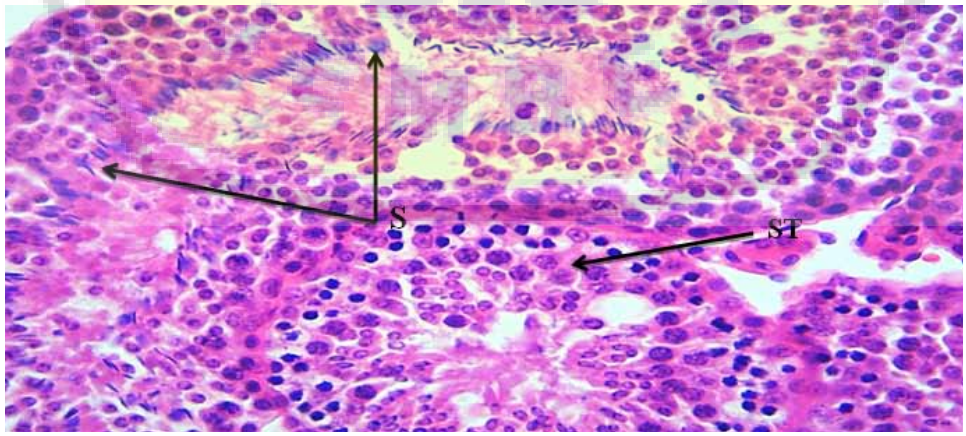


Image (5) Sections of testicular tissue of the group of animals infected with diabetes and treatment with sesame oil shows the spermatozoa ST naturally, showing the full sperm S clearly and the stages of sperm formation can be seen within the semen. H & E 400X.

One of the main effects observed was that the main objective of our study was the occurrence of some of the histopathological conditions of the testicular, as well as the occurrence of disorders in the hormonal regulation, which is important in the productivity of the sperm and thus affect the testicular tissue. The bloodstream is well-formed and has a clear appearance as well as the occurrence of degeneration of testicular cells. As a result, the congestion is likely to result from rupture of some blood vessels in the male reproductive tract tissues in diabetic animals.

Diabetes mellitus effects on the endocrine control of spermatogenesis, sperm quantify and quality and morphological testicular lesions specially degeneration of germ cells in testis by apoptosis [19],

A study showed **Evy** *et al*(2018)[20] ncorporation of sesame oil into the diet may improve the reproductive parameters at the level of the testicular microstructures (germ cell to Sertoli cell ratio) and endocrine function plasma testosterone concentration) without any beneficial effect on the epididymal sperm parameters in induced diabetic rats. Sesame oil supplementation was effective in improving reproductive parameters in normal rats as well.[22]

AL-Ani (2013)[22] study shows that olive oil plays an important role in improving testicular damage while reducing oxidative stress and protecting against genital infection during cadmium toxicity.

A study showed Ekaluo *et al* (2013)[23] results also revealed that the administration of soybean to rats at different doses caused significant dose-dependent toxicity effects to testicular integrity, ranging from mild degeneration of sperm in testicular tubules to excessive necrosis and haemorrhages; which might be the underlying cause of the effects on sperm parameters. Soybean is an endocrine disruptor in males and it is rather probable that soybean may have disrupted the synergy between testosterone and follicle stimulating hormone during the process of spermatogenesis Ikpeme *et al*(2013)[24]. assertively revealed that the distortion in fertility in malemammals is directly correlated with the disruption of spermatogenesis and the hormone regulatory machineries. The reductions in conception rate, sperm viability, sperm count and increase in sperm head abnormality

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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The Role of Microbiota Fusobacteriumnucleatum as a Possibly Important Etiological Factor in the Initiation and Progression of Colorectal Cancer

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Abstract

The search to evidence a link between the microbiota of the guts with colorectal cancer.This study aims to investigate association of microbiota *Fusobacterium nucleatum* (Fn) in tissues of CRC (colorectal cancer) and its correlation with other clinicopathological variables.

The study utilizes qRT-PCR (quantitative real time polymerase chain reaction) technique to detect variable of Fn abundance in CRC and normal tissues; in addition to its association with other clinic-pathological variables (gender and age). In this study, the results demonstrated that Fn has been considerably enriched in CRC tissues of patients compared to controls (neighboring normal tissues of the same patients and the tissues of the healthy individuals) which also indicate Fn infection has been related to the progression of CRC and its metastasis.

The results indicated an over-represented Fn in CRC samples using qRT-PCR technique; Inspite of no significant association was found of Fn with other clinical-pathological variables (age and gender), Fn was enriched in CRC tissues; this may be taken under consideration as a factor of risk for CRC progression and metastasis.

Keywords: *Colorectal cancer (CRC), quantitative real time polymerase chain reactions, Fusobacterium nucleatum, Metastasis.*

Introduction

(CRC) is the 3rd most widespread type of cancer and the 4th main cause of deaths due to cancer all over the world, being responsible for about 1.2 million new instances and 600,000 deaths each year[1]. It was influenced by numerous factors of risk that are related to it which includes; heredity, lifestyle, gut microbiota, smoking, excessive consumption of alcoholic substances, inflammatory bowel disease, diet (increased consumptions of processed and red meat), obesity, in addition to other factors[2,3,4]. The gut microbiota has earned a considerable amount of attention due to its significant impact on risk of CRC via immunity and metabolites in the host[5]. Earlier researches have shown that numerous species of bacteria appear to be involved in CRC pathogenesis[6,7,8,9]. *Fusobacterium* species is the non-spore-forming, Gram negative which grow anaerobically and it is found as normal flora in the mucosa of the mouth and the gut of human and identified as an potentialpathogen in inflammatory infections of both the mouth (cause periodontitis) and gut (cause inflammatory bowel infections)[10,11,12]. Many researches proved enrichment of *Fusobacterium nucleatum* (Fn) in CRC[13,14]. However, the inflammatory bowel diseases showed significant abundance of Fn than in the normal bowels hence it turns into a factor of risk for inflammation-related colorectal cancer[11]. The microbiota Fn could be of a considerable potential for promoting CRC, similarly to promoting stomach cancers by *Helicobacterpylori*[15,16]. Latest researches gave mechanistic proofs that gut bacteria are involved in developing CRC[17]. The researchers also showed that

proliferation of tumors and growth of cancer might be diminished by a decrease in the Fusobacterium load via treating with antibiotic- metronidazole[18]. The goal of this research is assessing the role of colon bacteria (Fn) in colon cancer progression.

Materials and Method

Collection of Samples and Extraction of DNA

Clinical Samples: A total of 42 fresh colorectal cancerous tissue (CRC) samples and 10 healthy normal individuals as well as 28 CRC tissue sample's patients and matched adjacent normal tissue have been intra-operatively obtained from patients that have been lately diagnosed with CRC, collected from : Endoscopy Center of Al-Alosi private Hospital, Al –Arabi Hospital, AL-Masara general Hospital and Baghdad Hospital also Gastroenterology and Liver Hospital, during the period of 2018-2019.

All needed data on clinical and demographic histo-pathological parameters has been obtained from patient's medical records and designed information sheet. The exclusion criteria was patients which included antibiotics utilization within two months, patients who had complications with chronic disorders of the bowel and additional CRC patients' exclusions for included radiation or chemotherapy treatments before surgery also excluded patients who has another malignancies or polyps in another organs . All of the participants have received conventional preparation of bowel with no pre-operative administration of antibiotics. All samples have been transported to the lab as quick as possible frozen the tissues and kept at -80ºC until being used.

DNA Extraction: Bacterial DNA has been extracted for all tissue samples (80 sample) (Presto ^{Tm} Mini gDNA Bacteria Kit/Geneaid/Korea) based on the instructions of the manufacturer then stored at a temperature of -20ºC before steps of amplification or further processing.

Fusobacteriumnucleatum Quantification: Fn Quantification has been accomplished in CRC and the related adjacent normal DNA and Healthy individuals samples tissue via qPCR. Taq ManFusNucdtec-qPCR Test (GPS, genetic PCR solutions™/Spain) with specific probe/primer . The reaction was subjected to temperature of 95º C for 15min, 95º C for 15 seconds, then 60º C for 1min; then the reaction performedfor 40 cycles. The fluorogenic signal was collected during this step by using the FAM channel for the target. After optimization and qualification of RT-PCR standard curve with serial dilutions were made, copy number concentration was calculated; then the standards have been kept at -20ºC with serial dilutions which have been made before RT-PCR assay. qPCR results for every sample (note: the final volume in each qPCR reaction well was 20µl) have been expressed as copy number of bacterial 16-S r DNA for each gram of tissues. Thresholding of the Cycle has been computed with the use of automated settings for RT- qPCR assay was performed in 96- well optical plates run on software version ("Rotor-Gene Q Software 2.3.1.49").

Statistical Analysis: Data analysis has been performed with the use of available statistical SPSS-25 package (which stands for "Statistical Packages for Social Sciences" v. 25). Data were shown in trivial measures of percentage, frequency, standard deviations, average and range (minimum-maximum values).

The importance of different percentages difference (qualitative data) were tested with the use of Pearson test of Chi-square (χ^2-test) via applying Fisher Exact test or Yate's correction whenever applicable. Statistical significance has been taken under consideration in any case where the value of P was ≤ 0.05.

Results

qRT- PCR Determination: According to the standard curves and the CT value of the amplification efficacy of Fn in the tissues of CRC patients and normal tissues; Fn was highly significant in CRC tissues which indicated by the over-representing in 15 out of 42 (35.7%) CRC samples compared with tissues of healthy individuals 0 out of 10 (0%) (Figure 1). The sufficient amount of Fn has been considerably greater in the samples of tumor tissues 12 out of 28 (42.9%) than in the adjacent normal tissues 1 out of 28(3.6%) and another healthy control individual tissue samples 0 out of 10 0% (Figure 2, 3)

No significantly association of Fn infection in CRC patients with other clinic-pathologic features (age and gender).

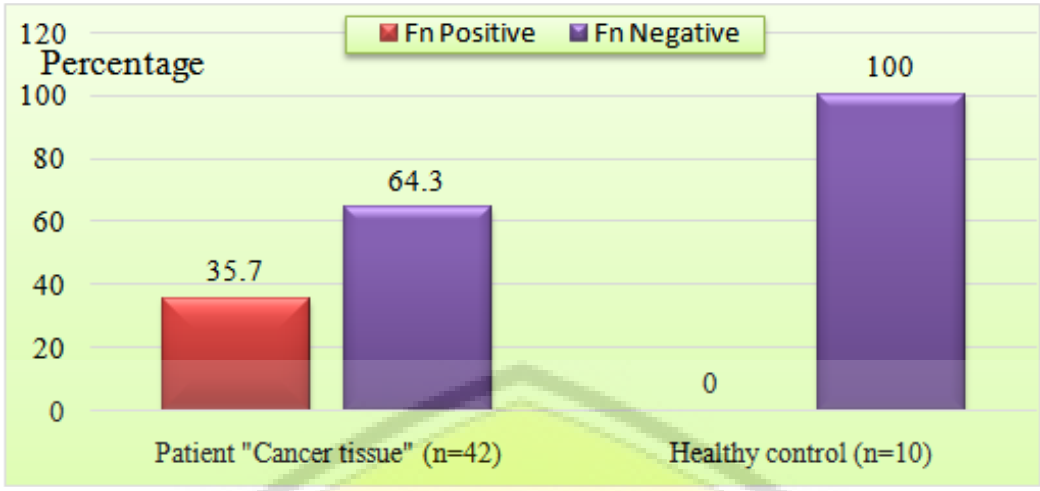

Figure 1: The analysis data of Fn abundance in patients that have CRC compared to healthy control persons

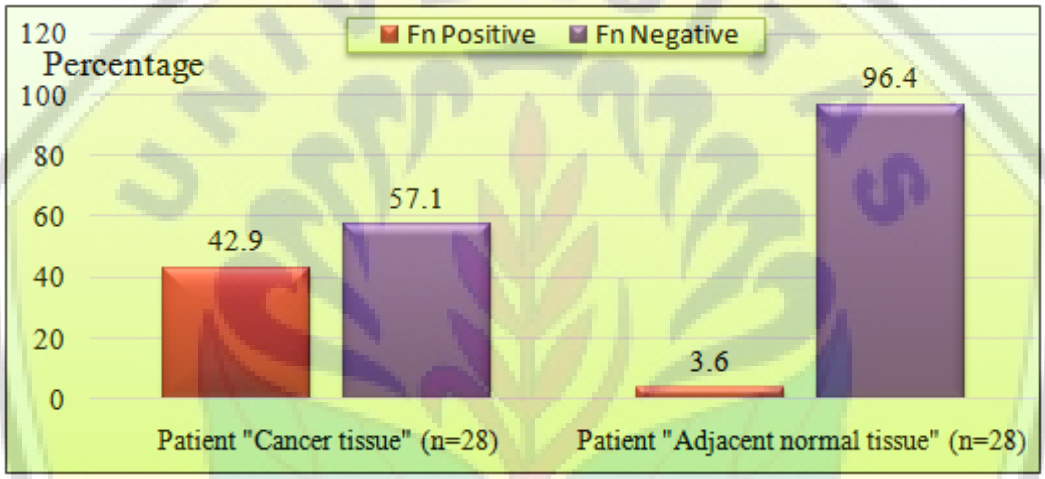

Figure 2: The analysis data of the over-represented Fn in tissues of CRC patients compared to adjacent normal tissues.

Data regarding no significant association (P value=0.545) between adjacent normal tissues of the patients and healthy control individuals

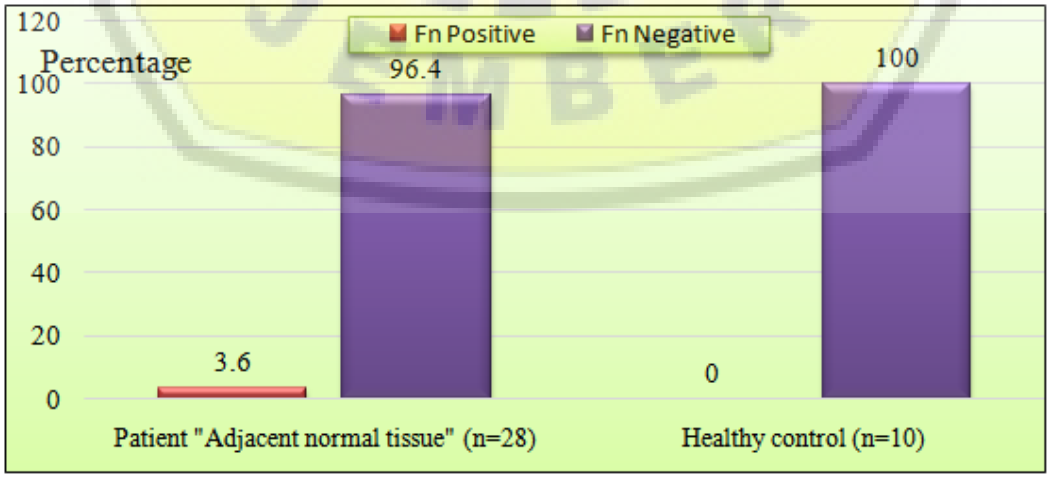

Figure 3: The analysis data of no significant association between the adjacent healthy tissues of the cancer patients compared to normal control persons

The result of this study may provide evidence supporting using bacteria for microbiota-related prognosis, diagnoses, treatment and prevention from CRC.

Disscussion

More than 1000 bacterial phylotypes are present in the human gastrointestinal lumen which populated by an estimated 10^4 microbes[19], which are advantageous and deleterious to hosts; the higher is the abundance of *Streptococcus*, *Bacteroides-Prevotella*, *Enterococcus*, *Klebsiella* and low abundance of *Clostridia* which is detected in the CRC patients' guts compared to controls of normal individuals. Many of that bacterial dysbiosis plays a role in various colorectal diseases and that includes CRC, but there was not any confirmed results with specific bacterium being a key for the virulence factor[20,21]. There are many factors determined by the composition of these microbiota including environment, diet hygiene and host genetics[22,23]. Notably, the study finding being Fn significantly highly overabundant in tissues of colorectal cancer versusthe control of adjacent normal tissues and control of healthy people, those results have been inconsistency with earlier studies[24] in which they have detected enrichment of DNA sequences of *Fusobacteriumspp*.in CRC in comparison to control samples by using the whole genome sequencing technique andothers[25] who found a positive correlation between high-level colonization via Fusobacterium and metastases of the regional lymph nodes.Castellarin*etal*.[13] they identifiedthe association between inflammationof microbiota and gastrointestinal cancers. Another similar confirming results were reported by[26,27,28]. The species of anaerobic bacteria *Fusobacterium* might stimulate host pro-inflammatory response[29] and had virulence properties, which might indorse their adhesiveness to the cells of the host[7]. The genus *Fusobacterium* is an anaerobic obligate, gram negative bacteria which always colonizes in oral cavities of almost every human, some of the strains play a role in the progression of dental plaques and the periodontal diseases[30]. *Fusobacterium* are poor healthy colon mucosa colonizers and are not capable of breaching the intact wall of the colon; in the case that adenoma, carcinoma inflammations are developed, the weakened colon cell wall micro-environment allows those microbiota which also include *Lactococcus* and *Peptostreptococcus* to reach and adhere base of the membrane.[31] No significant association of Fn infection was found with other clinic-pathological variables such as, patient's age and gender. The same was observed by others.[32]

Conclusion

Our results indicated that the presence of Fn was highly more in tissue of CRC compared with control tissue and it's abundance was positively indicated by the bacterial association with CRC. Hence may be considered as a factor of risk for CRC and metastasis progression. Furthermore the results revealed that was no significant association between the abundance of the bacteria Fn and other clinic-pathological variables like age and gender. Also, there was no significant association between the adjacent normal tissues of the CRC patients compared with another healthy control tissue of the individuals. To our knowledge, this is the first report exposing the relationship between Fn and CRC in Iraqi patients.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Estimation of Anti-Thyroid Peroxidase and Anti-Thyroglobin Antibodies Levels among Thyroiditis Patients in Baghdad

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Abstract

Anti-thyroid peroxidase antibody (anti-TPO antibody ATPO) and anti-thyroglobulin antibodies (ATG) are a part of the thyroid gland antibodies which is valuable in the creation and identification of autoimmune thyroid diseases. Autoimmune of thyroid gland can cause numerous forms of thyroid gland inflammation and abnormal function, ranging from low to high activity of thyroid gland.

Objective:

1. Estimation of anti-thyroid peroxidase antibodies, anti-thyroglobulin antibodies and thyroid gland function tests including Free T3 and Free T4.
2. Highlight the effect of age and gender on the levels of auto antibodies in thyroiditis patients.

Seventy patients with thyroid disease attending Al-Yarmouk Teaching hospital from the (comparison, 26 control samples (respiratory disease and healthy) matched by age and gender were also included. The study included estimation of the serum levels of Anti-peroxidase antibodies, anti-thyroglobulin antibodies and thyroid disease function tests in thyroid disease patients and control by a sandwich ELISA test using commercially available kits.

The present study revealed significant difference in ATPO and ATG ($P<0.05$) among study groups, also there was significant differences among age groups in ATPO and ATG levels ($P<0.05$).

High levels of ATPO and ATG among thyroiditis patients indicate main role of this parameters in the pathogenesis of disease as well it has the possibility to use them in the diagnosis and follow up of it.

Keywords: *Thyroid disease, Anti-peroxidase antibodies, Anti-thyroglobulin antibodies.*

Introduction

Autoimmune diseases have a high commonness in the populace, caused by irritation of organs because of generation of antibodies against self-structures[1]. Autoimmune diseases thyroid malady (AITD) is a standout amongst the most widely recognized delegates, incorporate a few inflammatory thyroid infections with Graves' ailment (GD) and Hashimoto's thyroiditis (HT)[2]. Thyroid peroxidase antibodies (ATPO) are particular for the autoantigen TPO, a 105kDa glycoprotein that catalyzes iodine oxidation and thyroglobulin tyrosyl iodination responses in the thyroid[3]. It had been named microsomal antigen dependent on its intracellular limitation. Antibodies respond against conformational epitopes at the surface of the atoms and against direct epitopes[4]. Polyclonal antibodies from healthy people and patients are coordinated against similar epitopes. Anti TPO antibodies from healthy subjects did not block TPO movement or meddle with the blocking action of hostile to TPO antibodies from AITD patients[5] while anti TPO antibodies from AITD patients can

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settle supplement, devastate thyrocytes and go about as aggressive inhibitors of enzymatic action[6]. While against TPO antibodies may act cytotoxic on thyrocytes in HT they do not have an established role in GD[7].

Thyroglobulin is a huge (600 kDa) glycoprotein comprising of dimers and containing overall 2– 3 atoms of T4 and 0.3 particles T3. The particle is heterogeneous in regards to hormone substance, glycosylation and size [8]. The generation of antibodies against Tg can be prompted by the enormous devastation of the thyroid organ. Antibodies against Tg vary between healthy subjects and AITD patients in that polyclonal antibodies are found in typical subjects and oligoclonal antibodies in AITD patients. Against Tg antibodies don't settle supplement in light of the fact that the epitopes are too broadly separated to permit cross-linking [9]. The absence of cytotoxicity in GD is a considerable difference to HT and other AD. Location and immunogenicity of the antigen and prevailing class of the antibodies may contribute to these differences.

Materials and Method

The study was conducted at Al-Yarmouk Teaching Hospital from February to May 2017. Ninety six specimens were collected in this study, 70 (73%) of them were from thyroiditis while other 26(27%) of total specimens were from control groups. A full history was taken from each case, including the sex, age, residency, occupation and history of disease.

Blood samples were collected from all patients by venipuncture to measure study parameters which include serum ATPO antibodies, ATG and thyroid function tests (FT3 and FT4).Serum ATPO, ATG, FT3 and FT4 were determined by using Bioactive ELISA Kits (Germany).

Statistical analyses were performed using Chi-Square and Pearson correlation tests. P-values less than 0.05 were statistically significant.

Results

Distribution of patients' samples studied according to FT3, FT4, ATPO and TG: Estimation of FT3 concentration shown an elevation in its mean value among thyroiditis patients (2.364 ± 0.25), in comparison with healthy control group (1.445 ± 0.24) ((P<0.05).as shown in Table 1.

The mean value of FT4 concentration was elevated significantly among thyroiditis patients, in comparison with healthy control group(0.831 ± 0.10), (0.412 ± 0.04) respectively as shown in Table .1, as well as the level of ATPO which significantly increased (194.90 ± 18.23) in patients in comparison with healthy control group (111.78 ± 29.08), (P<0.05), as shown in Table 1, while the mean value of ATG concentration was elevated significantly (P<0.05) among patients (52.82 ± 9.88) in comparison with healthy control group(25.81 ± 6.97).

Table 1: Comparison between control and patients in the studied parameters

The Group	No.	Mean ± SE			
		FT3 ()	FT4 ()	ATPO ()	ATG ()
Patients	70	2.364 ± 0.25	0.831 ± 0.10	194.90 ± 18.23	52.82 ± 9.88
Healthy (Control)	26	1.445 ± 0.24	0.412 ± 0.04	111.78 ± 29.08	25.81 ± 6.97
T-Test	----	0.898 *	0.342 *	73.52 *	15.356 *
P -value		0.0449	0.0206	0.0491	0.0511

* (P<0.05).

Effect of Age on FT3, FT4, ATPO and ATG among patients: The patients in ageless than 30 showed the highest level of ATPO, the mean value of concentration (285.76 ± 62.55), (P<0.05), as shown in Table 2, while the patients in age more than 40 showed the highest (P < 0.05) level of ATG with mean value (99.19 ± 24.44).There was insignificant differences between age and the serum levels of FT3 and FT4, as

shown in Table 2.

Table 2: Effect of Age in study parameters of patients.

Age Group (Year)	No.	Mean ± SE			
		F-T3 ()	FT4 ()	ATPO ()	ATG ()
Less than 30	13	2.067 ± 0.46	0.546 ± 0.09	285.76 ± 62.55	73.39 ± 22.95
30-40	41	2.126 ± 0.27	0.780 ± 0.12	140.97 ± 27.32	20.20 ± 5.43
More than 40	16	2.11 ± 0.36	0.645 ± 0.06	192.51 ± 40.65	99.19 ± 24.44
LSD value	----	1.214 NS	0.468 NS	116.90 *	42.641 *

*(P<0.05), NS: Non-Significant.

Effect of gender in FT3, FT4, ATPO and ATG among patients: From table .3 it seems to be that the concentrations of parameters were non-significantly higher among males rather than females. Insignificant difference between genders was detected while the mean value of FT3 concentration was (2.42 ± 0.35) among males and (1.814 ± 0.18) among females (Table 3). The mean value of FT4 concentration was (0.764 ± 0.12) among males and (0.670 ± 0.09) among females with no significant difference between genders. In males the mean value of ATPO was (184.65 ± 32.48) and (160.13 ± 23.81) among females, while the mean value of ATG was (54.58 ± 12.29) among males and (36.43 ± 7.09) among females, as shown in table3 with no significant difference between genders.

Table 3: Effect of Gender in study parameters of patients

Gender	No.	Mean ± SE			
		F-T3 ()	F4 ()	ATPO ()	ATG ()
Male	35	2.42 ± 0.35	0.764 ± 0.12	184.65 ± 32.48	54.58 ± 12.29
Female	35	1.814 ± 0.18	0.670 ± 0.09	160.13 ± 23.81	36.43 ± 7.09
T-Test	----	0.815 NS	0.314 NS	71.872 NS	28.617 NS

NS: Non-Significant.

Discussion

The current study showed a significant increase in serum ATPO, ATG, FT3 and FT4 levels in patients with thyroiditis compared to control, these results are agreement with (A. Sridevi et al 2018)[11] and (Anjalia et al 2011)[12] who demonstrated that ATPO, ATG, FT3 and FT4 levels were increased in patients more than control groups. Raghunath et al 2015[13] and Ioannis et al 2012[14] showed that ATPO levels were highly significant less than 30 yrs.old and this agreement with our results. Yushu Li et al 2008 [15] and Yue-Rong Yan et al 2015 [16] showed that levels of ATG were highly significant with age more than 40 years old these results agreed with our data. H. Nawaz et al 2018[17] has determined different findings that thyroid profile, ATPO and ATG levels were highly significant in female than male. The results of the current investigation were in agreement with A Amouzegar et al 2017 [18] who revealed that levels of ATPO and ATG were highly significant in female more than male.

Conclusion

From this study we conclude that the levels of thyroid

profile, ATPO and ATG correlate with age, gender and the status of disease and we recommend more studies to focus the role of ATPO and ATG in the identification of thyroid cancer in the early stages.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Evaluation of the Oxidative Stress Status in the Girls with Hyperprolactinemia Through Some Biochemical Parameters

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Abstract

Recently Hyperprolactinemia (HPrl) is a common phenomenon in girls and this problem may be one of the infertility causes in the future, the high prolactin hormone levels may be associated with the presence of polycystic ovaries syndrome (PCOS) or the presence of a pituitary tumor. In this study, focus on the relationship between HPrl and oxidative stress as an important factor in among girls. Where it was found that the value of prolactin (11.63±1.52) in healthy, while (31.82±13.51) in patients.

Also, has been evaluated the state of oxidative stress by conducting a comparative study between patients and healthy values of both DPPH, lipids peroxidation, GSH and total thiol groups.

Keywords: *Hyperprolactinemia, TSH, DPPH, total lipids peroxidation, GSH, oxidative stress.*

Introduction

Hyperprolactinemia (HPrl) is widespread (0.4%-5%) among the girls and can be considered from a frequent endocrinopathy, despite its rarity in childhood. Prolactin from the anterior pituitary gland hormones and has an important role in the reproductive functions. The normal value of serum prolactin level in girls and adolescents between (5 - 20) ng/ml [1,2]. This hormone create in the lactotropic cells of the anterior pituitary lobe due to stimulatory signal TRH (thyrotropin-releasing hormone or called prolactin releasing hormone) and regulate within the normal level by an inhibitory signal from dopamine [3].

From the causes of HPrl due to obstruction or interruption of the peduncle of the portal venous system that causes loss the inhibitory action for dopamine. There are numerous factors act as stimulants to prolactin release by the direct effect to the anterior lobe or reduce the inhibitory action (dopamine) such as stress, highproteindiet, insomnia, hypoglycaemia, TRH, suckling, estrogens, oxytocin and vasoactive intestinal polypeptide (VIP)[3,4].

The lactotrophic effect is the essential role of prolactin by given its action on the epithelium cells of the mammary glands and regulating the gonadal function through the inhibiting Gn RH excretion that responsible about secretion of Luteinizing hormone (LH) and Follicle stimulation hormone (FSH)[5,6]. Interestingly, prolactin plays a regulatory role in the adipose tissue, lactation, immune system and insulin secretion [7–9]. The prolactinoma in pediatric maybe associated with hormonal deficiencies or defect in growth hormone (GH) or thyroid stimulating hormone (TSH) that is frequently in macroadenomas (10- 40 mm)[10].In the cases with the polycystic ovarian syndrome (PCOS) usually related to hyperinsulinaemia that causes inhibition the catabolism of androgen and leads to hyperandrogenaemia. Then, the androgen conversion to estrogen by aromatase (estrogen synthetase). The hyperproduction of estrogen stimulates prolactin secretion either by a direct effect on lactotropic

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cells or due to inhibiting dopamine signal [6]. In children, the primary hypothyroidism causes more TRH release, which also has an endogenous trophic effect for the lactotropic cells and raises prolactin levels in the blood [11–13]. The clinical symptoms of HPrl in adolescence is easy to recognize but in childhood-onset, the symptomatology is neurologic with headache and visual shortfall. Generally, there are three major causes of HPrl in childhood and adolescent: pathological, iatrogenic and physiology. The clinical symptoms of HPrl in adolescence is easy to recognize but in childhood-onset, the symptomatology is neurologic with headache and visual shortfall. Generally, there are three major causes of HPrl in childhood and adolescent: pathological, iatrogenic and physiology [1,2]. Also, must be done a physical examination for the patients (gynaecological examination) to the skin (acne, hair growthindicative for PCOS), mammary glands (galactorrhea) or any clinical sign can be related with a medical disorder[10].

Material and Method

The required materials are prolactin and TSH kits, 1,1-diphenyl-2-picrylhydrazyl radical (DPPH), Fe SO4, methanol, ethanol, "thiobarbituric acid (TBA), trichloroacetic acid (TCA), 5,5¯-Dithiobis (2-nitrobenzoic acid)(DTNB)", EDTA and n-butanol.

Study Design: The study design is case-control, dependent on the comparison between the healthy unmarried girls and with those who have hyperprolactinemia within age stage (18-30).

Sample Collection: The sample collection from the Iraqi girls in the hospitals with excluded the patients with pituitary mass, married women and smokers.

Sample Size Determination: The sample size determines according to the following equation [14]:

$$n = Z^2P(1 - P)/d^2$$

The number of samples represented by (n), Z-Score (1.96), (P) refer to population and (d) is an absolute marginal error (equal 5%), so the number of samples were collected is 140.

Prolactin Determination: Has been measured of prolactin by VIDAS according to BIOMERIEUX kit company.

TSH Determination: Has been measured of TSH by VIDAS according to BIOMERIEUX kit company.

DPPH Assay: The DPPH scavenging assay at 517 nm, where the lowering degree in absorbance values refer to higher scavenging by samples antioxidants [15].

Total Lipids Peroxidation Assay: Lipids peroxidation assay determined by the reaction of malondialdehyde (MDA) with thiobarbituric acid and comparison the lipids peroxidation in samples with peroxidation of total lipids in egg yolk that used as a source for lipids, then measured the color of the sample at 532 nm [16].

Reduced Glutathione (GSH): Can be determined by the Ellman method [17].

Total Thiol Group: Can be determined by the Ellman method [17].

Results and Discussion

The current study shows the results for girls with elevated prolactin hormone (HPrl) that is not associated with pituitary mass by relying on the selection of samples on specific criteria (Table 1).

Table 1: Prolactin, TSH and oxidative stress results for the patients and healthy girls.

Parameters	Healthy	Patients
	Mean ± SD	Mean ± SD
Number of cases	140	140
Age/year	27.43±5.23	27.20±5.21
BMI	19.56±3.33	21.15±3.97
Prolactin (ng/ml)	11.63±1.52*	31.82±13.51
TSH(µIU/l)	2.16±0.53	1.90±0.58
GSH (µmol/l)	25.60±6.03*	11.42±5.56
Total thiol groups (mmol/l)	1.20±0.03*	0.90±0.08
DPPH scavenging percent %	65.87±5.11*	44.62±5.34
Total lipids peroxidation percent %	15.85±3.06*	36.20±9.00

* It is mean significant values between healthy and patient groups where the p-value ≤ 0.05.

From the factors that related to HPrl is the oxidative stress were which we want to focus in this study. The importance of measuring the thyroxine hormone (TSH) as shown by the above results is to demonstrate the integrity of the pituitary gland from any tumor in addition to relying on the results of the CT-Scan, therefore there are no significant differences between patients and healthy group.

However, the results showed significant differences between the values of the oxidative stress tests through DPPH, total lipids peroxidation, reduced glutathione and total thiol groups this means the stress is an important factor to elevated HPrl and this occurs maybe to Lack of sleep hours, sleep late at night, a lot of use of mobile and Internet, depression, lack of eating fruits and vegetables and increased caffeine intake. These factors play an important role to regulate hormonal levels and maintain the integrity of the body antioxidants system also, enhanced the immunity.

In addition, increase in the values of DPPH and lipids peroxidation and reduced the values of GSH and total thiol groups refer to increase the free radical levels and this can be caused dopamine receptor damage or called dopamine resistance and this lead to inhibitory effect to dopamine action.

Funding: Personal funding.

Conclusion

In conclusion, the oxidative stress from the important factors that lead to elevated prolactin levels in the adolescents and unmarried girls, with excluded pituitary mass for these cases. Therefore must be controlled on the factors that increase free radical in girls by enhancement theantioxidants in the intake foods and follow a better lifestyle by staying away from depression.

Conflict of Interest: There is no conflict of interest with authors.

Ethical Clearance: This research got on the approval of the scientific committee of my university and health ministry of Iraq.

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The Effect of Healing Using the Cooled Suit and the Reflective Reflexology in the Concentration of Lactic Acid for Karbala Club Players

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Abstract

Because of the nature and speed of performance in the game of handball, where the liberation of energy in accordance with the anaerobic system (Lactic) and leave this system of remnants in the muscles and blood, which lead to fatigue and decrease the physical abilities of players. The hand that they are involved and interested in this game in the lack of use of the means of recovery during the game and daily exercises, which prompted the researcher to use and experiment method of healing (cooled suit and reflexology) to get rid of the accumulation of lactic acid.

The objective of the research was to identify the effect of the healing process on the concentration of lactic acid in the Karbala club for the students of the Karbala Club.

The aim of the research was to identify the effect of the two therapeutic method (the refrigerated suit and the reflexology) in speeding and eliminating the accumulation of lactic acid for the research sample and the researchers used the experimental method in the style of the two experimental groups corresponding to the nature of the problem and the research community was determined by players Karbala club handball and the number of (14) players “without goalkeepers and were all selected as a sample to search in the style of the researchers concluded that the use of the cooled suit is better than the reflexology reflex in the process of rapid recovery and elimination of the accumulation of lactic acid.

Keywords: *cooled suit, reflexology and lactic acid.*

Introduction

The game of handball is one of the games of the collective, which is characterized by the strength and speed of performance in this requires that the energy release in accordance with the anaerobic system, which is the result of leaks or residues of lactic acid is caused by not supplying the body with sufficient oxygen and necessary for heavy muscle work, There is a lot of functional and biochemical changes on the body. This requires a great deal of pressure on the trainers to try to get rid of the players and get back to normal in order to increase the concentration of the player as well as his ability to continue the same efficiency Which started the training or competition and this represents the second part of the training process, which is recovery to rebuild the destroyed cells in the period of work and compensate for the energy sources needed to perform and the desired adaptations of the training process, which is reflected positively in achieving high sporting achievements, The training process is very much in the process of after recovery and used many of the means of after recovery that help and accelerate the return to normal or soon, including (cold suit and reflexology).[1]

Many athletes use cryotherapy to recover and muscle strength after vigorous exercise. Putting ice at -135 degrees for three minutes will stimulate muscle and re-load. Studies have shown that cooling therapy reduces muscle pain by 10.15%. Significant impact on athletic performance.[2]

The reflexology technique is the practice of using pressure on certain points on the hands and feet to influence the health of the corresponding parts of the body. Reflective therapy techniques alert these points and release waves of relaxation. To the entire body, for example there is a nerve that starts from the middle of the toe and climbs up to reach that part of the brain responsible for control of movement and breathing and accelerate the heart. Here is the importance of research in the use of the method of healing (cooled suit and reflexology) and knowledge of their impact and is faster in the process of recovery, which helps to restore the player to normal and as soon as possible.[3]

Research Aims:

1. Recognition of the effect of healing (cold and reflexological equation) in the concentration of lactic acid for players Karbala club handball for applicants.
2. Recognition of the advantages of the two therapeutic method (cooled and reflective reflexology) in speeding up and eliminate the accumulation of lactic acid for players Karbala club handball for applicants.

Research Hypotheses:

1. There are positive differences of the two medical facilities in the accumulation of lactic acid before and after recovery and in favor after the after recovery of players Karbala club handball for applicants.
2. The superiority of after recovery with cooled formula for after recovery with reflexology in the concentration of lactic acid for players of Karbala club handball for applicants.

Materials and Method

The researchers used the experimental approach in the style of the two experimental groups to match the nature of the problem.

Search community and design: The research community was determined by the players of Karbala Club in the handball number (16) players, "and a sample was chosen in a comprehensive inventory method after the exclusion of players and goalkeepers and were divided into two equal groups each group of (7) players.

Search tools and devices:

- Handball.
- Ice bags.
- Cooled Suit.
- Medical Cotton.
- Abby Drill.
- Sterile materials.
- Lattice for the measurement of the concentration of lactic acid in the blood.
- Lactate pro LT-710, a measure of the concentration of lactic acid in the blood of Japanese origin (3).
- Laptop type (hp).

Search Procedures:

Tests Used In Research:

Measure the concentration of lactic acid in the blood.[4]

Objective of the test: To measure nonacidic oxygen capacity.

Tools Used: Three Lactate Pro LT-1710 devices manufactured by Japanese company Arakray, 3-pin drill (3), Check Strip (3), striped bar Calibration Strip (3), Test Strips, Medical Cotton, Sterile Materials, Assistant Team and Handballs No. (4), Registration Form.

Performance Description: A formal game is played. The level of lactic acid concentration in the blood is measured after the first half and the second half of the game is completed. The telemetry is given after 8 minutes of the first measurement.

The researchers followed all recommended steps and instructions for using the device and extracting readings from it.

Registration: The reading that the device shows after the measurement for each laboratory is recorded in the registration form.

Pilot Study: The exploratory experiment was conducted on Friday 26/2/2016 at 4:00 pm in the closed martyr hall in the holy governorate of Karbala to control the test method and its contents.

Pre Test: The pre-test was carried out on the research sample and with the help of the auxiliary team in a friendly match with the Kufa sports team in handball, which was held on the closed martyr hall in the

holy governorate of Karbala. The test was conducted on Saturday 5/3/2016.

Main Experience: The researchers tested the cooled and reflective coil on the research sample in the friendly match between Karbala and Kufa handball clubs held on the closed martyr hall in the holy province of Karbala, after the lactic was measured in the pretest immediately after the first half and the second half, Wearing the cooled suit by members of the first experimental group, while the second group was applied reflexology by the auxiliary team, for a period of eight minutes while hearing the directions of the coach (between the two halves) or after the end of the game, The two bags are pre-equipped by the team with the right place. The suits are packed with ice bags covering the muscles of the chest, abdomen, back, buttocks, forearms, hip, thighs and legs. After this period, the post-test is measured and the test results are installed in a form prepared for this purpose. Warm up before the second half.[5]

Post-test: The post-test was carried out on Saturday, March 5, 2016. The researchers followed the same procedures as in the pretest in terms of measurement, method of implementation and the auxiliary team.

Results and Discussion

Presentation of the results of the tests in the pre and post measurement of the two groups of research, analysis and discussion:

Table 1: The computational circles, standard deviations, the calculated value (t) and the level and type of significance of the experimental groups in the pre and post tests

Tests	Unit	Groups	Half	Pre (After Effort)		Post (After Recovery)		(t) Calculated	Sig.	Type of significance
				Mean	SD	Mean	SD			
Concentration of lactic acid	Milli Mall	1	First	4.540	0.530	2.986	0.265	5.215	0.000	Moral
			Second	7.446	1.430	4.684	0.620	5.637	0.000	Moral
		2	First	4.220	0.360	3.541	0.301	3.129	0.002	Moral
			Second	7.941	1.101	5.934	0.430	4.000	0.001	Moral

Table (1) shows the statistical indicators of the results of the tests in the pre and post measurement of the research variable that the members of the experimental groups underwent.

The results showed that the mean values of the variable studied were less in the post-test than the pre-test and both groups and there was a significant difference between the tests and for the benefit of the dimension that the lower the mean, the better the level of dealing with the concentration of lactic acid, (0.05), indicating significant differences between the two tests.

Discuss the results of the tests in the pre and post measurement of the two research groups: The researchers attributed the reason to the use of the appropriate means of recovery to eliminate the causes of fatigue incident of the effort of the game, which is mainly the accumulation of lactic acid in the muscles and blood,[6] through disposal and transfer to the heart or kidneys or liver or skin, which confirmed That the elimination of the body of lactic acid during the period of recovery and return to the normal state of the ways, "several of which used as fuel by the heart muscle, or oxidation of the inside of the same muscle or in other tissues, or transmitted to the liver to convert to the classic, or the exit of lactic acid with urine And sweat.[7]

The relaxation process accompanying the refrigeration method and the reflective reflexology functioned as an external assistant which facilitated the flow of blood through the blood vessels. Therefore, the lactic acid was removed and turned into a chemical agent to glycogen.[8] As the process of recovery during the rest period is very important in training, which is producing energy to compensate for energy consumed at the time

of effort and the use of medical means to restore the balance of energy vehicles and adaptation of the body.[9]

The use of Reflexology reflex in the process of healing works on the sense of relaxation and relaxation, which leads to the expansion of blood vessels and in turn leads to the flow of arterial blood to all parts of the body, which helps to distribute blood in the body and helps this method also to remove any sense of indigestion and activates the vitality of the body, Muscular, increased nervous alert, improve blood circulation.[10]

Table 2: The significance of the differences between the results of the measurement of the post tests of the two experimental groups

Test	Unit	Half	Group 1		Group 2		(t) Calculated	Sig.	Type of significance
			Mean	SD	Mean	SD			
Concentration of lactic acid	Milli Mall	First	2.986	0.265	3.541	0.301	3.101	0.003	Moral
		Second	4.684	0.625	5.934	0.430	3.709	0.002	Moral

Table (2) shows the computational dynamics, standard deviations and the significance of the differences between the results of the tests of the two experimental groups. When reviewing the results of the tests, it is clear that there are significant differences between the measurement of the post tests and the benefit of the first experimental group (0.05) this is consistent with what came in the second hypothesis of the research.

Discussing the results of measuring the post tests of the two research groups: The researchers attributed the reason to the use of cooled suit as a means of healing because of the physiological effect of alerting the nervous system and stimulate the circulation of the blood, through the player's comfort during the cooling of muscles and skin where the blood to carry lactic acid to the heart and liver to use as energy,[11] The removal of the muscle from lactic acid leads to the elimination of the state of fatigue, the arrival of the player to the stage of recovery and thus enable him to return to the normal state that was before the game or close to them and work as efficiently as it started.[12]

This is confirmed by the the use of medical means to improve the return of venous blood, which works to quickly remove metabolic waste and remove the causes of fatigue and the speed of the composition of energy stocks exhausted during the activity, as well as it has an effective role in calming the device Central nervous system and peripheral nervous system.[13]

In addition, the lactic acid, which is deposited in blood during the duration of the effort, can be converted into pyruvic acid when sufficient oxygen is available, at rest. 4 In this aspect, Brian indicates that the lactic acid deposited in the blood, to all parts of the body will cause the reduction of the effectiveness of the muscles, but when oxygen is available again, this acid turns to pyruvic, which in turn combines with oxygen to produce carbon dioxide, water and (ATP).[14] This is what the healing process works by cooling the oxygen through the blood flowing in large quantities to the muscles, due to increased respiratory rate and increase the volume of breathing and that the process of recovery after the competition helps to increase the capabilities of the player through the renewal of stores muscle energy. Ice bags (in the cooled suit) activate the blood circulation in the deep tissue and the cooling of a part of the body for a long time decreases "in the blood flow in that part and thus the brain sends signals to the heart to increase blood to that area and these quantities Eliminates waste from activity by increasing the transferred oxygen.[15]

The coldness of the ice in the cooled suit works to shrink the blood vessels that exist under the skin and in the muscles around it. The blood inside it, which contains the residues of the metabolism, including lactic acid towards the blood and to the heart, the heart is pumped back to the body parts to get rid of them, as the bulk of it is transferred to the glycogen by special enzymes and becomes a source of energy and the other part is put out and these changes do not occur in natural conditions as effective as the existence of snow, so it is used not only to treat the aches and swelling, inflammation and tissue damage and stimulate muscle cells to begin repairing

any rupture in, but works to accelerate and shorten the time period for the restoration of recovery through waste disposal and renewal of energy sources and provides optimal conditions for the body to achieve the recovery and recovery.

Conclusions

1. The use of cooled suit after the first half and the second run to accelerate the disposal of the accumulation of lactic acid and healing.
2. The use of reflex after the first half and the second run to accelerate the elimination of accumulation of lactic acid and healing.
3. The use of refrigerated suit is better than reflexology in the process of rapid recovery and elimination of the accumulation of lactic acid.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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The Effect of Repetitive Technique in the Rapid Defense Coverage of the Attack and Some Biochemical Variables of Young Handball Players

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Abstract

The importance of research in the use of exercises in the method of repetition to develop the speed of defensive coverage of young handball players. Where the problem of research was the weakness of defensive coverage and the speed of return to the defensive situation, which is appropriate to the speed of movement of the opponent's attack. The aim of the research study is to

1. Use the repetitive method in the training of the speed of defensive coverage.
2. To identify the effect of the method of refining in the proportion of lactic acid and CPK.

The researcher used the experimental method in the style of the two groups with the pre and post test to suit the nature of the research. The researcher identified the research community with the young players in the club of Kufa and the 10 players and then the researcher divided the sample into two groups equally and the researcher used repetitive exercises with The experimental group, while the control group used the exercises prepared by the coach where the researcher codified the training stressed physical exercise by extracting the percentage and intensity of (90-10%).

After the completion of the exercise, the tests were carried out after the use of the appropriate statistical treatments to reach the results after the results were presented, analyzed and discussed the researcher reached the conclusions of machines:

1. There is a clear effect of exercise in the method of repetition in the speed of defense coverage.
2. Exercise also affected the enzyme CPK and lactic acid.

Keywords: *Biochemical variables; young handball players; rapid defense.*

Introduction

Handball defense is one of the important elements that represent the real engine of handball performance which consists of defense and attack. There is no doubt that the modern offensive play in modern handball has become dependent on the use of various offensive plans, including rapid attack hijacking, in addition to the high level of players in their offensive abilities as a result of the development of their physical and skill.

Therefore, it is necessary to develop defense plans and their speed so that they can overcome the various offensive plans. It is therefore important to follow effective defensive plans suited to the circumstances of the game and the way of playing the opposing team's capabilities and the team's abilities on the other hand. "The discovery of kinetic abilities and physiological characteristics each player is an important and necessary factor in directing him to the appropriate performance of duty in the development of defensive or offensive play plans."[1] The defense in general is a work must be in coordination and cooperation between the players of one team and the coach has to explain to the players the importance of defense work and the defensive effort of

the players is appreciated if the defense is individual or collective, as is the value of offensive action.

The defense is of obvious importance in modern handball, by working without the attacking team being able to carry out its offensive vision and to be able to achieve goals resulting in winning the game, so that the team can ensure victory against the opposing team or at the minimum minimize the seriousness. It is very important to pay attention to the defensive aspects, whether individual or collective or differential and there are important duties must be determined by the coaches of their players and must be learned and trained defenders to perform these duties on the face of the game.[2]

The handball games in the regional, continental, and Olympic and World Cups have seen a significant change in the defense of the majority of the teams at the individual level. The issue here is not limited to the defensive formation system, but rather depends on the speed to cover the attacker. In how players apply to individual defense actions during coverage that fully controls the opponent.

Hence the importance of research through the use of the method of repetition in the training of the speed of the defensive movements of the method of flash for young handball players.

Research Aims:

The research aims at:

1. Prepare repetitive exercises to improve the speed of defensive coverage of the attack.
2. To identify the effect of exercise in the method of repetition in the speed of defense against the attack and some of the biochemical variables of young players handball.

Research Hypotheses: There is a positive effect of exercises in the method of repetition on the defensive coverage of the attack and some of the biochemical variables.

Research methodology and field procedures:

Research Methodology

The researcher used the two-group experimental approach to suit the nature of the research problem.

Search community and sample: The research community was determined by the young Kufa club players of 18 players were selected sample of them by 10 players, a ratio and in a simple random way.

Means of gathering information:

- Arab and foreign references and sources.
- Testing and measurement.
- Personal interviews.
- Experimentation.

Devices and Tools:

- Digital electronic stopwatch (1/100) of a second for measuring time and calculating it for tests that need time (German industry) 2.
- Leather measuring tape with a length of 40 meters.
- Whistle, Colored ribbons, Lace band, Chalk.
- Handball field.

Search Procedures: After reviewing several sources and scientific references and conducting many personal interviews, to determine the special tests in measuring the research variables studied by the experts interviewed.

Tests used in research:

Test defensive moves to cover the attack:[3]

Objective of the test: Measure the speed of the performance of defensive moves to cover the attack.

Tools: Handball, bar to bar, standard bar, stopwatch.

Performance characteristics: Eight of the five signs (A, B, C, D and E) are drawn near a 6 meter line, each is 3 meters wide and two marks (and g) are drawn on the first 9 meter line in the middle distance between the two markers A, B) and the second in the middle distance between the signs (C, D) and draw another mark (H) on the other 6 meters line.

The laboratory stands above the mark (H) and when it is given the starting signal, the enemy moves forward to the middle of the field, then changes its direction to face the goal with the back and the fast backward retreat until it reaches the mark (E) Until the mark (g), then back with a tilt to the mark (C) and through the side moves of the sign (B), then (f) and finally doing the back-back movements with a tendency to reach the sign (A).

Performance Requirements: The movement of the laboratory is similar to the movement of the defense

in terms of movements of the two men and the shape of the arms and hands.

Calculation of Grades: The time of the distance from the mark (h) to the mark (A) is recorded to the laboratory.

1. Measurement of lactic acid in the blood.[4]

Purpose of the Test: Measure the level of lactic acid concentration in the blood after the effort

The test was conducted to measure the concentration of lactic acid by taking a drop of blood from the thumb of the player five minutes after the end of the training unit to know the movement of the increase and decrease the amount of lactic acid blood after physical effort to ensure the transfer of the largest amount of lactic acid from the muscles to the blood is withdrawn The amount of lactic acid is measured after 13 second of the drop of blood drop. The number shown on the screen of the device, which is a measurement of 100 mL/100L, is read. The normal rate of the time of rest is 1 mm Work has been carried out under the supervision of a specialist in pathological analysis.

2. Measurement of creatinine phospho-cyanase (cpk).[5]

The Purpose of the Test: Measuring the creatine phosphorus kinase enzyme

Test Specification: A blood sample was taken from each player by 5 cc after 3 minutes of effort and by a specialist in the analyzes and then transferred to Al Shahad laboratories in India for the purpose of extracting the enzyme level. Note that the normal ratio of the enzyme (mm) of the type (mm) of the muscles range from (20-200) Milli Mall.

Pilot Study: The researcher conducted two surveys on the sample (6) players from outside the sample of the research and the goal of conducting the following exploratory experiment:

1. Verification of the accuracy and safety of the devices and tools used.
2. The extent of appropriate and appropriate tests for the sample and identify the difficulties faced by the sample and researcher during application, as well as calculate the time taken to perform tests.
3. Training assistants how to apply tests and how to register grades.
4. Taking into account the safety of players when performing tests.
5. To create the scientific conditions for tests in terms of sincerity, stability and objectivity.

The second exploratory experiment was for the purpose of knowing the time of application of the exercises prepared by the researcher for the research sample.

Pre Tests: The researcher carried out the physical and physiological tests of the control and experimental research samples on Thursday 23/1/2019 at 2:00 pm and at the Kufa sports club hall.

Sample homogeneity and equivalence of the two groups: In order to complete the experimental design requirements, the researcher verified the homogeneity of the research sample in the studied variables using the Levine test in which the SIG value was greater than (0.05) and for all the research variables, Shown in Table (1).

In order for the researcher to attribute the differences to the experimental factor, the parity between the two research groups was carried out prior to the start of the exercise. The appropriate statistical method was used to test (t) for independent samples of equal number in which the sig value was greater than (0.05) the tests confirm the equivalence of the two sets of research and as shown in Table (2).

Table (1). Shows the homogeneity of the sample and the equivalence of the two research groups in the investigated variables

Tests	Units	(F) value	Level of significance	(t) calculated	Value calculated for the level of significance	Statistical significance
Speed of defense coverage	Second	0.01	0.92	0.11	0.91	Random
Enzyme Ck	Milli Mall	0.18	0.68	0.27	0.79	Random
Lactic acid		1.95	0.20	0.42	0.96	Random

The Main Experience: The researcher conducted the main experiment, where the exercises were prepared by the researcher on the experimental group and using the method of repetition and for four weeks by three units per week, while the control group has used the exercises prepared by the coach.

Phosphate exercises in the training curriculum as follows:

1. The total number of training units included special exercises (24) doses.
2. The number of weekly training modules that special exercises (3) units and for a period of (8) weeks.
3. Special exercise time in one module (45-50) minutes (main section only)
4. The researchers adopted the method of repetitive training in all training units.
5. Training days during the week are (Sunday, Tuesday and Thursday).
6. The goal of special exercises is to develop the physiological variables (the concentration of lactic acid in blood, the concentration of CPK in blood).
7. The objective of the diamond-style exercise is to develop defensive coverage of the hand-held attack.
8. Considering the exchange of labor between the muscle groups.
9. The rate of work rest for exercises is (10: 1 18: 1).

Posttests: The researcher carried out the physical and physiological tests of the control and experimental research samples 15/05/2019 at 2:00 pm and at the Kufa sports club hall.

Results

Table (2): Shows the mean, the standard deviation, the calculated (t) value and the level of significance of the results of the physical and physiological tests

Tests	Units	Pretest		Posttest		(t) calculated	Level of significance	Statistical significance
		Mean	SD	Mean	SD			
Speed of defense coverage	Second	12.31	1.41	7.93	0.62	5.87	0.004	Sig.
Enzyme CPk	Milli Mall	180	36.74	272	44.94	2.94	0.04	Sig.
Lactic acid		9.02	2.97	13	0.70	3.53	0.02	Sig.

Table (3) shows that there are differences between the results of the pre and post measurements of the experimental group in the investigated variables. It was found that the value of the mean level of the defense coverage rate of 0.004 is less than the significance level (0.05), indicating that there is a difference between the tests and for the post test.[6]

Table (3): Shows the mean, the standard deviation, the calculated (t) value and the level of significance of the results of the physical and pretests of the control group.

Tests	Units	Pretest		Posttest		(t) calculated	Level of significance	Statistical significance
		Mean	SD	Mean	SD			
Speed of defense coverage	Second	12.20	1.58	9.24	0.42	5.30	0.00	Sig.
Enzyme CPk	Milli Mall	187	43.24	201	42.48	0.62	0.56	Non sig.
Lactic acid		9.12	4.41	10.6	2.07	0.77	0.4	Non sig.

As for the variable lactic acid in the blood, the value of (t) calculated (0.77) and the level of significance (0.4), which is greater than the level of significance (0.05), indicating no significant difference between the tests.[7]

Table (4). Shows the arithmetic mean, the standard deviation, the calculated (t) value and the sig value of the results of the physical and physiological tests of the experimental and control groups in the post tests

Tests	Units	Experimental group		Control group		(t) calculated	Level of significance	Statistical significance
		Mean	SD	Mean	SD			
Speed of defense coverage	Second	7.93	0.62	9.24	0.42	3.88	0.04	Sig.
Enzyme CPk	Milli Mall	272	44.94	201	42.48	2.56	0.03	Sig.
Lactic acid		13	0.70	10.6	2.07	2.44	0.04	Sig.

Table (4) shows that there are differences between the results of the post-dimensional measurements of the experimental and control groups in the investigated variables. The mean value of (t) calculated (2.56) and the level of significance (0.03) is smaller than the level of significance (0.05), indicating the existence of a significant sign between them and this is the result of the increased effectiveness of the enzyme for the experimental group due to the impact of exercises intensity In the increase in the number of motor units participating in the performance, that the effectiveness of the enzyme increases according to the requirements of performance and this was confirmed by the supporter of a local improvement in the activity of the enzyme active muscles.[8]

What we notice in the results of the tests of the dimension of the concentration of the enzyme (CPK) is the reduction of the proportion of members of the control and experimental groups and this decrease led to significant differences of the members of the two groups and that is attributed to the researchers that when the low concentration of lactic acid in the blood as a result of adaptations taking place In the body as a result of regular and continuous training prepared by the trainer helped the control group members to make physiological adjustments.[9]

The researchers found that the development of the enzyme (CPK) was reflected in the level of accumulation of lactic acid, which was in large quantities in the blood before the exercise by the researcher who prepared it, which dropped to large levels and this is a good indicator of the improvement of the physical condition and functional of the players as the trainee athlete well can eliminate the accumulation of lactic acid in the blood.[10]

Conclusion

1. There is a clear effect of exercise in the method of repetition in the speed of defense coverage.
2. Exercise also affected the enzyme CPK and lactic acid.
3. The special exercises prepared by the researchers helped to develop the concentration of lactic acid in the blood.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

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Effect of Dietary Supplement (Turmeric) in the Level of Concentration of Lactic Acid and Lactic Acid Dehydrogenase in the Players of the University of Babylon Futsal

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Abstract

The importance of research in the use of dietary supplement extracted from plants and their impact on the physiological indicators of players The problem of research that players are exposed to high physical stress depending on the specificity of the game with a random diet, which negatively affects the performance of the player in addition to delay the process of hospitalization and speed The aim of the research is to identify the effect of dietary supplement (turmeric) in the level of lactic acid concentration and lactic acid dehydrogenase in the players of the University of Babylon futsal. The researchers hypothesized that there is a positive effect of dietary supplement (turmeric) on the variables under study in the research sample. The researchers selected the research sample represented by the players of the team of the University of Babylon in futsal for the academic year (2018 - 2019) and the number of (12) players were distributed into two groups equally by random (lot) and after the provision of food supplement and the pilot experiment, The experimental group used the supplementary food supplement in addition to the instructor's method. The control group used the instructor's training curriculum only. After eight weeks, the post-tests were carried out. After the results were presented and processed by the appropriate statistical means Researchers reached the most important findings of the study and the conclusions reached by researchers are having a positive effect of food complement (turmeric) in the acid concentration level of lactic enzyme lactic Dehydrogenase the team players Babylon University futsal.

Keywords: *Turmeric, lactic acid and dehydrogenase.*

Introduction

It is known that most athletes at the upper levels take supplements with natural substances and elements as being not prepared and safe to use. In view of the global trend of expanding the use of plant raw materials instead of chemical substances with harmful side effects in the manufacture of pharmaceuticals, the use of plant raw materials with active substances and appropriate doses are more useful and safe in the treatment and prevention of many diseases. Turmeric powder is one of the nutritional supplements useful for increasing the vitality and activity and resistance to fatigue of players both in exercises or competitions. Turmeric has a wide range of preventive and therapeutic possibilities for many diseases in addition to containing a high percentage of antioxidants.[1]

High-intensity aerobic exercise leads to a lot of chemical changes within the cells of the body, especially as a result of metabolic processes. The higher the voltage, the higher the proportion of metabolic wastes, including the increase of the proportion of lactic acid and the difference of the concentration of the enzyme Lactate dehydrogen (LDH) The halls have a lot of specialties in terms of the small area of the stadium and not restricting the players specific duties as well as the movement of fast and continuous with a few breaks and this requires the trainers and cadres help work a lot to create functional and physical adaptations when players enable them to the importance of research in the use of natural dietary supplements (turmeric) to determine the effect of the concentration of lactic acid and the concentration of lactate dehydrogen in the blood of the players in the research sample.[2]

Research Aims:

1. Identification of the effect of dietary supplement (turmeric) in the level of lactic acid concentration in the players of the University of Babylon futsal.
2. Identification of the effect of dietary supplement (turmeric) in the level of concentration of the enzyme lactic dehydrogenase in the players of the University of Babylon Futsal.

Research Methodology and Field Procedures:

Research Methodology: It is the nature of the problem that determines the methodology used, so researchers used the experimental approach in the design of equal groups, which is compatible with the nature of the problem of research as experimentation is one of the most efficient means to access reliable information. The researchers also chose to design the experimental group and control method with pre and posttests.

Community and Sample Research: The researchers identified the research community with the players of the University of Babylon futsal team (15) and the exploratory experiment was conducted on (3) players and excluded after their participation in the exploratory experiment. The rest of the players were divided into two groups with (6) players per group.

Field Research Procedures:

Specify Search Variables: After reviewing several scientific sources and consultation between the researchers, the variables of the research were identified and were presented to the specialists in the field of sports and sports training, as agreed upon in accordance with the problem of research and were as follows:

- Concentration of lactic acid in blood after the effort.
- The concentration of LDH enzyme in the blood after the voltage.

Tests Used in Research: After studying the relevant studies and the sources related to the research problem, the researchers chose a standardized test to measure the performance of the futsal players and presented them to the experts in the field of physiotherapy and sports training. The researchers presented the test to (11) experts to determine the validity of the test.

Performance Test: Long-range performance test based on scoring and scrolling on both sides of futsal. Short anaerobic tests approach between (60-120) seconds.

Pilot Study: The pilot study is a mini-experiment of the basic experience and the conditions and conditions in which the basic experiment is to be possible should be available so that its results can be taken.

The researchers conducted a pilot study for the tests used in the study on Thursday, 8/11/2018 on a sample of (3) players from the research community, in the closed hall of the Faculty of Physical Education and Sports Sciences/University of Babylon.

Main Experiment Procedures:

Pretests: The researchers conducted the pretests on the research community on Monday 12/11/2018 at 12 noon in the closed hall at the Faculty of Physical Education and Sports Sciences/University of Babylon.

Application of the supplementary food program and the trainer's training curriculum: After completion of the experimental experiment, the researchers started implementing the supplement program for the experimental group and the training curriculum for the instructor for both groups starting from Sunday 13/11/2018 for 8 weeks and 3 training units per week.

Posttests: The researchers carried out the tests after the completion of the main experiment (dietary supplements, turmeric and training curriculum for the instructor) on Tuesday, January 15, 2019. The tests were conducted under the same conditions as the pretests in the same order of tests where each group tested the same of tests.

Results

Table (1). Show the results of pre and posttests of the experimental group of the test group

Variables	Units	Pretests		Posttests		(Wilcoxen) calculated	Tabulated	Level of test indication	Type of significance
		Median	SD	Median	SD				
Lactic acid in blood	Mmol/l	10.29	0.42	7.04	0.54	2.2	0	0.028	Sig.
LDH enzyme in blood	Unit/l	501.44	22.94	385.65	10.2	2.2	0	0.028	Sig.

The results showed significant differences between the two mediators, which indicates the decrease in the accumulation of lactic acid in blood. Turmeric with the exercises of the trainer worked to find this difference between the pre and posttests of the variable ratio of accumulation of lactic acid in blood.

The researchers attributed the reason for the apparent decrease in the accumulation of lactic acid to the presence of sodium in abundant amounts in turmeric and in the effectiveness of the training method. They worked together to speed up the process of lactic acid degradation and convert it into a glycogen to be re-exported as a source of energy through a series of quick chemical reactions. Anise narrator confirmed that lactic acid is a compound resulting from the representation of sugary substances. It can then be converted into sugars (glucose or glycogen) inside the muscle or liver. The hydrogen atoms adhered to lactic acid are united again with NAD and then oxidized Wen acid which energy source is used and then configure the ATP as well as converted to glucose in the blood or glycogen in the liver by Korean cycle .[3]

Returning to Table (1) of the experimental group, we note that the results showed significant differences of statistical significance between the two mediators and this is a sign of a decrease in the proportion of the secretion of the enzyme LDH in blood, that the intake of turmeric capsules with training according to the program prepared by the coach worked to find this difference in Between the preterm and post-test trials of the LDH enzyme in blood.

The researchers explain that the reason for this apparent decrease in the concentration of the enzyme (LDH) for members of the first group is due to compounds consisting of turmeric and in particular vitamins (B6, E, B9, C, K) as these vitamins act as antioxidants needed by cells to continue to perform This is what believes that the protective function of antioxidants is considered as one of the chemical control and balance systems in the body through which the metabolic activity related to the production of the enzyme is controlled. Power of during the reverse action (reverse adaptation) by antioxidants in stopping the work of harmful free radicals during physical exertion .[4]

Table (2). Shows the results of the pre and post testing of the control group and of the control group

Variables	Units	Pretests		Posttests		(Wilcoxen) calculated	Tabulated	Level of test indication	Type of significance
		Median	SD	Median	SD				
Lactic acid in blood	Mmol/l	10.26	0.4	8.39	0.5	2.2	0	0.028	Sig.
LDH enzyme in blood	Unit/l	502.83	20.35	426.68	5.34	2.2	0	0.028	Sig.

By noting the results in Table (2) which showed that there are significant differences of statistical significance between the two mediators, which indicates the decrease in the proportion of accumulation of lactic acid in blood, which is that the training curriculum of the coach worked to find this difference between the tests Pre and post-variable ratio Accumulation of lactic acid in blood.

The researchers attribute this to the efficiency of the training curriculum in relieving the body of physical exertion, including lactic acid. Some studies indicates that the body gets rid of lactic acid faster if the athlete performs moderate exercises during the period of recovery rather than complete rest.

Also, when the LDH secretion rate was observed in Table (3), the researchers attributed the low LDH concentration of the control group to the effective training method, which improved the enzyme responsible for converting into lactic acid during the anaerobic physical exertion Which is reflected in the ability of the muscle to get rid of lactic acid and thus decrease the concentration of the enzyme (LDH), whose relationship is positive with the concentration of lactic acid and then increase the time of anaerobic synthesis. The speed of LDH reactions starts to increase gradually after the first minute of the reaction and the amount of the increase is associated with the high concentration of lactic acid.[5]

Table (3). Shows the results of the post tests of the Crosscal Wallis test for both groups

Variables	Units	Experimental Group		Control Group		(Crosscal Wallis) calculated	Tabulated	Level of test indication	Type of significance
		Median	SD	Median	SD				
Lactic acid in blood	Mmol/l	7.04	0.54	8.39	0.5	10.71	5.99	0.005	Sig.
LDH enzyme in blood	Unit/l	385.65	10.19	426.68	5.34	15.15	5.99	0.01	Sig.

By observing the results of Table (4), which show the Wilcoxon test coefficient, we found significant differences between the tests of pre and post and for the benefit of posttests and when using the test Crosscal Wallis showed significant differences between the two groups, which requires the use of the test (Mann Whitney) to see the smallest difference between Groups in order to indicate the preference of one of the two research groups.

Table (4). The results of the post-test tests of the Mann Whitney test mix between the control and experimental groups in the level of lactic acid concentration in blood and lactate dehydrogenase

Test Mann Whitney between the control and experimental groups				
Variable	Median	SD	Test Mann Whitney	Level of significance
Lactic acid in blood	7.72	0.86	2.72	0.006
LDH enzyme in blood	406.17	22.78	2.88	0.004

In the table (4), we see statistically significant differences between the two groups for the benefit of the experimental group. This indicates that the experimental group showed superiority over the group. This is attributed to the researchers that the use of turmeric capsules and the training curriculum of the trainer together can reduce the concentration of lactic acid in blood faster than the group that used the trainer's training curriculum.[6] And the fact that supplement Turmeric contains many elements that improve the metabolism within cells and thus produce more energy and the most prominent of these elements (sodium, potassium, magnesium and calcium) and thus the experimental group showed a difference from the control group and therefore these elements affect the cells of the body of the athlete,[7] And this is consistent with the study Eating sodium reduces the concentration of lactic acid in the blood when measuring the peak of the collection of lactic at the time of hospitalization.[8]

In addition, the reason for the decrease in the concentration of lactic acid is due to the adaptation of the working muscles and internal organs of the body of the player in the rapid disposal of the accumulation of large amounts of lactic acid in the blood during physical effort and this physiological adjustment due to the quality of the exercises that the players continuously,[9]some studies suggests that the recent training proposals proved that the use of modern means of training can lead physiologically to the full impact on organic organs, which develops from the ability of the athlete to resist fatigue in a wide variety of fatigue complex and pleasing aspects, which requires the need for multiple method of training and the resulting multi-dimensional impact in the functional machinery .[10]

Back to table (4), there are statistically significant differences between the two groups for the benefit of the experimental group in the concentration of LDH in blood, which is attributed to the researchers that supplemented Turmeric contains many vitamins and elements that improve the metabolism and analysis of amino acids (B6, C, K, B9, Sodium, Potassium, Magnesium and Calcium). These elements have also influenced the cells of the body of the athlete.[11]

The researchers believe that the decrease in the level of the concentration of lactic acid was clearly reflected

in the ratio of the enzyme (LDH) in blood, which means that the enzyme is very important in the activation of the interaction of the front and back and the relationship between the two and this confirms to increase the activity of the enzyme (LDH) This helps with the metabolism of lactic acid, so any increase in the activity of this enzyme is accompanied by an increase in the elimination of lactic. When performing a high physical effort, lactic acid will accumulate, causing muscular fatigue, as energy houses cannot form glucose of the lactic so the enzyme works on LDH Yale Lactic acid to Berovk.[12]

Conclusions

1. There was a positive effect of the use of dietary supplement (turmeric) in low level of lactic acid concentration in the players of the University of Babylon futsal.
2. There was a positive effect of the use of dietary supplement (turmeric) in the low level of the concentration of the enzyme Lactic dehydrogen in the players of the University of Babylon Futsal.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Cycosomatic and its Correlation to the Mentally Retarded Athletes of Al-Furat Al-Awsat Technical University

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Abstract

The aim of the study was to identify the scales of psychosomatic and mental regression and to find the correlation between the cycosomatic and mental regression of the teams of the Middle Euphrates University and Al-Furat Al-Awsat Technical University. The researcher hypothesized that there are no statistically significant differences between psychosomatic and mental retardation. The study sample consisted of (96) athletes representing Al-Furat Al-Awsat Technical University for the 2016-2017 sports season, 12 of whom were excluded for participating in the exploratory experiment. The researcher used statistical means (percentage, arithmetic mean, standard deviation and global analysis).

Through the results obtained by the researcher, they derived the following:

- The correlation that emerged is a negative correlation between the psychosomatic and mental retardation University of the Euphrates Middle Tech
- Plane players enjoy varying degrees of cycosomatics and under conditions of competition and low grades during the training modules.

Keywords: *Cycosomatic, mentally and athletes.*

Introduction

The correlation between psychology and sports and physical games is an interrelated and dialectical correlation that is characterized by live interaction and cannot be separated from this link as psychology generally addresses the problems experienced by individuals in their lives that appear in the form of acute and abnormal emotions and not in the form of deviations, disorders and diseases and psychological contract. Psychological problems are always the result of the poor compatibility of the individual with himself on the one hand and poor compatibility of the individual with his environment and the environment on the other, this causes failure to achieve the individual's goals and satisfy his psychological needs. And social and social.[1]

"Mathematical psychology plays an important role in the lives of individuals, as it directly affects their behavior and therefore we see its effects in many of their actions. Sports psychology can be seen as a kind of motivation, desires, mental and physical abilities, attitudes, psychosomatics, fear, anxiety, concentration and attention. And control and stability and other cases are acquired and fungus and develop experiences in the first case and since birth in the second case can be developed the individual must strive for success and that "feeling inferior is normal for people and can lead to a state of creativity and that the goals are Move to overcome the problems by the inherent creative power within the human being that helps to achieve his natural talents for self-realization".[2] The importance of this research is to find the correlation between the cycosomatic and mental state of volleyball athletes as it attempts to shed light on the nature of the correlation between two variables the first is related to the psychological aspect of the cycosomatic of athletes. The other variable is mental reflexology. In addition, the study comes in the field of the university and mental retaliation urges the player to be advanced and distinguished among his peers in the team as the player's need for achievement and excellence It works to

motivate and stimulate the potential of the environment and works to redouble and direct its efforts and energies towards achieving the desired goal of high achievement. As a result of the above, the importance of research lies in the level of recognition of the level of psychosomatic athletes, as well as the level of mental response and thus know the type of correlation and influence between the cycosomatic and mental retardation.[3]

Research Aims:

1. Recognition of the psychosomatic and mental retardation in the athletes of the University of Middle Euphrates technical.
2. To identify the type of correlation between the cycosomatic and mental retardation in athletes.

Methodology

Research Community: Is "all individuals, objects or persons who constitute the subject of the research problem, which is all elements related to the problem of the study to which the researcher seeks to generalize the results of his study". Thus, the research society included the 96 athletes of Al-Furat Al-Awsat Technical University as shown in Table (1).

Table (1). The names of institutes and faculties of the Euphrates Middle East Technical University show the technical and technical Euphrates University

Name of institute or college	Technical Institute Kufa	Najaf Technical Institute	Technical Institute of Diwaniyah	Technical Institute of Samawah	Karbala Technical Institute	Technical Institute Musayib	College of Administrative Kufa
Number	12	12	12	12	12	12	12
Total	96						

Search Tools: The researcher used the research tools to access the research information, questionnaire form and interviews, which included the construction of the scales of psychosomatic and mental retardation in the athletes of the University of Middle Euphrates technical.[4]

Scientific steps of the measures of psychosomatic and mental retardation:[5]

1. The initial preparation of the special scale formula for psychosomatic and mental retardation requires a lot of procedures, including the process of formulating the paragraphs of the standard that are appropriate to the study society, as well as setting instructions on how to answer them and method of correction. The procedures were: - access to sources and references.
2. The study of previous studies, standards and questionnaires in physical education and self-employment, which relate to personality, psychosomatic and mental retardation.

Formatting the paragraphs of the scale: The "building conditions of psychological standards that the instructions to answer them are clear to those who prepare the scale, in addition to hiding the real purpose of the scale is (not to write the name of the scale) to obtain true data" (3). (4) A paragraph was prepared for the measure of the cycosomatic and it was presented to the experts and specialists to indicate their validity to measure the purpose that was developed and excluded. (75%). Thus, the paragraphs agreed upon (17) paragraphs and by agreement (80%) and 48 paragraphs were prepared for the mental regression and were presented to the experts and specialists also for the statement (24) of the scale of the cycosomatic scale This is because they do not get the agreement rate (75%), so the agreed paragraphs (24) and the proportion of agreement (80%), "Bloom notes that (the rate of reliance on the consent of experts is 75% and more in such kind of honesty".[6]

Stability of the scale: "The stability tests are necessary indicators and the researcher used the half-way method because it requires a one-time test".[7]The data obtained by the researcher regarding the scores of the responses of (12) players were adopted. This method depends on splitting the test into two parts, the first part contains the individual numbers and the second

part contains the even numbers. The simple correlation coefficient (Pearson) was calculated between the scores indicated between the scores which reached (0.841). This method represents the stability coefficient of half the test., So the researcher used constant stability Measuring (0.945) is a good standard that can be relied on.[8]

Table (2). Correlation coefficients between the degree of each paragraph in the total sum of the construction sample of the cycosomatic scale

Item	Factor	Item	Factor	Item	Factor
1	0.376	13	0.055*	25	*0.109
2	0.353	14	0.651	26	*0.154
3	0403	15	0.411	27	0.398
4	0395	16	0.541	28	*0.123
5	0611	17	*0.143	29	0.290
6	*1.009	18	0300	30	0.306
7	0491	19	0518	31	0.299
8	0.439	20	*0.155	32	0.421
9	0.611	21	0.333	33	*0.110
10	*0.197	22	*0.162	34	0.320
11	0.289	23	*0.119	35	0.432
12	*0.123	24	0.421	36	0.280

* Weak discrimination clause.

Table (3). Value (t) of psychosomatic scales using the method of the two extremes

Paragraph	(t) value	Paragraph	(t) value	Paragraph	(t) value
1	2.432	13	3.210	25	3.112
2	*1.552	14	3.109	26	2.219
3	1.432	15	*1.691	27	4.091
4	2.339	16	1.432	28	3.221
5	3.710	17	1.904	29	2.321
6	2.833	18	3.110	30	1.295*
7	2.621	19	*1.772	31	3.120
8	*1.652	20	3.100	32	2.432
9	*1.711	21	*1.502	33	1.481*
10	3.320	22	4.132	34	3.911
11	3.200	23	6.087	35	2.330
12	3.108	24	2.332	36	3.118

Table (4). Value (t) of psychosomatic scales using the method of the two extremes

Paragraph	(t) value	Paragraph	(t) value	Paragraph	(t) value
1	2.249	13	3.008	25	3.111
2	*1.550	14	3.184	26	2.092
3	1.737	15	*1.604	27	4.910
4	2.098	16	2.123	28	3.231
5	3.265	17	1.720	29	2.076
6	2761	18	3.090	30	*1.218
7	2.187	19	*1.700	31	3.305
8	*1.603	20	3.103	32	2.907
9	*1.375	21	*1.522	33	2.900
10	3.410	22	4.045	34	*1.401
11	3.100	23	4.208	35	2.701
12	3.012	24	2.002	36	3.052

Correction of Scale: After completion of the scientific transactions by the researcher for the paragraphs of the scale of the cycosomatic, based on the previous procedures, the final form of the measure is made up of (24) paragraphs see Annex (1). The answer will be answered by choosing one of two alternatives, namely (yes) or (no), with two degrees of response (yes) and one score for the answer (no) and the total score of the scale ranged between (48 - 96).[9]

Mental Retardation Scale: The researcher used the same steps to build the psychosomatic scale.

Table (5). Value (t) of psychosomatic scales using the method of the two extremes

Paragraph	(t) value	Paragraph	(t) value	Paragraph	(t) value
1	2.246	17	3.581	33	3.438
2	*1.552	18	3.482	34	2.532
3	1.731	19	*1.691	35	4.438
4	2.549	20	1998	36	3.711
5	3.321	21	1.844	37	2.539
6	2.975	22	3.095	38	*1.295
7	2.199	23	*1.772	39	3.270
8	*1.652	24	3.129	40	2.982
9	*1.711	25	*1.542	41	*1.481
10	3.310	26	4.192	42	3.751
11	3.183	27	6.237	43	2.709
12	3.622	28	2.593	44	3.055
13	2.129	29	2.700	45	3.731
14	*0.654	30	3.218	46	2.052
15	3.099	31	5.172	47	3.194
16	3.183	32	*0.799	48	2.841

In view of the fact that paragraphs (6/10/12/17/21/24/26/27/29/30/33/34/36/48) were adopted in an internal consistency and paragraphs (2/8/9/14, 19/23/25)/32/41) in the manner of extreme groups on the coefficient of discrimination is weak so excluded from the scale, so the number of paragraphs deleted is (24) paragraph for both method, as the standard is composed in its current form after the statistical analysis of the paragraphs of (24) paragraph.

Main Experience: This was done during the volleyball championship of Al-Furat Al-Awsat Technical University for the period 6-11/1/2018 and in the collective manner and the hall of the Technical Institute Kufa, where the forms were distributed on the survey sample of (96) players and after marking the standards by the players were collected forms to obtain the results search.

Results

View and discuss results: After the application of the scales of psychosomatic and mental retardation to the research community, data acquisition and processing are statistically and quantitatively shown in Table (6).

Table (6). The correlation coefficient between the cycosomatic and mental retardation of the athlete of Al-Furat Al-Awsat Technical University

Tests	Mean	SD	Correlation coefficient	(r) value	df
The cycosomatic	46.84	2.68	-0.165	0.178	82
Mental Retaliation	51.57	3.57			

Table (6) shows that the correlation coefficient value (- 0.165) is less than the (t) value of (0.178) and the degree of freedom (82) below the significance level (0.05). The mean and standard deviation of the sample of the study and there is no significant difference between the cycosomatic and the mental regression. The higher the score on the psychosomatic scale, the higher the results were on the mental regression scale and vice versa.[10]

The researcher attributed these results that whenever players have a lack of stability and stability and anxiety and tension whenever there is a lack of relaxation and calm as a result of the personality disturbed physically and psychologically during training and this means that there is psychological pressure is exposed to players and therefore their performance is unacceptable due to lack of stability and stability,[11] What is supported by the impact of anxiety and tension and physical and psychological (cycosomatic) and low level of stability and varies from one individual to another depending on the type of pressure and size and strength and extent and nature of the psychological construction of the athlete and his ability and efficiency of his muscular and nervous systems and the safety of personality The force will on the resistance and not to succumb to these pressures and the extent of his sense of control events".[12]

Behavioral psychologists assume that schizophrenia occurs because of reinforcement, either by increasing attention to or reducing certain responses. Cognitive psychologists believe that cycosomatic disorders focus people too much on internal physiological processes and shift natural susceptibility to disorders accompanied by pain, aches, tension, anxiety and anxiety.[13]

The term "psychosomatic" refers to the physical disorders of the psyche. The physical aspect is the response to emotional pressure, which takes the form of physical disorders such as high blood pressure, anxiety, physical tension, joint pains, etc. and physical pains with a real organic sensation, especially emotional distress. It is a group of disorders that appear on individuals and their physical symptoms with the absence of an apparent organic cause. Psychosocial factors are therefore the loss or change in bodily functions without apparent physical cause. Any appearance or change of the physiological functions of one or more members of the body, That all mental disorder is an emotional conflict not feeling and physical disorders as a result of stress or psychological stress of the individual.[14] This is the close contact between the body and the soul, it reflects the continuous interaction between personality and emotional conflict on the one hand and the independent nervous system on the one hand others are due to the individual's struggle

between his ambitions and goals and his ongoing attempts to achieve them.[15]

Conclusions

1. The correlation that emerged is a negative correlation between the psychosomatic and mental retardation University of the Euphrates Middle Tech
2. Plane players enjoy varying degrees of cycosomatics and under conditions of competition and low grades during the training modules.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Role of Tissue Doppler in Early Detection of Left Ventricular Dysfunction in β Thalassemic Patients of Pediatric Age Group

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Abstract

Objective: Heart failure due to increase serum iron level is a major fatal cause in patients with Beta thalassemia. Echocardiography is a non invasive tool that play a major role in detection of cardiovascular disease. the aim of the study is Early detection of cardiac impairment in beta thalassemia by bed site technique (advanced echocardiography) in order to overcome the time and cost of other technique (T2 CMR).

Method: This is a case control study included 51 thalassemic patients maen age (11 ±2.8 year), 40 control (mean age 10± 2.7 year) they had attended to thalassemic center in obstetric and pediatric hospital in Hilla from 1 January 2019 to 4 march 2019. All pt and control underwent conventional echocardiography and tissue Doppler image (TDI).

Results: βThalassemic Patients (β-TM) had significantly higher left ventricular end diastolic and systolic diameter index, LVEDDI (41.5±13.7vs. 31.8±7.5; P = 0.000) and LVESDI (25.7±6.2 vs. 20.9±6.7;P = 0.000) (On the other hand there are no differences in ejection fraction and systolic fraction between patients and control (P>0.05). Additionally pulmonary capillary wedge pressure are more in patients than in control (11.6 ± 4 vs. 9.7 ± 1; P = 0.000).

Conclusions: Advanced echocardiography including tissue Doppler imaging has important role for early detection of cardiac dysfunction in β-TM patients

Keywords: *Thalassemia, Tissue Doppler image (TDI).*

Introduction

Usually thalaseemia major is presented in early life between the age of 6-24 months. Patients may complain from feed problem, failure to thrive, abdominal expansion due to hepatosplenomegally .Also changes of skeleton and deformation of the long bone, the maxilla is hypertrophied leading to upper teeth protrusion [1]

Complication of thalassemia depends myocardial iron deposition with high reproducibility with magnatic resonance scan. In later adult life with development of diabetes which affect endotheliam and more cardiovascular function detorioration . so the need for more safsticatedtechnigues for early detection to improve the prognosis [2] .

There is dramatic improvement of thalassemic patients with blood transfusion and iron chelating agent to decrease excess iron that is loaded in endocrine organs with presentation could ocurr from childhood to adulthood [3]. Iron deposition mostly in hepatic and cardiac tissue [4]. Main complications from iron overload include osteogenses abnormalities, retarded growth, diabetes mellitus (DM) and endocrine deficiency (thyroid & adrenal glands) [5]

Cardiac damage of these patients due to iron and free radicals effects, endocrine abnormalities, infectious and drugs effects, coagulopathy and valvulopathy[6] . Volume over load in thalessemic patients progressively impaired heart function with the development of heart failure due to high volume ejected with the presence of abnormal valves due to increased thickening and calcification[7] .

Moreover, There are many mechanisms for iron deposition in the body these include transfusion of blood

and early destruction of RBCs and increase absorption of iron through gastrointestinal tract [8]

Materials and Method

This is a case control study included 51 thalassemic patients maen age (11 ±2.8 year), 40 control (mean age 10± 2.7 year) they had attended to thalassemic center in obstetric and pediatric hospital in Hilla from 1 january 2019 to 4 march 2019. All patients and control underwent conventional echocardiography and TDI. This study was done in Echo Department in Obstetric and Pediatric hospital and in Marjan teaching Medical City.

The following patients were not involved in this study:

1. Patients with respiratory tract infection (RTI)
2. Congenital heart disease
3. Diabetes mellitus
4. Cardiomyopathy.

Echocardiographic study was done in a supine and lateral decubitus position . parasternal long and short axis view and then the apical view[9]. Doppler study included pulse wave and tissue Doppler study for the left sided assessments was done

Vivid 5 GE medical ultrasound instruments was used with a probe of 2.5 MHz .Imaged were stored for all the patients and control for offline analysis.

Body surface area was measured by this formula

Body surface area (BSA)= (height *weight)/3600[2]

The M-mode echocardiographic measurements included left ventricular end diastolic diameter (LVEDD) and left ventricular end systolic diameter (LVESD)were measured and indexed for body surface area . The M-mode measurement was taken between the tip of the mitral valves and the tips of the papillary muscles with a correct angle (90). If a correct angle cannot be obtained either the option of automated M mode was used or measurements was taken by 2 D echocardiography .In addition to that interventricular septal thickness in diastole and ejection fraction and fractional shortening were measured .

Diastolic function of the left ventricle was determined by using pulse wave and tissue Doppler imaging.

Pulse wave Doppler included the following:

a. E-wave velocity of early mitral flow

b. A- wave velocity of late mitral flow

c. E/A ratio

d. Deceleration time

By taking apical 4 chamber view (4CV), PWD was putted atrial the tip of the mitral valve and then the peak velocity of E and A wave was calculated in addition to measurements of deceleration time and E/A ratio

Statistical Analyses: SPSS 17.0 was used (SPSS Inc, Chicago, IL, USA). In this study Chi square was used .T- test was used for comparison between the mean and SD . Correlation between variables was calculated by using Pearson correlation. P value <0.05 is the cutoff value for testing significancy.

Results

The results of this study were shown and expressed as two groups; Thalassemic major patients (TMP) and normal control groups.

There were no significant changes in age, tall and weight between the study groups (P>0.05) . On the other hand, there is a significant difference in the heart rate between patients and control (P<0.05) (Table 1).

Table 1: Distribution of the study groups according to their demographic data.

Variables	Patient (50)	Control (41)	P value
Age	11±2.8	10±2.7	0.07
Weight	46±30	40±32	0.2
Tall	46±132	37±133	0.6
BSA	1.02±2.3	1.02±0.36	1
HR	103±15.9	93±16.7	0.003*
S F	2534.9±1443		
HB	22.5±3		

BSA = Body surface area, HR = Heart rate, SF = Serum ferritin, HB = hemoglobin, Values are expressed in mean±standard deviation. *P<0.05

Additionally, history was taken from the patients from the patients about intake of iron chelating, presence of hepatomegally and splenomegally.

Furthermore, there was no significant differences in the number of male and female in the study group (P>0.05). (Figure 1 & 2).

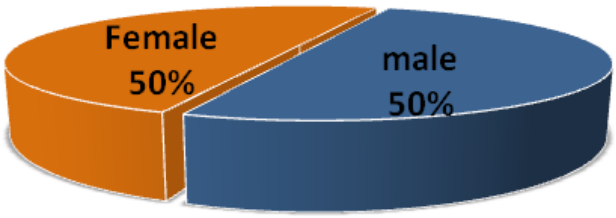

Figure 1: Gender distribution in patients group

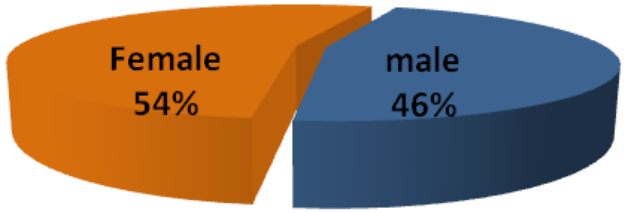

Figure 2: Gender distribution in control group

Highly Significant differences of LVEDDI and LVESDI were shown between thalassemic patients and control groups . On the other hand, there was no significant change in the IVS and EF between the study groups (Table 2).

Table 2: 2D and M mode echocardiographic parameters between patients and control groups .

Parameters	Patients	Control	P value
IVS(mm)	8.1±1.02	7.9±1	0.5
EF(%)	67.8 ±5.7	67.2±5	0.5
FS(%)	37.4±4.6	36.4±4.2	0.3
LVEDDI (mm/BSA)	41.5±13.7	31.8±7.5	0.000**
LVESDI (mm/BSA)	25.7±6.2	20.9±6.7	0.001**

IVS= Interventricular septum, EF= ejection fraction, FS=fractional shortening, LVEDDI= left ventricular diastolic diameter index, LVESDI= left ventricular systolic diameter index, Values are expressed in mean ± standard deviation.

The results showed that the level of E, A, E/A ratio were significantly higher in patients than in control groups (P<0.05) (Figure 3).

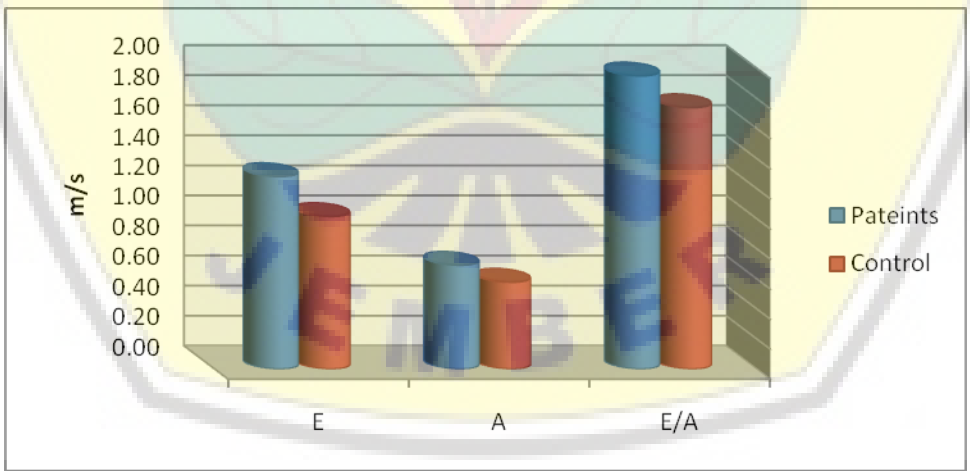

Figure 3: Mitral valve Pulse Doppler parameters in patients and control groups

Also, there were highly significant differences in tissue Doppler parameters included E/e^ and IVRT, IVCT, ET, MPI (P<0.01). Also, the PCWP that detected from lateral and septal wall was significantly higher in patients than in control group. ON the other hand, there were no significant in other tissue Doppler parameters included E^, S^ of the septum (P>0,05) while the s^ from the lateral wall is significantly loer in patients than in control groups (P<0.05). (Table 3).

Table 3: Tissue Doppler parameters between patients and control groups .

Parameters	Patients	Control	Pvalue
e^ (m/s)septum	0.17±0.02	.16±0.02	0.4
E/e^ septum	7.6±1.4	5.9±0.9	0.000**
PCWP septum	11.6±1.4	9.8±1.02	0.000**
S^ septum (m/s)	9.8±1.69	9.6±1.9	0.5
S^ Lateral (m/s)	10.6±1.7	12.3±2.7	0.006**
e^ (m/s) lateral	21±3	20±3.4	0.2
E/e^ lateral	6.2±1.1	5±1	0.001**
ET(ms)	252.8±26.9	281.8±24.5	0.000**
IVRT(ms)	45.1±9	36±9	0.000**
IVCT(ms)	45.7±11	33.6±6.6	0.000**
MPI	.36±0.08	.24±0.08	0.000**

ET= ejection time, IVRT= Isovolumetric relaxation time, IVCT= Isovolumetric contraction time, MPI= Myocardial performance index, ms= millisecond, Values are expressed in mean ± standard deviation.

Discussion

Most of thalassemic patients in this study had serum ferritin (SF) more than 2500 mg/dl this is due to recurrent blood transfusion Additionally, our study showed that there are a significant differences in the heart rate between thalassemic patients and control which occurred due to physiological compensation of chronic anemia.[10]

This result was agreed with Mohammed and his co-workers in 2013 who found that most of the patients with TM had a sinus tachycardia.[11](4)

Also in this study there are in significant differences of systolic EF and FS of the LV between patients and controls . these results is consistent with many other studies.[12,13,14]

There are two major factors that affected the cardiac chambers and function in thalassemic these are :ferritin level and high cardiac output .

Hemodynamic changes that occurred in thalassemic patients is due to anemia which lead to bone marrow expansion causing volume overload and high cardiac output .subsequently, this lead to dilatation of the chamber and chronic maintenance of this state lead to heart failure[15,16,17]. Additionally the myocardium will affected by iron deposition this is results in impaired function of the left ventricle .

A current study found that there are no significant differences in the septal thickness between patients and control while there was a significant increase in LVEDDI and LVESDI between thalassemic and control groups . These parameters were analyzed by many other studies and the results of this study agreed with most of them[18]

On the other hand, Bay and his coworker found that there is no significant differences in the LVEDD between the control and patients groups [19]

Doppler measurements in a current study revealed high E, E/e^ ratio in thalassemic patients than in control groups .

This result was agreed with Mozhgan and his co-workers in 2017 who found that the patients with thalassemia had a higher E and E/e^ Doppler parameters than control groups [20] .This findings are agreed with other studies and explained a that chronic state of anemia and increase preload will lead to high cardiac output that cause a higher E velocity [13,21].

Also there is a significant increament of PCWP in thalassemic patients than in control groups which indicate a high ventricular filling pressure and left ventricular dysfunction and this resukt was coincide with another study who had a similar finding [22]

Myocardial performance index (MPI) is directly related to IVRT and IVCT and inversely related to ET.[23]

So MPI is measured the systolic and diastolic function of the heart . Additionally MPI is less affected by the heart rate.

In this study there are significant increase in MPI, IVRT, IVCT and this results were agreed with other study [24], that found a significant increase in MPI when serial evaluation was done to a children thalassemic patients

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Effect of TIVA with Propofol Versus Inhalational Anathesia Plus Ketamine on Fertilization and Clinical Pregnancy Rate in ICSI

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Abstract

Background: *In vitro* fertilization is an important advancement in the treatment of infertilityin the late forty years and it has become available on outpatient bases in day care surgical units, however, pain is expressed during aspiration of oocytes and adequate pain relief is required. Various anesthetic modalities and analgesics have been tested in different studies. Theseanesthetic agents have been found in the follicular fluid and may have detrimental effects on oocyte fertilization and embryonic development. The aim of current study was to investigate the effect of type of anesthesia on fertilization and pregnancy rate in patients undergoing ICSI.

Method: The study was held at the High Institute of Infertility and ART's in AL-Nahrin University, Baghdad, Iraqfrom 1st of April 2018 to the 1st of February 2019. The study involved 80 patients during their ICSI course were randomized blindly at time of oocyte retrieval anesthesia into two groups:Group 1 included 40 patients subjected to TIVA(total intravenous anesthesia) with midazolam and propofol (group1) and Group 2 included 40 patiesnt subjected to inhalational anesthesia (isoflurane) with ketamine and Midazolam. Evaluation of fertilization,cleavage, grade 1 embryo and pregnancy rate were done to determine the most beneficialand less toxic anesthesia for *in vitro* fertilization patients.

Results and Conclusion: TIVA with midazolam and propofol had better reproductive outcomes on fertilization rate, cleavage and grade 1 embryo rate with significant higher pregnancy rates than inhalational anesthesiawith midazolam and ketamine.

Keywords: *IVF, anesthesia, propofol, ketamine, pregnancy rate.*

Introduction

*In vitro*fertilization (IVF) is animportant advancement in the treatment of infertilityin the late forty years and it has become available on outpatient bases in day care surgical units [(1)]. In general, IVF techniques includeovarian stimulation, ultrasound-guided oocyte retrieval, intra-cytoplasmic sperm injection (ICSI), embryo culture and embryos transfer [(1)].

Transvaginal oocyte retrieval was introduced in assisted reproductive technologies (ARTs) since 1981 avoidingmore invasive previous laparoscopic use [(2)]. Pain expressed during aspiration of oocytes is produced by the needle inserted through the vaginal wall and ovarian capsules [(3)]. Adequate pain relief is required to ensure immobilization and to eliminate the danger of piercing any vessel and to reduce the stress of the procedure [(2)]. Various anestheticmodalities and analgesic regimens have been tested in different studies, but no definite conclusion so far been made regarding the preferred technique for anesthesia and pain relief for these procedures [(1)]. In addition, these anesthetic agents have been found in the follicular fluid and may have detrimental effects on oocyte fertilization and embryonic development[(4)]. Exposure to the anesthetic drugs should

be the least possible time with least penetration to the follicularfluid [1].

Various anesthetic modalities have been used for trans-vaginal oocyteretrieval such as monitored anesthesia care, conscious sedation,general anesthesia (GA), regional anesthesia, local injection as paracervical block(PCB), epidural block, subarachnoid block, total intravenous anesthesia (TIVA), patient-controlled analgesia (PCA) and alternative medicine approach (acupuncture)[5]. Allmay be potentially toxic to the oocyte. Studieson GA may be conflicting and few studies related it to lower pregnancy rates. There was disagreement about the results mainly due to theuse of different anesthetic techniques with different anesthetic agents. The presence of detectable amounts of anesthetic drugs in the follicular fluid still not strongly indicates toxicity to oocytes [6].

GA has been used with propofol and 50%oxygen–air mixture. Previous trials showed no toxic effects on DNA of the oocyte, on fertilization rate and embryo quality despite its cumulative effect in the follicular fluidin high concentrations [7]. Ketamine was presented commercially in 1970with the manufacturer's description as a "rapidly acting nonbarbiturate general anesthetic". With the help of its old unique pharmacological properties and newly found beneficial clinical properties, it has survived the strong winds of time and it currently has a wide variety of clinical applications. It is a specific intravenous anesthetic agent with a wide range of effects associated with bronchodilatation and sympathetic nervous system stimulation [8]. Ketamine is excreted asnorketamineinurine and faeces and accumulates with a gradual resistance that emergeson repeated dosages. Generally, ketamine nowadays (0.75mg/kg) is accepted asan alternative to general anesthesia in oocyte retrieval [9]. The aim of current study was to investigate the effect of type of anesthesia on fertilization and pregnancy rate in patients undergoing ICSI.

Materials and Method

The study was double-blind randomized clinical trial held at the High Institute for Infertility and Assisted Reproductive Technique in AL-Nahrin Medical University, Baghdad, Iraq. The study was started at the 1st of April 2018 tillthe 1st of February 2019. The study involved 80 patients subjected to ICSI for infertility treatment after taking a written informed consent from them for their participation in the study.

Inclusion criteria were patients' age between 20 and 40 years, body mass index (BMI) of 22-27 kg/m^2, healthy patients with ASA grade I(Healthy, non-smoking, no orminimal alcohol use)[10], normal AFC, AMH, FSHandLH, normal seminal fluid analysis or mild male factor infertility, no genital tract anomalies and female factor infertility with adequate ovarian reserve. On the other hand, exclusion criteria included those without the above criteria, those with empty follicle syndrome, those refused to participate in the study and those not subjected to embryo transfer.

The 80 patients were evaluated initially during their IVF/ICSI cycle for hormonal and ultrasound examination and started their controlled ovarian stimulation with gonadotrophin. The response to treatment was monitored by repeated ultrasound and estradiol level measurements. When the largest follicle was 14mm in size, antagonist 0.25mg was administered daily until at least three follicles reach 18mm in size whenoocyte maturation was triggered by 10000IU subcutaneous HCG.

Generalanesthesia During Oocyte Retrieval: Oocyteretrieval guided by ultrasound under general anesthesia was done after 34-36 hours. All80 patients included in the study were healthy with ASA grade 1 according to the American society of anesthesia and they were breathing spontaneously with oxygen face mask. They wereblindly randomized to two groups;Group 1 included 40patients managed with total intravenous anesthesia (TIVA) starting with IVmidazolam0.05mg/kg with fentanyl 0.015mg/kg followed after 5 minutes by IVpropofol 2mg/kg total infusion dose. Infusion was started at a rate of 100-150µg/kg/min in the first 15 minutes then 50-100µg/kg/min, then turned off the propofol infusion 5-10 minutes before the desired time of emergence. Group 2 included 40 patients started with midazolam 0.05mg/kg and ketamine 2mg/kg with maintenance on inhalational anesthesia by isoflurane (mac 1.1)withisofluranewas turned off about 5 minutes prior to the desired time of emergence. Monitoring was achieved with measurements of vital signs including pulse rate, blood pressure and respiratory rate.At the embryology laboratory, assessment of total number of oocytes, oocyte denudation, number of MII and MI was assessed as well as abnormal oocytes including GV. In addition, mature oocytes were inseminated by ICSI 18 hours after assessment for fertilization and assessment for grade of pronuclei, then daily follow up for number of blastomeres,degree of fragmentationand grading of embryo. Embryo transfer after 48-72 hours,all patients

have one or two Grade 1 embryo transferred, this is determined according to the grade and number of embryos available, then luteal phase support by cyclogest suppositories twice daily and primolut depot ampoules 250µg IMtwice weekly. Two weeks later checking for pregnancy was done by serum measurement of h CG and subsequently by ultrasound for assessment of fetal node and viability.

Outcome Measures: Fertilization ratewas defined as total number of fertilized oocyte numberby total number of embryo transferred.Cleavage ratewas defined as total number of day 3 embryos by total number of fertilized oocytes [11]. Pregnancy rate is the number of pregnancies by patients subjected to ICSI embryo transfer attempt[12].

Statistical Analysis: The Statistical Analysis System (SAS) [13] program was used sis. Chi-squared test was used to compare between percentages and least significant difference (LSD) test was used to compare between means in this study [13].

Results

In this study, there was a tendency for higher pulse rate, higher blood pressure and respiratory rate in group 2 compared to group 1 with significant difference (Table 1).

Total oocytes retrieved in our study were 313 in group 1(TIVA + propofol-treated group) and 299 in group 2 (inhalational + ketamine-treated group). MII oocytes formed about 45% of oocytes in group 1(142/313) which is lower than MII oocytes ratio in group2 (57.85%; 173/299)with statistically significant difference between the two groups. MI oocytes were not statistically difference between both groups, while abnormal oocytes (Germinal vesicle,ruptured abnormal oocyte) in group 2 were statistically lower than group 1 (100/313 compared to 59/299).

Table 1: Physical findings for ICSI patientsof both groups of patients treated with TIVA or inhalational anesthesia

Physical finding	TIVA (Propofol) group 1 (Mean±SD)	Inhalational Anesthesia + Ketaminegroup2 (Mean±SD)	*t*-test
Heart rate (beat/minute)	102.45±5.38	111.62±7.82	7.819 *
Systolic blood pressure (mmHg)	125.62±7.07	135.42±9.61	28.51 NS
Diastolic blood pressure (mmHg)	66.5±2.66	81.40±4.27	13.73 *
Respiratory rate (breath/minute)	14.47±0.52	17.02±1.06	2.16 *

*: Significant at P<0.05. NS: Non-significant.

The total number of oocytes inseminated in group 1 was 198 compared to 203 oocytes in group 2. The insemination rate was 4.95 oocytes/patient in group 1 and 5.07 oocytes/patient in group 2 (Table 2).

Table 2: Laboratory findings of oocytes of both groups of patients treated withTIVA or inhalational anesthesia

Laboratory Finding	TIVA:Propofol group 1 No.	TIVA:Propofol group 1 Percent/ ratio	Inhalational + Ketamine group 2 No.	Inhalational + Ketamine group 2 Percent/ratio	Chi-Squared (χ^2)
Total oocytes number	313	7.8/patient	299	7.47/patient	---
MII	142/313	45.36%	173/299	57.85	4.52 *
MI	71/313	22.86%	67/299	22.40%	0.074 NS
Abnormal oocytes	100/313	31.94%	59/299	19.73%	4.85 *
MII:MI ratio	142/71	2.00	173/67	2.58	---
Inseminated oocytes	198	4.95/patient	203	5.07/patient	---

* (P<0.05). NS:Non-Significant.

The fertilization rate, cleavage rate and grade 1 embryo were higher in group 1 than group 2 (75.25% compared to 71.42%,76.51 compared to 75.86% and 73.46% compared to 67.27%, respectively) although statistically were not significant. With a statistically significant difference between the pregnancy rate between both groups with higher pregnancy rate in group 1 patients than group 2(35% compared to 17.5%, respectively, Table 3).

Table 3: Reproductive outcome resultsfrom ICSI patients treated with TIVAor inhalational anesthesia

Reproductive Outcome	Propofol group No.	Propofol group Rate/ratio	Ketamine group No.	Ketamine group Rate/ratio	Chi-Squared (χ^2)
Fertilization rate	149/198	75.25%	145/203	71.42%	0.793 NS
Cleavage rate	114/149	76.51%	110/145	75.86%	0.793 NS 1.602 NS
Grade1embryo	75/114	73.46%	74/110	67.27%	2.526 NS
Pregnancy rate	14/40	35%	7/40	17.5%	7.194 *

*: Significant at P<0.05. NS: Non-Significant.

Discussion

Infertile patients managed with ICSI when subjected to anesthesia they may suffer from stress, anxiety depression and obesity. Theymight be taking a lot of drugs like aspirinand metformineand they might be subjected torepeated interventions and pain especially at time of retrieval of the oocytes and discomfort from hyperstimulated ovaries and from associated ascitis[14]. The type of anesthesia should be suitable to the patient clinical state and satisfactory for relieving her anxiety and pain,keeping in mind that these drugs might be eliminated in the ovarian follicular fluids and may affect the oocytes and their DNA, interfering with their fertilization, embryo grading and subsequent pregnancy.

TIVA by Propofol is the most commonly used agent for general anesthesia,with fast onset and short elimination time. It is beneficial in oocyte retrievaland it may cause cardio-respiratory depression which can be improved by addition of fentanyl [15] andthe patient should be monitored with anesthesiologist or personnel skilled with air ways management. In this study the group received TIVA with propofol (group 1) had higher fertilization rate, cleavage rateand higher percentage of good quality grade 1 embryowith significant higher pregnancy rate and this was also evident in previous study by [16]. Accordingly, TIVA with propofol can bemore suitable for GA in oocyte retrieval since it has less effect on fertilization rate, embryo quality and pregnancy rateespecially if prolonged anesthesia is avoided. Till now there is still a concern on oocyte quality comes from accumulating concentration of propofol in the follicular fluid especially for the last aspirated follicles supported by ahuman study by [17] although this damaging effect is not confirmed till now but itis still possible.

Ketamine with its long use in general anesthesia,can be regarded as ideal anesthetic agent and it is a good alternative to TIVA with propofol, especially when used with midazolam (minimize its well knownpostoperative CNS and psychological side effect[18]. Ketamine as in our study, it was known togive lower fertilization rate, embryo grading and significantly lower pregnancy rate. This could be due to its effect on increasing prolactin and β-endorphin levels[18] or due todirect toxic effect on oocyte and its DNA. Inaddition, isoflurane inhalational anesthetic agent used with ketamine (as in our study) might also be responsible for lower reproductive outcome and pregnancy rate in group 2,as it was found from a previous study due to directembryo- toxic effect[19]. Midazolam was used in both groups in our study and it is known to accumulates in the follicular fluid without affecting pregnancy rate [20] .In this study there was higher number of abnormal oocytes (mainly GV) in group 1 than in group2, with relative decrease in MII with similar total number of inseminated oocytes/ patient. In our study, this difference in the ratio of MII to the immature MI and abnormal oocyte may have resulted from the operator tendency to aspirate all the remaining

small follicles towards the end of the procedure to avoid OHSS in patients with large number of follicles. Inspite of this higher rate of inseminated MII in group 2(MII: 173), the fertilization, cleavage and embryo transfer rates were still higher than in group 1(MII:142)with significantly higher pregnancy rate.

It was found that significant higher fertilization,cleavage and grade 1 embryo and pregnancy rate in propofol-treated group than ketamine-treated group[21], similar to the results of our study although the pregnancy rate was clearly significantly different, but the pregnancy rate was higher than in our study in the group 1. This might be due to difference in the pregnancy rate between that center and ours.

There was an observed negative effect on fertilization, cleavage and Grade 1 embryo rate in inhalational anesthesia plus ketamine-treated group compared to TIVA with propofol. Also, there was significant effect of isoflurane and ketamine on ICSI outcome and specificallyon pregnancy rate compared to propofol. Thelatter should be regarded as first-line anesthetic agent to be used for oocyte retrieval.

Studies on the effects of anesthetic drugs level in the follicular fluid on the oocyte retrieved at early, mid and late in the procedure, give better confirmation of toxicityand whether it depends on duration of exposure or not.

Ethical Clearance: The research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

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Evolution Micro RNA–Gene Polymorphisms in Patients with Colorectal Cancer Disease in Middle and South of Iraq

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Abstract

Background: Colorectal cancer is one of the most common cancers in mortality and morbidity worldwide. Single nucleotide polymorphismsin microRNAs may be used as specific markers of predisposition for colorectal cancer diagnosis and prevention. The aim of current study was to investigate the role of miR-196a2 gene polymorphisms in the development of gastric cancer.

Method: A total of 40 hospitalized gastric cancer patients and 20 control subjects were collected between August 2015 and October 2016. The genotyping of miR-196a2 were performed using polymerase chain reaction coupled with restriction fragment length polymorphism.

Results: We observed significant differences in the genotype frequencies of miR-196a2 between patients with gastric cancer and controls (P=0.009, OR =6.92(1.52-31.37).

Conclusion: Our study found that miR-196a2 polymorphism was associated with gastric cancer development.

Keywords: *CRC, RFLP, miRNAs, SNPs. PCR.*

Introduction

Colorectal cancer (CRC) is the third most frequently diagnosed malignancy in men and the second among women. In 2012, approximately 1.4 million cases were diagnosedand 693,900 CRC-related deaths occurred (1). The International Agency for Research on Cancer estimated that there were 952,000 new gastric cancer cases in 2012, making it the firth most common malignancy in the world, after lung, breast, colorectal and prostate cancers (2). Infection with Helicobacter pylori is a proved risk factor for gastric cancer (3,4) and some environmental factors have been indicated to have a critical role in the development of gastric cancer, such as consumption of preserved food containing carcinogenic nitrates, lifestyle, tobacco and alcohol as well as obesity (5). CRC is a multi-factorial disease. Genetic background, environmental factors and gene-environment interactions all contribute to its etiology. Many studies have been carried out to identify genetic variations that might be used for CRC diagnosis and prognostic assessment. MicroRNAs (miRNAs) are well known classes of small noncoding RNAs and they are responsible for promoting messenger RNA (mRNA) degradation, inhibiting mRNA translation and affecting transcription through binding to the 3'-untranslated regions (3'-UTR) of their target mRNA [6,7]. Experimental studies indicated that miRNAs are involved in a variety of biological processes such as cell proliferation, differentiation and apoptosis through regulating approximately 60% of the human protein coding genes [8,9]. Single-nucleotide polymorphisms (SNPs) are the most common sequence variation in human genome. SNPs in miRNAs genes may influence the expression of the respective miRNAs. Such as rs11614913 is identified and implicated in the development of multiple-type cancerssuch as colorectal, lung, breast and renal cell cancers as well as head and neck [10]. SNPs in miRNAs can affect hundreds of mRNAs, since it is estimated that mature miRNAs regulate around 30% of human genes. Since the first report of their existence, several studies have been carried out to identify these variants and

explore their associations with cancer. In current study, we conducted a case-control study to investigate the role of miR-196a2 gene polymorphisms in the development of gastric cancer.

Material and Method

Sampling: Forty blood samples were collected from patient with colorectal cancer who visited different hospitals in middle and south of Iraq and twenty samples from healthy subjects as controls.

DNA Extraction: Genomic DNA from whole blood cells was extracted and purified using extraction and purification Kit from Favergencompany (Taiwan).

Genotypic identification using RFLP- PCR amplification: The targeted sites of DNA were amplified using specific primers: One primer was used to identify miR-196a2, obtained from Bioneer, IDTDNA (USA). Primer: Forward sequence was 5- CCCCTTCCCTTCTCCTCCAGATA -3 and the reverse sequence was 5- CGAAAACCGACTGATGTAACTCCG -3.

Final product of 20µl reaction volumes containing 1.5µl of forward and reverse primer,12.5µl of Green Master Mix,3µl of Genomic DNA and the volume of reaction was completed up to 20µl by adding 1.5µl of nuclease free water. Amplification was carried out in a thermo-cycler (Eppendorf) programmed for five minutes at 94°C; for 30cycles; one minute at 94°C, one minute at 57.8°C and one minutes at 72°C; and a final extension of five minutes at 72°C. Amplification products were electrophoresed in 1% agarose gels and then visualized by staining with ethidium bromide. Standard molecular markers were also included in each electrophoresis run. Ultraviolet trans-illuminated gels were photographed.

The PCR product was cut using *MSPI* restriction enzyme, the PCR-RFLP technique was accomplished according to Promega Company Protocol. The digested *MSPI* products were electrophoresed through 3% agarose gels at 75V for 1 hour.

Statistical Analysis: All the statistical analyses were done with the SPSS statistical software (version 17.0; SPSS Inc., Chicago, IL), *P*-values <0.05 were considered statistically significant.

Results

Genotyping Study: Figure (1) showed miR196a2 amplification product, whereas Figure (2) showed gel electrophoresis of RFLP-PCR of miR196a2 amplified product.

Figure 1: Agarose gel electrophoresis of amplified products of MirRNA196a2(145bp).

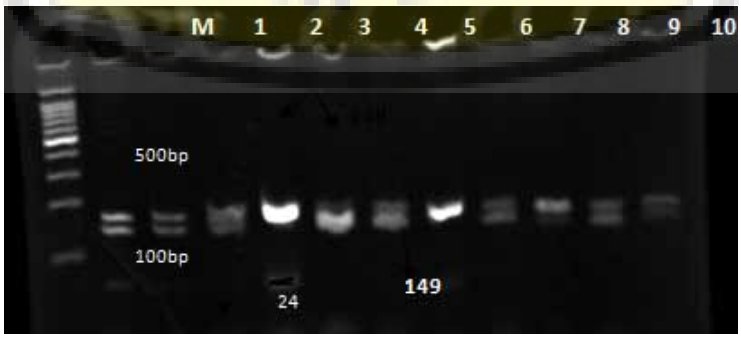

Figure (2): RFLP- PCR DNA polymorphisms of MirRna196a2. M: size marker, Lines (1,2) heterozygous 3 band TC (149,125 and 24bp). Lines (4,7) homozygous 1 band (149bp). Lines (3,5,6,8,9,10,11) homozygous 2 band (149 and 125bp).

Table (1): Genotyping distribution of pre-microRNA-196a2 (rs s11614913) polymorphism and their association in control and patients groups

Genotype	PatientsNo.(%)	Control No.(%)	P-Value	OR (95%)
TT a	9(22.5)	11(55)	0.009*	6.92(1.52-31.37
TC	17(42.5)	3(15)		
CC	14(35)	6(30)	0.100	2.85(0.77-10.46)
Total	**40**	**20**		

*: P≤0.05; OR=(95%CI); [a] reference.

The MicroRNA gene polymorphism was studied in CRC cases and controls. MiR196A2 T>C(rs11614913). The distribution observed in MicroRNA gene polymorphism in control and patients groups were showed in Table (1)**.** Thehighest genotype in control group was TT homozygote genotype (55%) followed by heterozygote genotype TC(30%) and mutant homozygote genotype CC(15%). In CRC disease, the highest genotype was TC heterozygote (42.5%). Also, the genotyping distribution pointed out that mutant homozygote CC (35%) was more than normal homozygote TT(22.5%).

Discussion

MicroRNAs (miRs) are noncoding RNAs that are transcribed from endogenous DNA molecules. Most miRs span about 22 nucleotides, but have negative regulation on its target mRNAs in the post transcriptional processes [(11)]. Cellular processes that involve miRs include development, differentiation, proliferation, apoptosis and stress response [(12)]. MiRs break the structure of target mRNAs or inhibit translation to down-regulate the expression of target mRNAs.

It is well known that polymorphism in miRNAs region plays a critical role in the expression and transcriptional regulation of miRNAs. The rs11614913 polymorphism in miR-196a-2 has been associated with susceptibility to various cancers. The molecular basis for this remains obscure; however, it has been speculated that the T to C mutation in the pre-miRNA stem region may alter the expression level of mature miR-196a-2 and influence its binding to target mRNA[(13)]. Therefore, the genetic variations of pre-miR-196a2 could influence the expression of mature miR-196a2 and binding activity of target mRNAand thus alter the gene function.

As elevated expression of miR-196a (the mature miRNA encoded by miR- 196a-2 gene) can promote CRC cell migration and invasion, sequence variations leading to such increased transcription might raise CRC risk [(14)]. We retrieved nine studies concerning the association between rs11614913 and this disease. Three of them reported that the TC genotype increased CRC risk compared to the TT genotype, whereas three others demonstrated that it decreased susceptibility. Six studies showed individuals with the CC genotype to be at increased risk in comparison to those with the TT genotypeand one investigation established the opposite effect.

Another study [(15)]reported that miR-196a expression is significantly higher in patients carrying CC or TC genotypes than in TT carriers. In our analysis of the association between this miR-196a-2 polymorphism and CRC risk, eight studies comprising 2264 cases and 3199 controls were included (one study was excluded because the genotype distribution data of control was lacking). We found no relationship between rs11614913 and CRC under any genetic model (CC *vs*TT: OR = 0.852, 95%CI = 0.479-1.515; CT *vs*TT: OR = 0.946, 95%CI = 0.735-1.216; CC+CT *vs*TT: OR = 0.945, 95%CI= 0.689-1.298; C *vs*T: OR = 0.962, 95%CI = 0.752-1.230) [(16,17,18,19,20,21,22)].

Conclusion

Our study found that miR-196a2 polymorphism was associated with gastric cancer development.

Ethical Clearance: The research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

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Silver: Gold Nanoparticles Medicating for Phototherapy against Breast Cancer Cell Line (MCF7)

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Abstract

Background: Cancer is one of the most important diseases of concern worldwide. The advanced in nanotechnology were focused in many scientific researches on the formation of nanoparticles and their application in cancer treatment. The aim of current study was to synthesize Au-Ag bimetallic nanoalloys with tunable localized surface plasmon resonance frequency for use in photothermal therapy for MCF7 breast cancer cell line.

Method: In this work, nanoparticles were made of silver: gold alloy with different gold ratio for use in phototherapy with tuned plasmon resonance peak between 405 to 526nm using UV-visible absorbance.

Results: From the comparison between FTIR spectrum of controlled breast cancer cell line (MCF7) before and after the addition of metal nanoparticles, was found essential difference due to the conjugated of cell protein with added metal nanoparticles. There was a selectivity of metal nanoparticles effects on the band where the N–H braches of the protein are directly involved in its interaction with the metal surface due to surface enhanced infrared absorption.

Conclusion: Growth inhibition of cancer cell line treatment using phototherapy employed metal nanoparticles and UV radiation illustrates good results with best GI ratio when use silver nanoparticles with 67.06% ratio before irradiation and 82.02 % after irradiation. This percentage decreases with increasing the gold ratio.

Keywords: *Plasmon effect, phototherapy, breast cancer, laser ablation, silver: gold alloys, nanoparticles.*

Introduction

The electronic structure of nanoparticles is strongly size-dependent. This effect is known as quantum confinement. A strong confinement regime occurs for particles with radius smaller than exciton Bohr radius (a_0), where the confinement potential becomes larger than the Coulomb interaction. There are two most important consequences of quantum confinement. The first is that the band gap of a semiconductor becomes larger with decreasing size and the second is that discrete energy levels arise at the band-edges of both the conduction and valence band[1].

That plasmon resonance coupling between nanoparticles and electromagnetic radiation is one of the most interested behaviors to many researchers. Controlling the local surface plasmon region (LSPR) sensitization amplifies its potential in the selection of effective wavelength by particle size, shape and components. Further control of the plasma frequency range can be achieved by using nanoparticles from a metal alloy or as core shell structure. The plasmon frequency produced in general with wavelength between the two values of the pure component with a value dependent on the ratio of the constituents[2].

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Laser ablation is the process of removing the material from a solid surface by irradiating it using a laser beam. When the falling laser energy of the time unit is large and for a small space, the material is usually converted into plasma. The amount of material removed by a single laser pulse affects the depth of the penetration, the optical properties of the material, the length of the laser wave and the pulse time [3].

Phototherapy is a method involves the use of electromagnetic radiation to destroy abnormal tissue cells during heat-thermal management that is sufficient to induce cell damage due to high temperature in the tumor area. The small size and heating capacity of metal nanoparticles (NPs), within a very small area higher than 313K by a suitable light source, led to the concept of phototherapy heat treatment. Gold nanoparticles (AuNPs) can enable highly targeted phototherapy to reduce undesirable side effects and has been widely used, either alone or in combination with chemotherapy and radiation therapy. Hyperthermia causes shrinkage in living cells, rupture of cellular membranes and release of cellular contents as well as alters the nature of enzymes and eventually leading to cell death. AuNPs have high absorption in the surface plasmon frequency region (SPR), enabling them to convert absorbed light into heat during picoseconds while leaving normal cells intact [4]. The core-coated AuNPs were also used as a probe for near-infrared heat (NIR). The SPR region can be adjusted to alter the optical properties of the nanoparticles. On the other hand, antimicrobial activity in nanoparticles was studied in combination with irradiation laser in *in vitro* human cancer cell line, while individual treatments showed little effect on cancer cells [5].

Silver nanoparticles (AgNPs) were focused with much interest due to their unique properties for antimicrobial activity against a wide range of microorganisms [6]. Photothermal therapy is an approach involving utilization of radiation exposure to induce cytotoxic damage of cells in tissues by sufficient heat for hyperthermic cellular responses in the tumor area [5].

The aim of current study was to synthesize Au-Ag bimetallic nanoalloys with tunable localized surface plasmon resonance frequency for use in photothermal therapy for MCF7 breast cancer cell line.

Materials and Method

Five samples were prepared; two of them were gold and silver, whereas the other three were alloys of both metals, with different weight percentages of Ag: Au (75:25, 50:50 and 25:75). The alloys were melted in graphite crucibles at sufficient melting point for both metals which is 1473 K, then poured molten into small molds until cool. Nd:YAG lasers with infrared wavelength of 1064nm has 900mJ pulse energy at 9 nanosecond pulse duration laser energy in distilled water.

The prepared metal nanoparticles were characterized using UV-visible absorbance and Fourier-transform infrared spectroscopy (FTIR). Also the cancer cell lines were examined by the FTIR before and after treatment with different metal nanoparticles ratio (Ag: Au) to study the effect of nanoparticles on IR band for cancer cell lines.

The prepared nanoparticles were examined in phototherapy of MCF7 breast cancer cell line *in-vitro* using UV irradiating for 24 hour after cells treatment with metal nanoparticles suspension. Briefly, MCF7 cancer cell lines were cultured in RPMI media containing 10% serum [One liter medium was supplemented with L-glutamine, 10% Hepes 10mM, 10% FBS, sodium bicarbonate (4.4%) 5–10ml, benzyl penicillin solution 0.5ml (1000000IU) and streptomycin 0.5ml] at 37°C under 5% CO_2. Cells were incubated in 96-well plate (104 cells per well) for 24h. Then, metal nanoparticles suspensions were introduced in the 96-well plates with different weight percentages of Ag: Au (100:0, 75:25, 50:50, 25:75 and 0:100) and incubated for another 24h at 37°C under 5% CO_2. Thereafter, the mixture was treated with and without irradiation by ultraviolet radiation. After that, cytotoxicity was determined by the MTT assay. Cells that were exposed to irradiation in absence of metal nanoparticles or in converse were regarded as controls. MTT reagent (2.5mg/ml) was added (50µl/well) and incubated at 37°C for 3h. The formazan crystals were dissolved in 100µl of dimethyl sulfoxide (DMSO) for 10min. The plate was subsequently read in the spectrophotometer at 620nm. Cells cytotoxicity was calculated as the ratio of the absorbance of the treated and control wells. On the other hand, the growth inhibition ratio (GI) was determined according to the following formula: Inhibition (%) = [(Optical density of control wells - Optical density of test wells)/Optical density of control wells] x 100 [7].

Results and Discussion

Figure 1 illustrated UV-visible absorption spectra of the aqueous solution of the produced AgNPs, AuNPs

and their composite at different (Ag: Au) ratios which were prepared by pulse laser ablation in distilled water. The peak appeared at 405nm was the specific peak of AgNPs plasmon resonance .This result was in agreement with results of[8], while the peak at 526nm was the specific peak of AuNPs which was in agreement with results of[10]. The excitation of quantum size is confined electron with its resonance frequency. This effect occurs when the particle size diameter is a part of the wavelength. These peaks confirm the formation of NPs in the solution.

Increasing the gold ratio leads to shift of absorbance peaks, from 405nm in pure Ag to 526nm in pure Au sample, corresponds to variation in plasmon resonance due to the alteration in the dielectric constants of the two metals which changes its resonance energy and the absorbance value at this plasmon peak wavelength is slightly decreased. These absorbance peaks can be used as a selective absorbance peak for irradiation treatment. These results agreed with [10] who reported for Ag:Au nanoparticle composites.

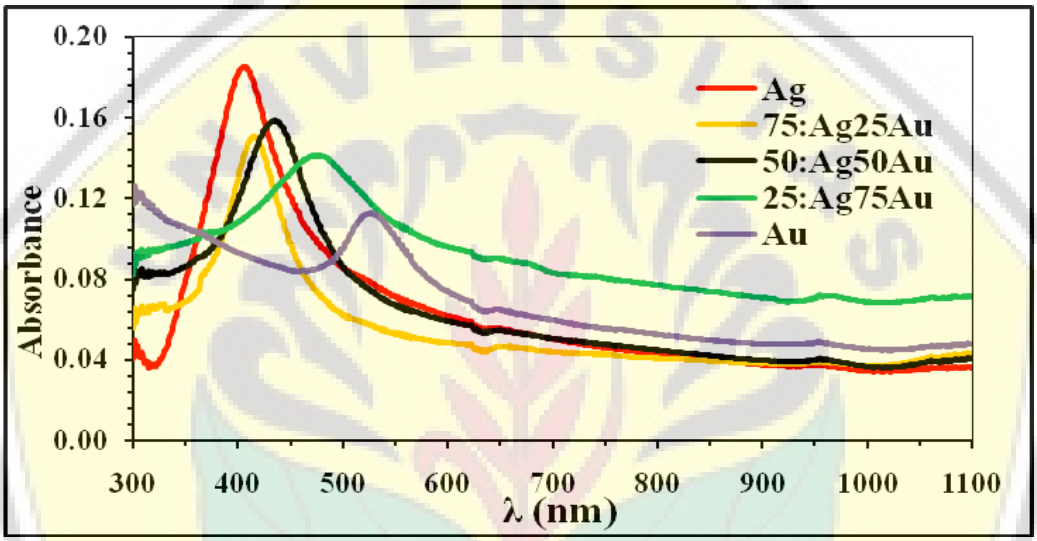

Figure 1: UV-VIS spectra for AgNPs, AuNPs and their composite sample at different Au ratios in water prepared by PLD.

Figure 2 showed the FTIR spectra for Ag: AuNPs composite at different Au ratios in the range 4000-400cm^{-1}. The characteristic absorption bands for AgNPs samples were 780.56 and 465.61cm^{-1} corresponded to the Ag-O stretching and bending vibration, respectively, [10,11]. Also, there were additional bands at 3431.35 and 1051.76cm^{-1} corresponded to stretching –OH group and for C-O comes from adsorbed gases on sample surface.

Decreasing the Ag ratio reduced the Ag-O band intensity till it's vanished at pure Au sample. Also, it can be noted that the C-O peak reduced its intensity due to the variation of sample ability to adsorb carbon oxide gases. The decrement of Ag-O band after mixing Au ratio with Ag was due to prevention of silver oxidation by Au shell.

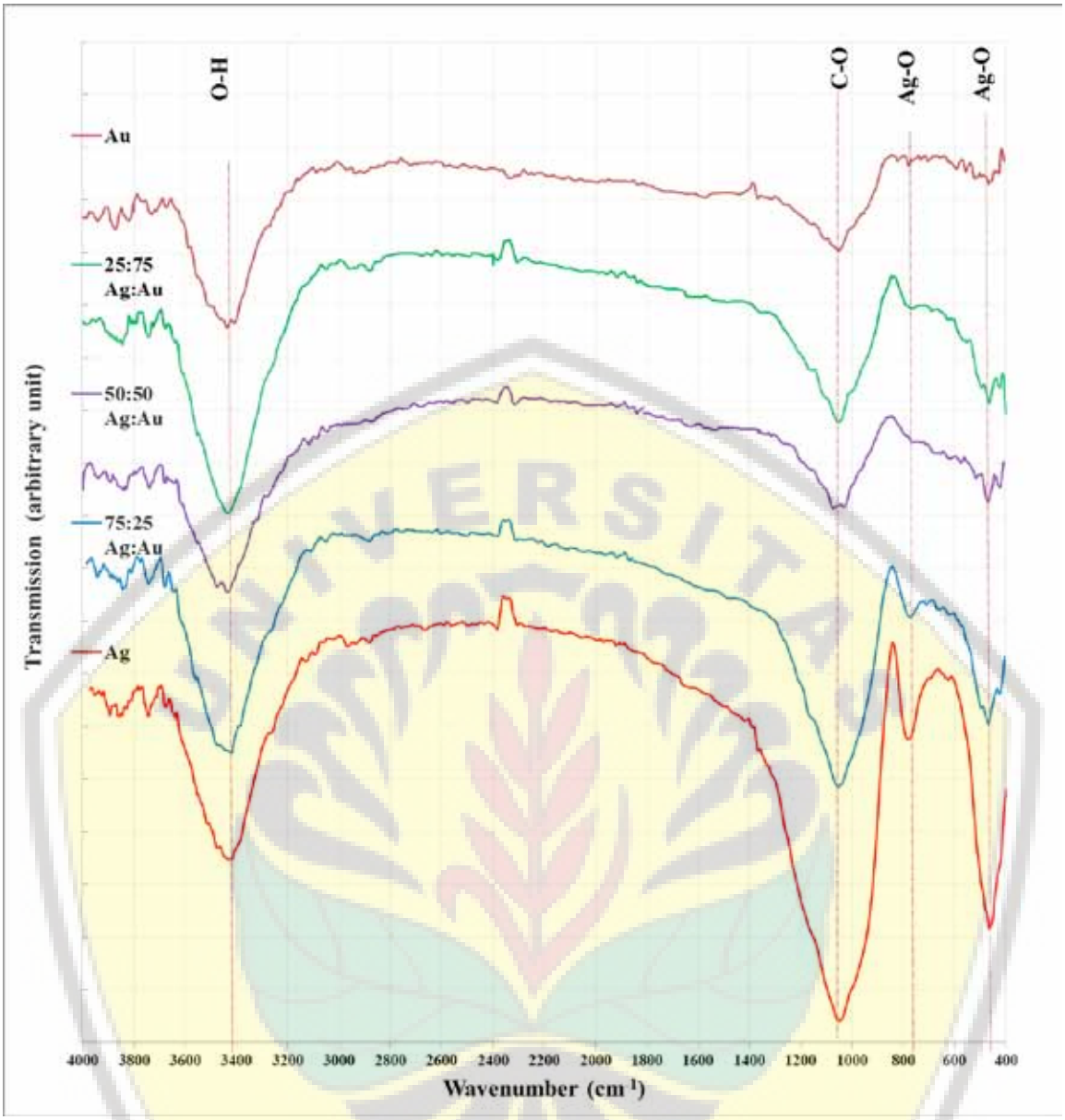

Figure 2: FTIR spectra for Ag NPs, Au NPs and their composite at different Au ratios.

The FTIR spectrum of controlled cancer cells line, which was shown in Figure (3) illustrated characteristic IR absorption bands of proteins. These absorption bands were including the amide N–H bond at 3848.74 and 3737.04cm^{-1}; very broad peak of carboxylic O–H groups centered at about 3439.17cm^{-1}. Symmetric and asymmetric vibration bands were seen for C-H stretch of amino acid within 2924.89cm^{-1}; strong typical amide I and amide II bands (representing mainly the stretching C=O and bending N–H modes) of peptide moieties at 1644.99 and 1514.67cm^{-1}, respectively. As well as peak of C–O band was shown at 1067.87cm^{-1} [13-15].

The comparison between the spectra of controlled sample of cancer cells line before and after the addition of metal nanoparticles was essentially different due to the conjugated cell protein with added metal nanoparticles (AgNPs, AuNPs and their composite at different Au ratios). It should be noted that the peaks of proteins in the conjugated samples with metal nanoparticle were less than that of pure proteins, whereas other peaks values with nearly same intensity were comparable to control sample, indicated the Dipole-Quadrupole effect that caused vibration bonds surface which enhanced infrared absorption (SEIRA) due to conjugation between

cell proteins and metal nanoparticles which caused selective surface enhancement of certain functional groups according to surface selection rules [16].

Note that, according to the SEIRA theory, only those molecular vibrations which appeared perpendicular to the metal surface were enhanced accounting for the selectivity of enhancement. Thus, the FTIR for samples of the nanoparticle–protein conjugate accounts for the absence of amide groups [15].This effect corresponded largely to the electrostatic and hydrophobic nature of the gold and silver nanoparticle surface conjugated with bio-materials due to the net effect of non-covalent interactions. The FTIR spectra for treated samples showed that the amide N–H band at 3848.74 and 3737.04cm^{-1} disappeared and instead of the amide I and amide II bands, in the metal nanoparticle–protein conjugate, there appeared as a single intermediate strong peak centered at 1638cm^{-1}. These changes might indicate that the N–H braches of proteins are directly involved in their interaction with the metal surface, in addition to enhance the regions of bending C–H vibration modes around 1400cm^{-1}. The extreme changes in cell proteins spectrum induced by metal nanoparticles upon conjugation can provide evidence that protein molecules are attached directly to the metal nanoparticle surface. This conjunction is of primary importance for the irradiative treatment [17].

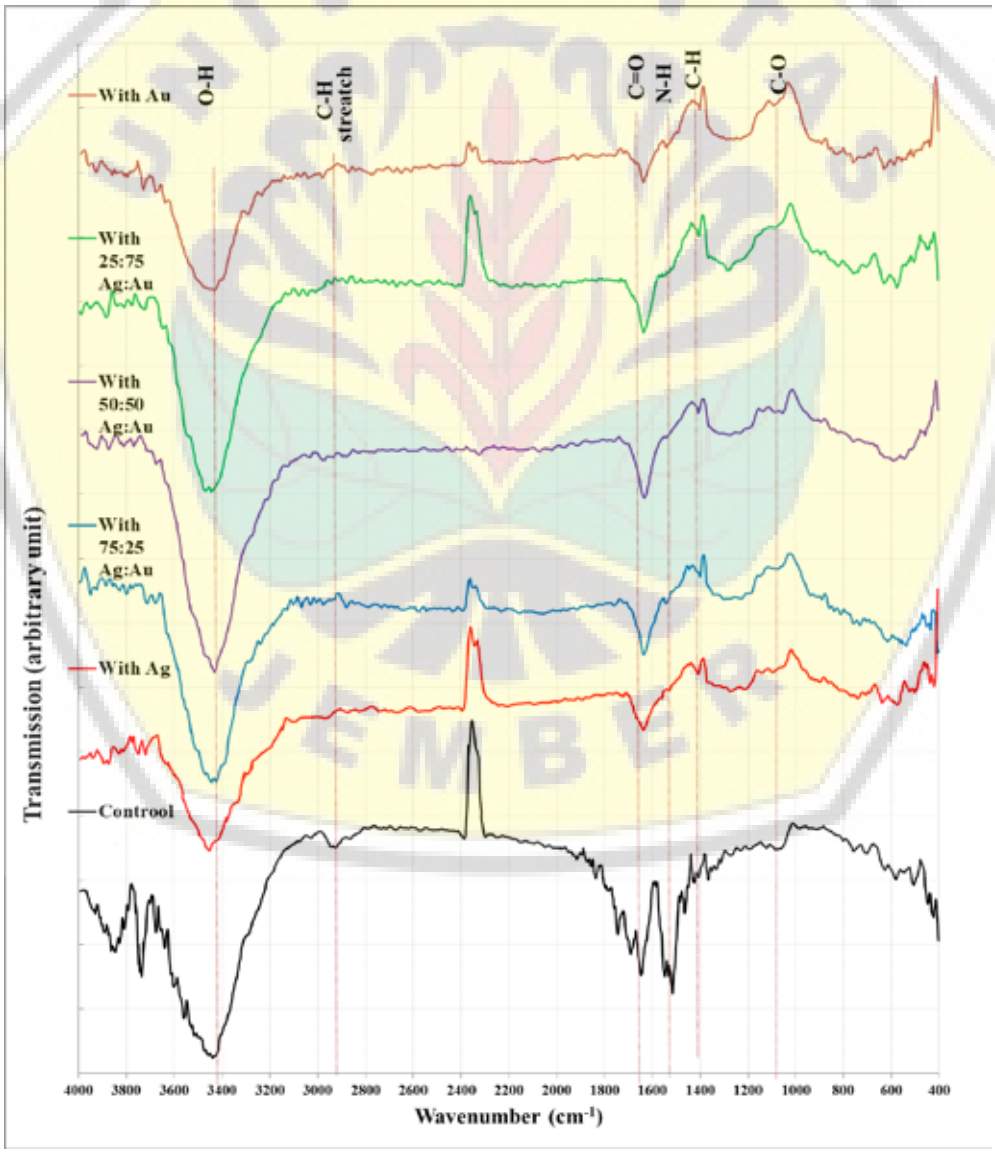

Figure 3: FTIR spectra for controlled cancer cells and samples treated with AgNPs, AuNPs and their composite at different Au ratios.

In-vitro MCF7 breast cancer cells line growth inhibition ratio (GI) using metal nanoparticles, without and with irradiation by ultra violet radiation, were shown in Table (1) and Figure (4). It seemed that the growth inhibition was reduced with decreasing Ag NPs in Ag: Au i.e. increased in AuNPs ratio. It was reduced from 82.02% for the controlled sample treated with AgNPs to 76.12% for AuNPs. The reduced growth inhibition due to red shift of plasmon peak of AgNPs with decreasing Ag in Ag: Au ratio as shown in UV-Visible absorption part. This shift reduced the overlap area between the absorption spectrum of the plasma peak and the spectrum of radiation applied onto the samples. Also, it was clear that growth inhibition after irradiation was greater than samples inculpated without irradiation in all Ag:Au ratios due to the effect of selected heating of cancerous cells treated with nanoparticles. The higher cytotoxic action of metal nanoparticles could be due to slow cellular uptake and intracellular distribution of nanoparticles because of its slow release behavior. Nanoparticles may be relying on cancer cells line and exposure conditions can stimulate apoptosis, DNA damage, diminish the invasive potential and reduce NF-jB activity [18,19].

Table 1: Growth inhibition% for MCF7 cancer cells line treated with metal nanoparticles before and after UV-irradiation

Ag:Au	Growth inhibition%	
	Before UV exposure	After UV exposure
100:0	67.06	82.02
75:25	65.88	81.50
50:50	64.82	81.18
25:75	62.35	80.34
0:100	61.65	76.12

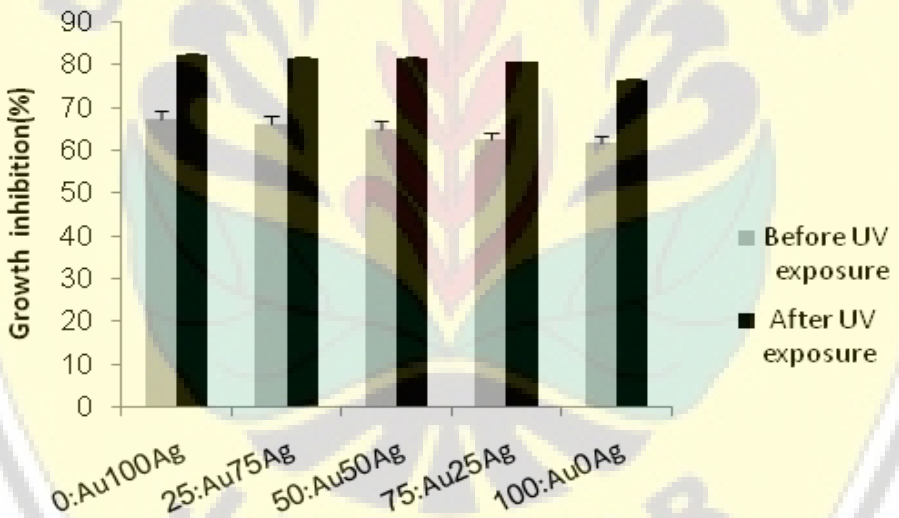

Figure 4: Cytotoxicity of MCF7 breast cancer cells line treated with the metal nanoparticles before and after UV-irradiation

Conclusions

Nanoparticles from the Ag: Au alloy were successfully generated by a simple way with the control of wavelength of the plasmonic peak between 405 and 526nm by variation of metals ratios, which were demonstrated in both the absorption spectra and the FTIR measurement. The FTIR measurement of cancer cells line before and after treatment with metal nanoparticles illustrated a conjugate between metallic nanoparticles and the cell proteins. The conjugation between proteins and metal nanoparticle, induced largely by the specific and selective surface enhancement of certain functional groups, due to surface selection rules for vibrations of surface plasmon resonance. Finally, growth inhibition (GI) of cancer cells line treatment using phototherapy employed metal nanoparticles and UV radiation illustrated good result with best GI ratio when we used AgNPs with 67.06% ratio before irradiation and 82.02% after irradiation. This percentage decreases with increasing the Au ratio.

Ethical Clearance: The research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

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Association between Irisin and Obesity

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Abstract

Objective: To observe the relationship between serum Irisin and obesity. Background: One of the top worldwide health problems is obesity. Many causes have been implicated for developing obesity such as: excessive food intake, lack of physical activity, genetic susceptibility, endocrine disorders, medications, or mental disorder.

Material and Method: One hundred and five individuals were participated in this study visiting Al-Imam Al-Sadiq Teaching Hospital from October 2017 to June 2018. A 50 normal non-obese and 55 obese. They were classified according to body mass index after measuring their weight, height. Blood and data were collected from patients and control to detected Irisin.

Results: The highest percentage of obese patients were female, the highest percentage of obesity was recorded among 20-30 age group, the majority of the obese patients were from urban areas and largest group of obese patients were unemployed.

Regarding Investigation: Irisin, there is significant difference ($p \leq 0.05$) between case and control for Irisin. There is also a significant positive correlation between irisin and body mass index(p value≤ 0.05; $r = 0.44$) and with the waist circumference (p value≤ 0.05;$r = 0.407$).

Conclusion: Serum irisin levels were higher in obese patients than in control. Moreover, serum irisin levels were correlated positively with anthropometric markers of obesity (BMI, Waist Circumference).

Keywords: *Obesity, Irisin, Body Mass Index, Waist Circumference.*

Introduction

Obesity is "a chronic, relapsing, multifactorial, neurobehavioral disease, where there is an increase in body fat adversely effects on adipose tissue function and physical forces of fat mass, resulting in abnormal biomechanical, metabolic and psychosocial health consequences", it is more common in women [(1-3)].

There are many types of obesity depending on where fat cells are stored. Abdominal obesity (excessive accumulation of fat cell in adipose tissue of the abdomen) is associated more strongly with meta-inflammation [(4)].

Irisin is a plasma myokine/adipokine that is produced by the proteolytic cleavage of fibronectin type III domain containing 5 (FNDC5) [(5)].

There are many reports of the positive, negative and no correlations between serum irisin and body mass index (BMI)[(6-9)].

The aim of This Study is To observe the relationship between serum Irisin and obesity

Materials and Method

Subjects: A case-control study was conducted in the obesity unit in Al-Imam Al-Sadiq Teaching Hospital at Babylon Governorate/Iraq, from October 2017 to June 2018.

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Inclusion Criteria: A convenient sample of one-hundred five individuals were included in this study (55 obese and 50 control) according to body mass index, with age range from 18 to 51 years old. All individuals subjected to the same clinical examinations and biochemical tests. The obese persons were taken from the obesity unit in the hospital while the control group individuals were friends, medical staff, medical students and relative to the patients. Informed consent must be taken from all people.

Exclusion Criteria:

1. Free of significant medical illnesses {diabetes mellitus (DM) (type I or II), cardiac disease, hypertension (HTN), hypothyroidism, poly cystic ovarian syndrome (PCOS), acromegaly and any congenital abnormalities} that known to impact body weight.
2. History ofdrugs administration that cause obesity or increase in body weight such as Antiepileptic drugs, anti-Diabetic drugs, Oral contraceptive pills, steroids and Chemotherapy.
3. Post-menopause women.
4. Pregnant women.

General History: Socio-demographic traits such as: age, gender, occupation, educational level, residency. Past medical history: thyroid disease (hyper: tremor, heat intolerance,palpitation; hypo: cold intolerance, previous unexplained obesity, etc.). Past surgical history: history of bariatric surgery, gynecological history: menstruation, fertility, pregnancy history and dietary history.

General Examinations:

Weight Measurement: Patient is weighed with minimum clothes and bared feet by digital scale with 0.1 kg as degree of error[10].

Anthropometric Measurements:

Height: Is measured by graded scale firmly fixed on the wall when participant is standing against the wall while feet are bared and the legs are held close to each other, no bending, the shoulders are straight in parallel line, the height is measured from the ground to the top of the head [11].

Waist Circumference: Is measured by flexible tape measure graded to 0.1cm at the midline between the last rib and the upper part of iliac bone [12].

Body mass index (BMI): Is calculated by dividing the weight in kilograms by the square of the height in meter[13].

Results

Socio-Demographic Characteristics of Study Groups:

The highest percentage of obese patients (89.09%) were female as shown in figure 1:

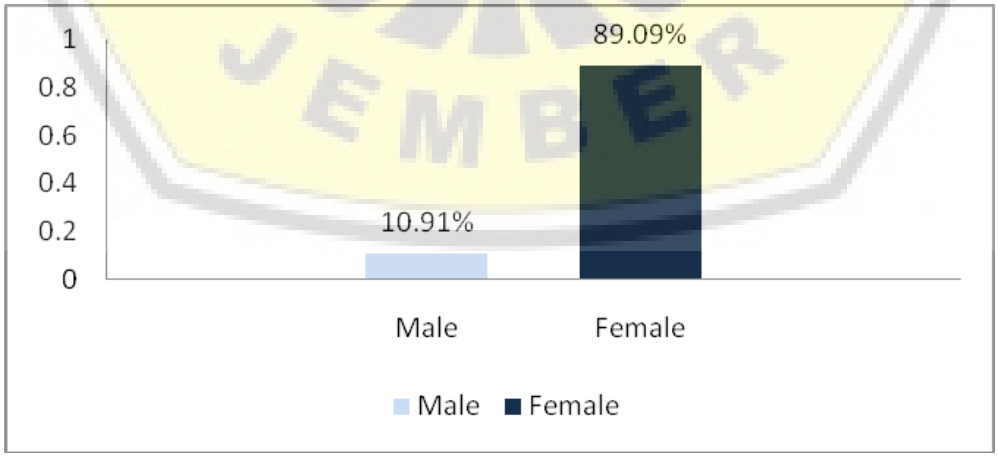

Figure 1: Distribution of obese patients according to the gender

The highest percentage for obesity was recorded among 20-30 age group, while the lowest percentage for obesity was recorded below 20 years old as shown in Figure 2.

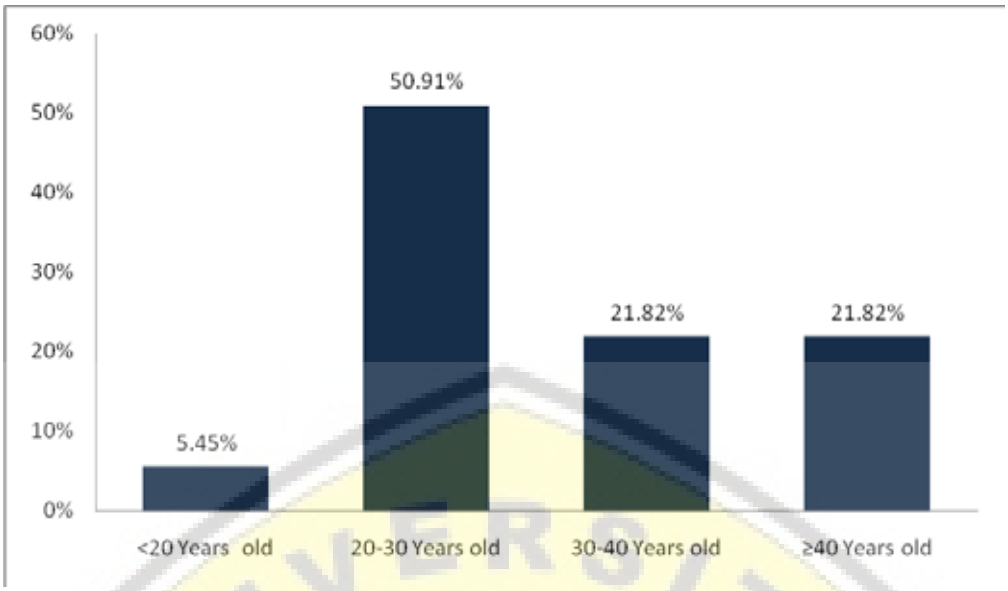

Figure 2: Distribution of obese patients according to age groups.

The majority of the obese patients (63.64%) were from urban areas. Minority of obese patients were from rural area as shown in figure 3.

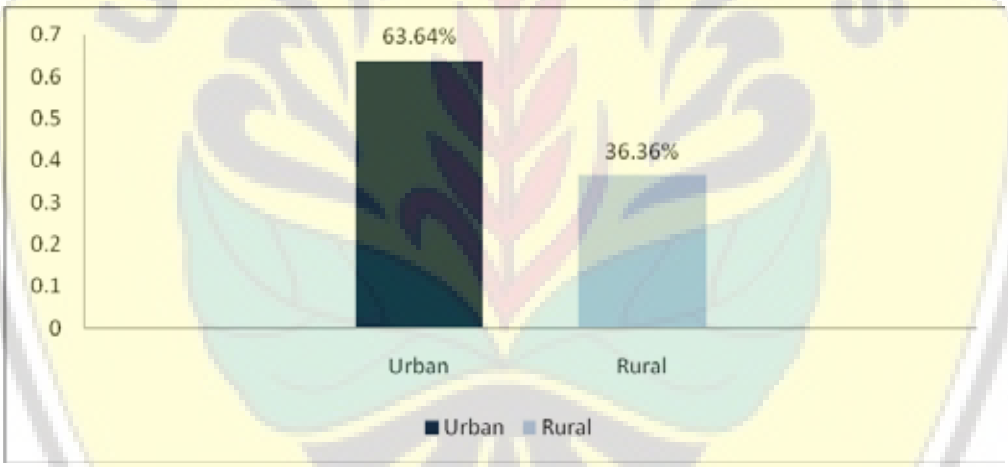

Figure 3: Distribution of obese patients according to residence.

Largest group of obese patients were unemployed as shown in figure 4.

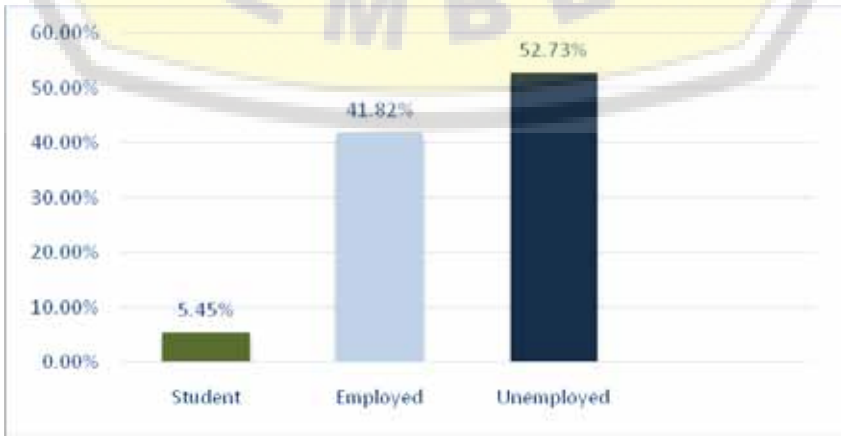

Figure 4: Distribution of obese patients according to occupation.

Figure 5 shows mean differences of irisin (ng/ml) for control and obese patients. There were significant differences between means of irisin for both study groups. **(t=9.435, P= <0.001*).**

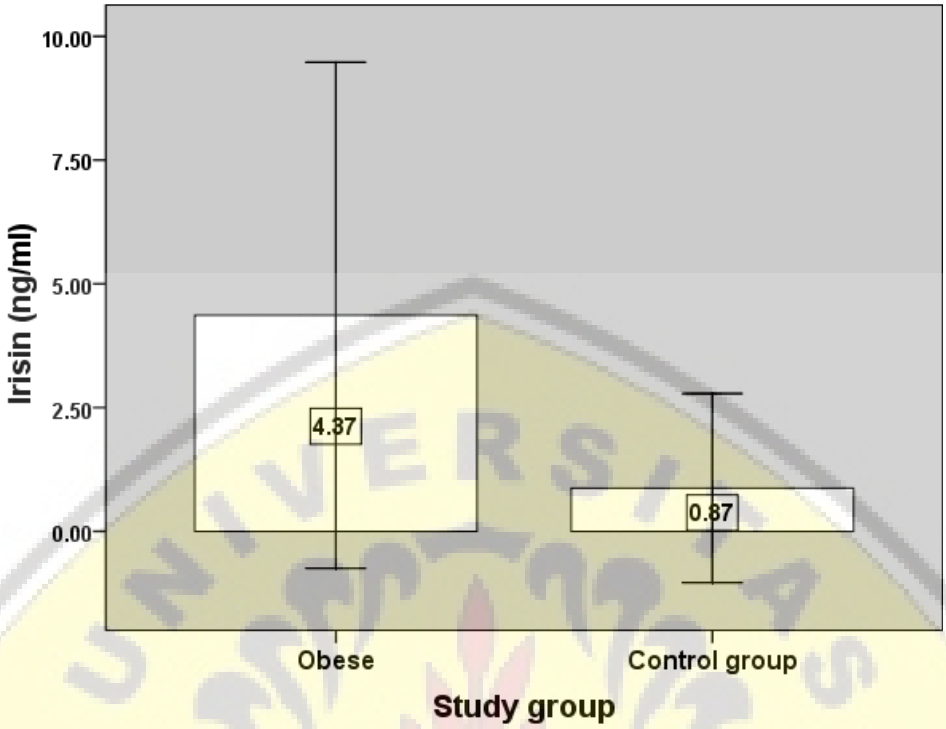

Figure 5: Meandifferences of Irisin (ng/ml) according to study groups

Figure 6 shows the correlation between Irisin (ng/ml) and body mass index (kg/m^2) among obese patients. There was significant positive correlation between irisin and BMI(p value≤0.05). **(r = 0.441, P = 0.002*).**

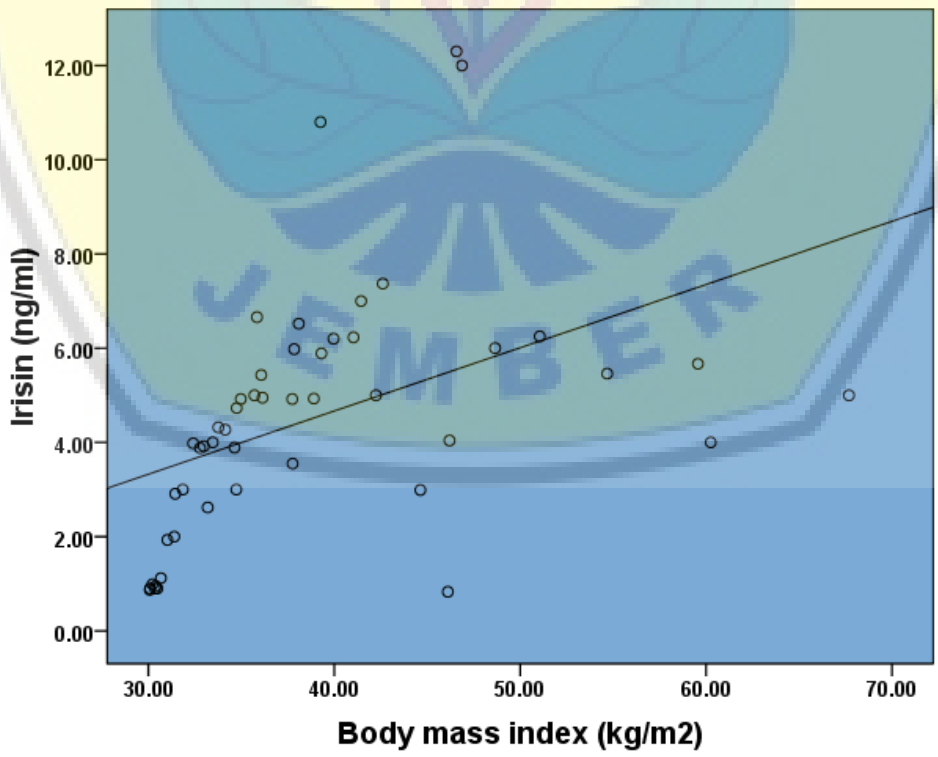

Figure 6: The Correlation between Irisin (ng/ml) and BMI among Obese patients (Correlation is significant at the 0.05; r: correlation coefficient)

Discussion

Regarding to the gender of obese patients shows in figure 1, the highest percentage of obese patients (89.09%) were female. This result agree with findings of other researchers [14-20]. The suggested reason for this result is presence of Traditional/cultural restrictions in lifestyle of women in Iraq are one source for increased rates of obesity among females than males, females have limited access to sports and exercise activities, also multiple pregnancies is an important factor as women gain 4.5 kg or more in one year postpartum, due to a combination of factors such as gestational weight gain, decreased physical activity and increased food intake.

Regarding the age of obese patients shows in Figure 2 the greatest increase of obesity was seen among 20-30 age group and this result agree with the findings of [21-24], this may be due to sedentary life-style and dietary habits. Also young adult people who live in countries making the socioeconomic shift, are particularly affected by the social and environmental factors such as financial independence, the easy availability of 'ready to eat' food stuffs, the increasing numbers of fast food chain shops, which are all part of adopting western life culture.

Regarding the residence of obese patients shows in Figure 3, the majority of the obese patients (63.64%) were from urban areas, this result agree with [25-29]. Urban populations are more exposed to a sedentary lifestyle and the high-fat fast food consumption are common and it is clear that those populations are at a higher risk of developing obesity compared with rural populations, which have a higher level of physical activity such as fishing and agricultural work.

Figure 4 showed distribution of obese patients according to occupation. Largest group of obese patients were unemployed, this result agree with the findings of [29-31]. Unemployment is more strongly associated with adiposity outcomes. Also, psychosocial stress and financial restriction associated with unemployment could have heterogeneous effects on energy balance .

Figure 5 shows mean differences of irisin (ng/ml) for control and obese patients. There is significant difference between control and obese patients (p value ≤ 0.05), the resulted data shows higher level of Irisin in obese patients compared with control, These findings confirmed the results of a previous study which demonstrated that obese patients had higher circulating levels of irisin than normal weight individuals [9, 32,33], in contrast with other studies that found lower irisin levels in obese patients[34].

Figure 6 shows the correlation between Irisin (ng/ml) and body mass index (kg/m^2) among obese patients. There is significant positive correlation between irisin and BMI(p value≤ 0.05). ($r = 0.441$, $P = 0.002$), in accordance with our findings, several studies have revealed a positive correlation between serum irisin levels and BMI[6,32,33,35,36]. Contrastingly, some studies found a significant negative correlation between circulating irisin and BMI[34,37]. Moreover, one study reported that irisin was not related to BMI[38].

Conclusion

Serum Irisin levels are higher in obese than in non-obese people.

Recommendations:

1. A community-based multiple prevention and intervention strategies should be implemented to combat with increasing level of obesity.
2. Study the gene expression of irisin, leptin, ghrelin associated with obesity.
3. We may push for the increasing medicalization of obesity.
5. Routine cardiac checkup for obese patients by a cardiologist doctor.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors have no conflict of interest.

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Assessment of Knowledge about Venous Thromboembolism Prophylaxis among Sample of Iraqi Residents

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Abstract

Background: Venous thromboembolism is defined as the inappropriate formation of a blood clot in a vein. Among hospitalized and non-hospitalized patients, considered a global health concern which includes deep vein thrombosis and pulmonary embolism.

Objectives: To assess the knowledge of Iraqi resident doctors from different specialties regarding thromboembolism prophylaxis.

Subjects and Method: The survey was conducted at Medical City teaching Complex in Baghdad, among four medical specialties; Surgeons, Internists, Gynecologists & obstetrics and Family medicine residents.

Results: Total of 200 residents were handed a copy of the questionnaire with response rate of 94.3%. The mean age of the participants was 31.4±2.6, the residents were of four specialties; Internal Medicine 25.5%, Family Medicine 33%, Gynecology & Obstetrics 21% and General Surgery 20.5%. The majority of the participants (69%) had a an experience less than 5 years. The vast majority of the participants (96.5%) did not participate in any training about VTE prophylaxis. the knowledge questionnaire response showed that the highest score was among the faire/acceptable score (54%), good score represented 30.5% and the poor score represented only 15.5%.

Conclusion: Although the overall knowledge score of all specialties were faire/acceptable, the knowledge regarding prophylaxis and treatment were poor indicating the need for indulging comprehensive training courses regarding VTE prophylaxis and treatment within the residency programmes

Keywords: *Knowledge, VTE (Venous thromboembolism),resident doctors.*

Introduction

Venous thromboembolism (VTE) manifests as deep-vein thrombosis (DVT), which occurs in the legs and to a lesser extent as pulmonary embolism. The terms 'thrombosis' and 'embolism' were coined by the German physician Rudolf Virchow, who was the first to demonstrate a mechanistic link between DVT and pulmonary embolism [(1)]. However, the so-called Virchow's Triad was attributed to Virchow only 100 years after the publication of his work in 1856. Virchow's Triad describes three groups of thrombogenic factors: hypercoagulability, changes in blood flow (stasis and turbulence) and endothelial dysfunction. In 2014, the International Society of Thrombosis and Haemostasis initiated "World Thrombosis Day" on 13 October_ the date of Virchow's birth [(2)].

The worldwide incidence of VTE is difficult to quantify and not simple to be predictable, as clinical symptoms can be nonspecific and screening techniques can fail to properly assess asymptomatic patients. Even so, it is thought that at least 5–15% of hospitalized patients will develop VTE, making it one from most common preventable cause of in-hospital death [(3,4)].

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The good knowledge of VTE pathophysiology and how each risk factor contributes to the development of the condition forms the basis for the optimum use of prophylaxis, many of VTE risk factors have been documented with the varying degree of effects. The most common individual risk factors are age above 70 years, history of VTE, immobility, cancer, congestive heart failure, obesity and many othermedical conditions [5]. Surgical patients are at risk for developing VTE depending on the type of the surgery and patient characteristics, hip orknee surgery carry the highest risk for developing VTE, prophylaxis thatincludes mechanical prophylaxis like patients with prolonged immobility following long-distance travel and surgical procedures, early and frequentmobilization is recommended [6-8]

Kashani et al;2015 found that The mean annual prevalence of DVT among the hospitalized Iranian adult patients not receiving prophylaxis is high. They also found that appropriate prophylaxis was provided for less than half of the patients in need [9].

In Saudia Arabia, Kharaba et al;2017 found as per the American College of Chest Physicians (ACCP) criteria, 375 (90.5%) patients were at risk for VTE and qualified forprophylaxis. Although 227 (60.5%) received some form of prophylaxis,only 144 (38.4%) of them received ACCP-recommended VTE prophylaxis [10].

In Iraq, Alhilali*et al*. 2016 reported in their study that Only 25% of the prescribed prophylaxis was ordered according to the ACCP recommendations and found that high prevalence of the risk of VTE among hospitalized Iraqi patients with an underestimation of the problem and terrifying under utilization of effective prophylaxis for at-risk patients [11].

Subjects and Method

Survey was conducted at Medical City teaching Complex in Baghdad for the period extending from 1st of March to the end of May 2018.

Two hundred resident doctors were recruited in the research who had completed at least one year in their residency program of the following specialties; Surgeons, Internists, Gynecologists & obstetrics and Family medicine residents.

A well-constructed self-administered questionnaire was used for data collection which consisted of three parts: 13 questions for knowledge to assess definition, risk factors, mechanisms, prophylaxis, guidelines, treatment and complications.

Response to these questions was in form of: Yes, No and Don't know, 3 points were assigned for correct answer, 2 for don't know and 1 for incorrect answer. Accordingly, total score for knowledge ranged from (13-39). Then the sum of scores were categorized into three levels of knowledge: Good knowledge defined by a score of ≥33; acceptable/fair knowledge level (26-33) and poor knowledge level (<26 knowledge) according to the quartile in which poor were assigned for less than <50% "first and second quartile", fair for 50-74% "corresponding to the third quartile" while 75% and above were categorized as good knowledge score [12,13,14].

Statistical Analysis: Analysis of data was done using the available software of Statistical Packages for Social Sciences- version 25 (SPSS-25). Simple measures of data which include the mean, standard deviation, frequency, percentage and range (maximum- minimum values).

The statistical associations of qualitative data were tested using Pearson Chi-square test (X^2-test). Statistical significance was considered when the P value was equal or less than 0.05. [15]

Ethical Consideration: The researcher directly interviewed all participants after obtaining their verbal consent and they were informed that their identity will not be revealed and the work is done only for research purpose.

Results

In this survey, 200 residents correctly filled the questionnaire; giving a response rate of 94.3%.. The mean age of the participants was (31.4±2.6), the age range was from 25 to 39 years. The majority of participants were in age group 30-34 years which represent 62.5% of the participants; followed by age group 24-29 years then the age group 35-39 years which represents 24.5% and 13% respectively.

Regarding the specialty, the residents were of four specialties; Internal Medicine 25.5%, Family Medicine 33%, Gynecology & Obstetrics 21% and General Surgery 20.5%. The majority of the participants (69%) had a work experience less than 5 years following graduation.

The vast majority of the participants (96.5%) did not participate in any training about VTE (table 1).

Table (1): The specific characteristics of study sample (n=200).

		No	%
Age (years)	24---29	49	24.5
	30---34	125	62.5
	35---39	26	13.0
	Mean±SD (Range)	31.4±2.6 (25-39)	
Specialty	Internal Medicine	51	25.5
	Family Medicine	66	33.0
	Gyn & Obstetrics	42	21.0
	General Surgery	41	20.5
Years of experience	1	17	8.5
	2	25	12.5
	3	36	18.0
	4	60	30.0
	5 & more	62	31.0
Years of experience	<5years	138	69.0
	5 & more	62	31.0
Participated in any training about VTE* prophylaxis	Yes	7	3.5
	No	193	96.5

In the current study, the knowledge questionnaire response showed that the highest score was among the faire/acceptable score (54%), good score represented 30.5% and the poor score represented only 15.5%.

The results in table 2 illustrates physicians' knowledge in the four medical specialties, out of 13 questions used to assess physicians' knowledge of participants; the majority had correct knowledge answers for both of the definitions and mechanisms (91.0%), about risk factors and diagnosis of VTE with percentages of (86.0%,74.5%,83.5%) respectively.

The notable correct answers was mainly regarding the prophylaxis 22.0% then treatment 40.0% and complications 41.5%. The participants showed fair/ acceptable answers about the questions regarding epidemiology, diagnosis and guidelines.

Table 2: The distribution of study sample according to their response to knowledge questionnaire (N=200)

Knowledge (Q13)	Correct		Incorrect		No response	
	No	%	No	%	No	%
Deep vein thrombosis (DVT) is a medical condition that occurs when a blood clot forms in a deep vein.	182	91.0	10	5.0	8	4.0
Deep Vein Thrombosis and Pulmonary Embolism (DVT/PE) are often under diagnosed and preventable medical conditions.	167	83.5	27	13.5	6	3.0
DVT is the most common source of PE	172	86.0	20	10.0	8	4.0
Pulmonary embolism is a medical condition that is unpreventable cause of mortality in hospital	142	71.0	34	17.0	24	12.0

Knowledge (Q13)	Correct		Incorrect		No response	
	No	%	No	%	No	%
The most important mechanisms of VTE risk are: Hypercoagulability, Stasis and Vascular injury	182	91.0	10	5.0	8	4.0
DVT does not cause heart attack or stroke while arterial thrombosis can cause heart attack or stroke	83	41.5	84	42.0	33	16.5
Diagnosis of VTE is based on Simple hematological tests	149	74.5	39	19.5	12	6.0
Wells criteria is important in the scoring of VTE	129	64.5	15	7.5	56	28.0
If the D-dimer test is positive, it means that the patient probably does have a blood clot	135	67.5	55	27.5	10	5.0
Recent or recurrent malignancy is not included in Wells criteria	109	54.5	30	15.0	61	30.5
Warfarin is only method for DVT prophylaxis	44	22.0	139	69.5	17	8.5
Inferior vena cava filters is only standard modality for treatment of VTE.	80	40.0	102	51.0	18	9.0
All of the anticoagulants can cause bleeding	110	55.0	79	39.5	11	5.5

The physician specialty revealed a statistically highly significant influence on the level of knowledge (P=0.0001) which was observed higher among internal medicine physicians (58.5%) then 31.7% of the general surgery classified as having good knowledge, while only 18.2% and 14.3% of family physicians and gyne-obstetrics had good knowledge score respectively.

The study showed unexpected results as the percentage of knowledge tend to decrease with increasing years of experience, as 34.8% of those who worked for less than 5 years had good knowledge score in comparison with 21.0% of those who worked for 5 years and more, with a statistically significant association with the of level of knowledge (P=0.05).

The results showed that participation in training about VTE prophylaxis had no influence on knowledge score (P=0.910), as 28.6% of physicians who were trained had good knowledge compared to 30.6% of those who were not trained (table 3).

Table 3: Distribution of study sample according to their knowledge score versus different variables (N=200)

		Knowledge Score				P value
		Poor-Acceptable		Good		
		No	%	No	%	
Age (Years)	24---29	35	71.4	14	28.6	0.944
	30---34	86	68.8	39	31.2	
	35---39	18	69.2	8	30.8	
Specialty	Internal Medicine	21	41.2	30	58.8	0.0001*
	Family Medicine	54	81.8	12	18.2	
	Gyn & Obstetrics	36	85.7	6	14.3	
	General Surgery	28	68.3	13	31.7	
Years of experience	<5y	90	65.2	48	34.8	0.050*
	5 & more	49	79.0	13	21.0	
Participated in any training about VTE** prophylaxis	Yes	5	71.4	2	28.6	0.910
	No	134	69.4	59	30.6	

*Significant association using Pearson Chi-square test at 0.05 level.

Discussion

The current study showed high response rate (94.3%)when compared with that reported by other studies carried out in Iraq, Pakistan [16], Nigeria[8] and Sudan [17] (84.5%,80.5% and 83.8%) respectively. This high response rate may reflects the advantage of self-administrated questionnaire and direct orientation by the researcher on the instruction given to the residents about the importance of such subject in ascertaining the knowledge and attitude and practice about VTE.

Departments of Internal Medicine, Obstetrics & Gynecology, Family physicians and General Surgery were involved in this study. There may be a relevance with the fact that most patients with higher risk factors of developing VTE are discovered within those departments who harbor the largest number of doctors in comparison to other wards.

Unfortunately, the vast majority of participants have not been enrolled into any training course about VTE prophylaxis guidelines, these results are in keeping with (Kesieme*et al;* 2016) who showed that the majority hadnot attained core of prophylaxis guidelines or protocols [18].This may explain our findings in residents with less than 5 years of experience who had a higher good knowledge score than those with 5 and more years of experience as the junior residents still attached to their undergraduate curriculum

In the present study, about one third of the participants were having good knowledge score while more than half of the study group appeared to have fair knowledge score and the rest had poor knowledge which are substandard, this coincide with findings of other researchers [17]. This may be attributed to loss of training programmers about the guidelines for the residents, this necessitate the importance of continuous medical training and educational strategies which focus on improving residents'knowledge about VTE.

According to each item of knowledge questionnaire, participants in the current study had good knowledge responses regarding definition, mechanisms and risk factors which goes in the same line with study in Nigeria[8]. This may be due to their knowledge about the VTE as a disease entity, but the lack of proper training which appear clearly in poor knowledge about the prophylaxis and treatment when only 22% of the participants correctly answered that there are multiple method for DVT prophylaxis other than warfarin. This finding is in agreement with a research conducted in Sudan in which two third of the participants didn't appreciate the importance of mechanical method as prophylaxis [17].

It should be noted that this study was conducted at a teaching hospital, which implies that the situation in the non-teaching hospitals could be worser.

In the current study, more than half of the internal medicine residents showed good VTE knowledge score with high significance association (P=0.0001) compared with Obstetrics & Gynecology residents who performed lowest score regarding the thrombosis knowledge which goes parallel with Ebrahimpur*et al*,2016 findings. This finding provides further evidence that the internal medical education still focuses rigidly on disease (VTE) which indicate the need to improve the VTE knowledge in all specialties [19].

Knowledge is still below the required level. In Iraq, The main reasons for underutilization of prophylaxis were the lack of awareness about the risk and the prevalence of VTE complications, fear of bleeding risk from drug prophylaxis regimen with complexity of the guidelines and financial restrictions [16].

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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The Roles of the Various Plasma Agents in the Deactivation of Streptococcusmutans Bacteria on Teeth

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Abstract

In this work; Cold plasma jets were utilize to determine the role of the charged molecules in the process of blocking the bacteria. These charged molecules played a key role in this disruption and using argon gas. These particles were found to play an important role in disabling *Streptococcus mutans* bacteria .UV and heating showed no secondary role in inhibiting bacteria while metastable stateandO3as well as O played a key role in this disruption.

Keywords: *Noble gas, cold plasma, S. mutans, metastable state.*

Introduction

Plasma Ionized gas represents a fourth state of matter consisting of electrons and charge carriers in addition to ions[1]. The killing of bacteria using non-thermal plasma has made this plasma an effective and useful role in various medical and biologic applications such as the removal of bacterial contamination and the sterilization of medical instruments in hospitals[2]. This type of plasma works at or near room temperature and this feature made Plasma does not produce heat damage to associated models or materials. This feature has opened the possibility of treating heat sensitive materials when developing a plasma jet that uses noble gases such as argon or helium, as well as killing bacteria in this way[3,4]. In the respiratory tract and mouth there *Streptococcus mutans* bacteria, gram positive bacteria and one member of mutant groups. *S.mutans* bacteria are responsible for the formation of bacteria in the mouth and therefore affect the teeth as well as immunodeficient patients who undergo bone marrow transplantation and chemotherapy. The most of these organisms have the ability to analyze sucrose and the formation of a layer on the teeth, which in turn provide the environment for fermentation and acid resulting from this fermentation leads to necrosis The tooth enamel layer is therefore tooth decay, figure (1) shows, a *S.mutans* bacteria and stock culture[5,6].

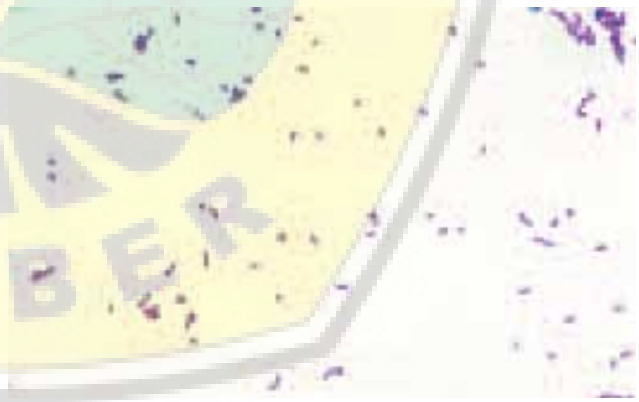

Figure 1: The Ovoid cells of streptococcus mutans bacteria and diameter (0.5–0.75 µm)[5]

Installation and operation of the experiment: A high voltage power source (12 KHz) used to generate discharge between two electrodes covered with an electric insulator. The voltage and current are measured by a high frequency digital oscillator (Tektronix TDS 2000). The high voltage applied is between two connectors, one or both, insulated with insulation to prevent turning

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to the arc and limiting current. The plasma system is a conventional jet and discharge system.

Through the alternating voltage between the isolated high voltage electrode and the base of the model, a cold plasma is created to process the samples, the power source is connected to a stainless steel tube, the insulation is prevented. The current flows between the electrodes. The plasma is produced with a high concentration and with minimal gas heating and a vacuum between the needle The model (1-4 cm).

Figure 2 illustrates the experimental diagram of our work. A part connected to the isolated mica block which prevents heat transfer to the catcher, the other side is a stainless steel dielectric tube connected to the high voltage source, the system provides a high voltage (0-15 kV).

Between the upper surface of the model and the bottom of the probe the discharge is generated,distance is controlled during discharge at a fixed diameter (2.6 cm) and for all samples at room temperature and air pressure when conducting the experiment.

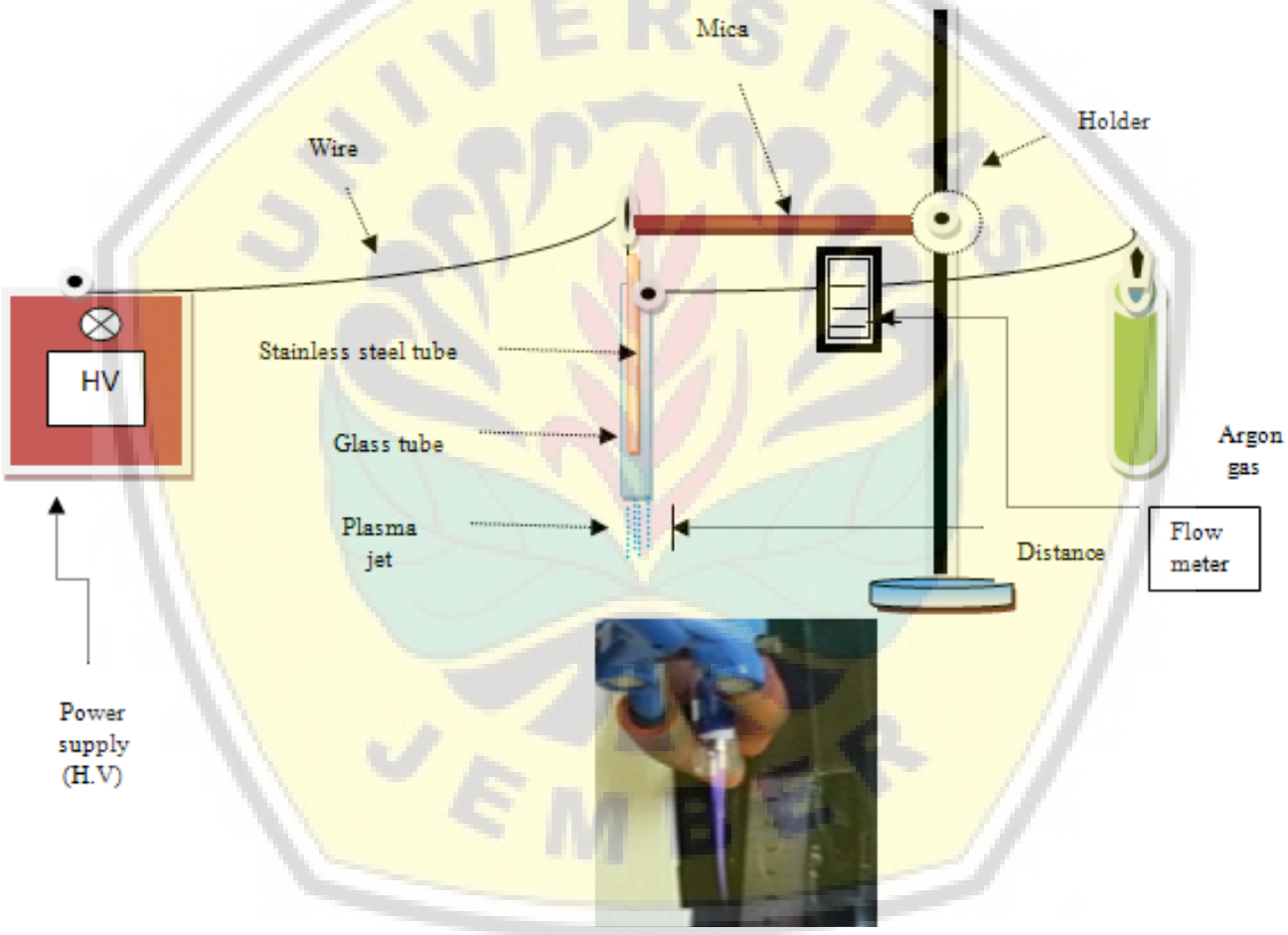

Figure 2: A schematic form to generate plasma jet

Materials and Method

In this work, the applied voltage (2 kV) and flow rate (1-3 l/min) as well as frequency (12 kHz) are optimal conditions to create non-thermal plasma to inhibit the bacteria in the mouth, teeth and tongue surface.

When a colony was taken from a solid medium after incubating it at 37°C and incubating overnight, a suspension of 1.5×10^8 (CFU/ml) was suspended using 0.5Mcfarland standard. 1: 100000 (*Streptococcusmutans* bacteria) and the effect of non-thermal plasma on this type of bacteria.

Below the plasma needle, place a 1 mL petri dish of suspended bacteria and variable distances (3,4 cm) at operational conditions (1, 2,3, 4 l/min) for exposure to this plasma.

Isolated isolates are not exposed to plasma. The isolated bacteria exposed to non-thermal plasma contain special media for all bacteria and cultured in petri dishesand then placed for 24 hours in the incubator at 37°C. After incubation, to demonstrate the efficacy and activity of non-thermal plasma in bacterial inhibition.

Results and Discussion

The activity of the gas flow rate on inhibition bacteria: The high flow rate of argon gas and high-speed particle discharge make it penetrate the outer wall of the *Streptococcus mutans* bacteria and inhibit bacteria through non-thermal plasma.

Increasing the rate of gas flow leads to the destruction of the cell membrane and the penetration of high-speed particles plays an important role in destroying the external structure of bacteria and the disappearance of cytoplasm; thus the death of bacteria. Figure 3 shows the increase in the kill rate by increasing the non-thermal plasma treating time at (3 cm) with the flow rate of the argon gas.

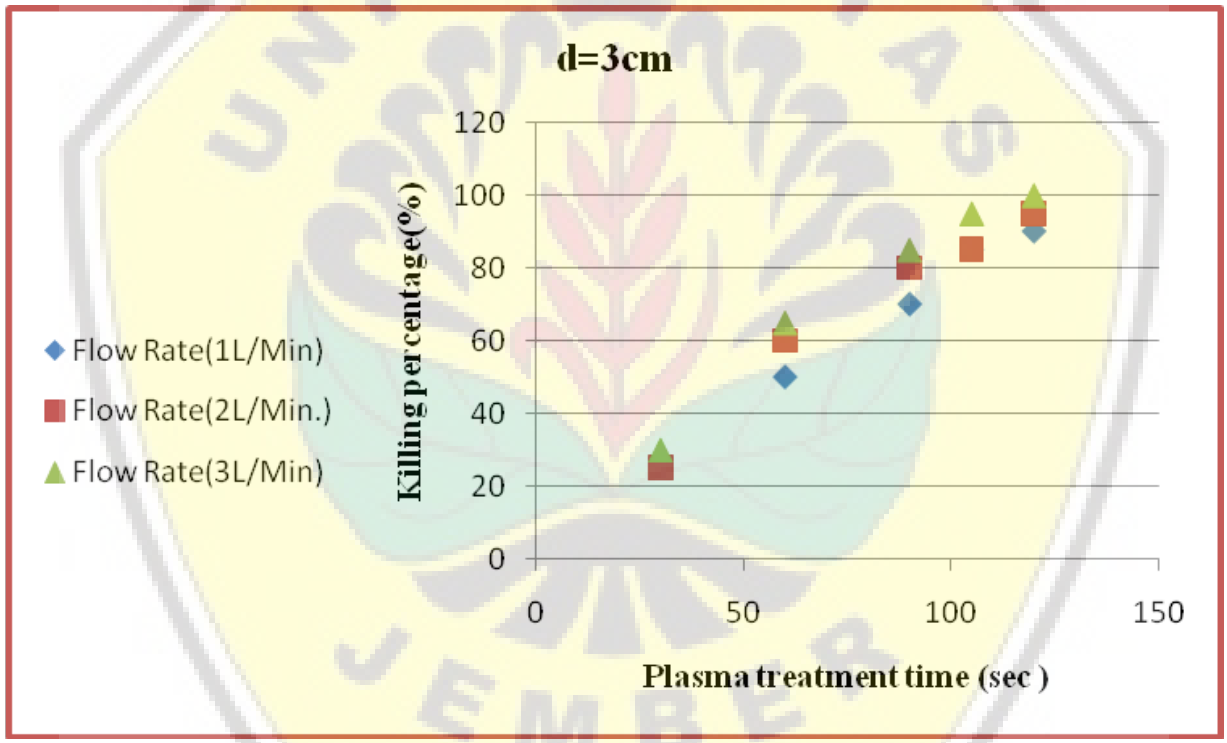

Figure 3: Killing percentage of Streptococcus mutans bacteria The relationship between & plasma treatment time at distance 3 cm

The effect of distanceon inhibition of S. mutans bacteria: Under certain conditions, the plasma treatment and its role on S. mutans bacteria were examined with different distances and times. The number of bacteria was estimated at different rates through the experimental conditions. The bacterial killing rate was defined as a function of plasma treating time as in Fig. 4. The results showed that the rate of killing of these bacteria increased with increased treatment time and decreased distance.

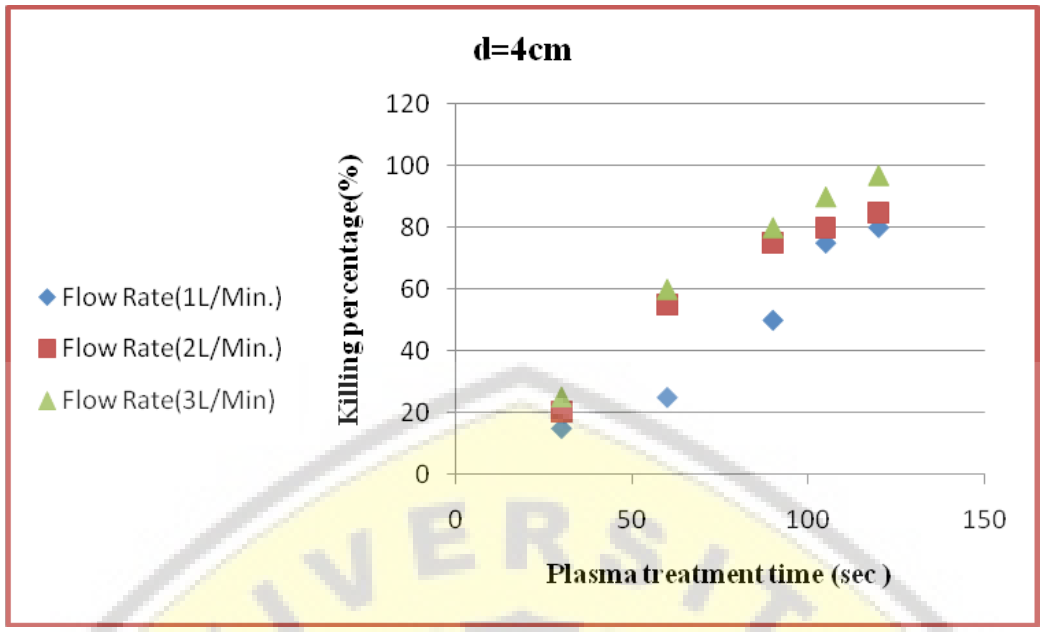

Figure 4: Killing percentage of Streptococcus mutans bacteria

The relationship between plasma treatment time at distance 4 cm: Within two minutes, interaction between reaction species and bacteria types is completed. This shows the role of the high voltage produced to a high degree to ionize the gas, this increases the intensity of the reaction which plays an important role to reduce bacterial cells. The charged particles also have the effect of deactivation of bacteria, UV and heating, it has been shown that active species such as ozone have a key role in inhibition of *streptococcus mutans* bacteria[7,8].

The increase in plasma treatingtime increases the inhibition of *streptococcus mutans* bacteria and these bacteria can be eliminated by exposure to cold plasma, this disruption Represented by working conditions of the plasma, such as processing time, flow of gasas well asapplied voltage [9].

Conclusions

The operating conditions of non-thermal plasma, such as treatingtime and distance, as well as gas flow, have a role in inhibition of *streptococcus mutans* bacteria. The use of plasma jet with atmospheric pressure, the use of plasma jet plasma generates a cold plasma that investigation the role of charged particles by inhibiting the bacteria.

The charged molecules, active species such as ozone and stable state, were found to be able to deactivate and inhibit the activation of *streptococcusmutans* bacteria..

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Study of the Physiological Effect of Some Different Heart Diseases in Atrial Natriuretic Peptide (ANP) Concentrations of Hormone, Troponin and Nitric Oxide (NO) of Patients in Kirkuk Governorate

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Abstract

This study was conducted at the Azadi Teaching Hospital in Kirkuk in (14/12/2016-24/06/2017), to determine the effect of some types of heart disease in Atrial natriuretic peptide (ANP) hormone, Troponin and nitric oxide, this study included some patients who were suffering of four types of heart diseases (Myocardial Infarction (MI), Ischemic heart disease (IHD), heart failure (HF) and Unstable angina (UA)), the number of patients and healthy was 60 and 30 respectively (heart patients were classified into four groups, each group included 15 persons). Their ages ranged from 40 to 90 years. Blood samples were collected from patients and healthy; the serum was separated in a common way. The concentration of Troponin increased significantly (0.05≥ P) in patients with MI in both males and females, As compared to other heart disease groups, while the lowest significant decrease (0.05≥P) in the concentration of Troponin in males and females suffering from (UA) and heart failure (HF). Nitric oxide concentrations increased significantly (0.05≥P) in healthy patients compared with all groups of heart patients and the group of female patients with UA (0.05≥P), was significantly higher than the group of males with the same disease, no significant differences were observed in nitric oxide concentrations between groups of male and female patients with myocardial infarction and heart failure, It is concluded that the totality of patients with (MI) is more likely to increase the concentration of (ANP) hormone and Troponin, while nitric oxide concentrations in all groups of heart patients decreased compared with healthy.

Keywords: *Heart disease, ANP, Kirkuk.*

Introduction

Heart disease is defined as a variety of diseases affecting the heart and blood vessels. Scientific studies have concluded that heart disease is the leading cause of death in all countries of the world especially cardiomyopathy (IHD) has been the leading cause of death accounting for 30% of the world's total deaths [(1)], followed by atherosclerosis and is one of the most important killer diseases globally[(2)], in a recent study in the United States, one out of every three patients has a heart disease, the rate of coronary artery disease was 48.8% of all types of heart disease, while stroke patients accounted for 16.8%, heart failure, hypertension,9.4%, vascular disease,3.1 and other heart diseases 17.9. Health care costs of heart disease amounted to $329.7 Billion, The number of deaths from heart disease was 1 million in 2015[(3)].

Deaths are expected to reach 23,600,000 deaths in 2030[(4)]. Because of reduced heart performance in patients with heart failure, hormonal factors are stimulated to try to maintain a balance in heart function to sustain blood flow in the circulatory system, thus, hormone activation gradually becomes more distinct as patients progress[(5)] and the heart produces a family of Natriuretic peptides (NPS) is produced and the main hormone of this family is the protective hormone of Atrial Natriuretic Peptides (ANP) which had been discovered by Drs de Bold [(6)], this hormone is one of the most important tools for diagnosis of heart disease[(7,8)], Nitric Oxide plays an important role in regulating cardiovascular function

through its role in regulating vascular tone and blood pressure so it protects the heart(9),also NO plays an important role in Endothelium Dependent which acts as vascular expansion and relaxation factor[10] it is released by the vascular lining in response to various other stimuli including Acetylcholine [11].

The aim of this study is to know the effect of some types of heart disease in Atrial natriuretic peptide (ANP) concentrations, Troponin and Nitric Oxide.

Materials and Method

This study included some patients who were suffering of four types of heart diseases (Myocardial Infarction (MI), Ischemic heart disease (IHD), heart failure (HF) and Unstable angina (UA)), the number of patients and healthy was 60 and 30 respectively (heart patients were classified into four groups, each group included 15 persons). Their ages ranged from 40 to 90 years. Blood samples were collected from patients and healthy; the serum was separated in a common way

Statistical Analysis: A statistical analysis done by using ANOVA One Way system, Moral differences were extracted between more than two averages and the differences were confirmed using (Mean±Stander Error)with significant differences (0.01≥P),(0.05≥P) and compare the averages in Dunkin way [12].

Results and Decision

Atrial natriuretic peptide (ANP) effect on heart disease: The table (1) and the horizontal comparison show a significant improvement I at the level (0.05≥P)of myocardial infarction (MI) females patients compared to male patients in ANP consecrations, patients with UA pectoris showed no significant differences between males and females in ANP hormone consecrations, we observed Moral superiority patients with (IHD) at level (0.05≥ P) in (ANP) hormone consecrations of female patients compared to male patients, patients with (HF), the males showed moral superiority at level (0.05≥P) in ANP hormone compared to female patients, many studies showed increasing of (ANP) hormone consecrations of patients with chronic(HF)[13].

Table 1: Comparison between some types of heart disease and healthy in the concentration of (ANP) hormone

Standards	Heart disease	Mean±Stander div.			
		N	Male	N	Females
ANP pg/ml	Healthy	10	34.80±1.06 c	20	38.45±3.64 d
	Patient with MI	12	135.3±4.2 a	3	*162.7±8.5 a
	Patient with UA	7	110.1±3.5 ab	8	112.1±3.7 b
	Patient with IHD	6	97.40±5.3 B	9	*120.6±5.0 b
	Patient with HF	7	*94.50±4.6 B	8	84.75±5.10 C

*Horizontally means that there are significant differences in probability level (P≤0.05),**Horizontally means that there are significant differences in probability level (P≤0.01), The vertically different letters mean significant differences (P≤0.05), MIMyocardial infarction, UAUnstable angina, IHDIschemic heart disease (cardiacin sufficiency), HFHeart failure.

In the same table, when comparing different heart diseases between healthy males and females, there was a significant increase in all heart patients (0.05≥P) compared with healthy males in the concentrations of this hormone, also there was superiority (0.05≥P)of patients with (MI) and (UA)pectoris was significant compared to patients with (IHD) and (HF) in (ANP) hormone consecrations, thus, it is concluded that the

diseases of (MI) and (UA)pectoris are the most harmful diseases affecting the increase in (ANP) hormone concentrations,also it was observed from the same table that when comparing different heart diseases between female patients and healthy females,all female patients were significantly higher than healthy females (0.05≥P), Patients with (MI),(UA) and (IHD)were (0.05≥P) superior to (HF) patients in (ANP) hormone concentrations,we conclude that patients with (HF) are the least affected by the increase in (ANP) hormone concentrations in females, in a previous study, there was an increase in (ANP)concentrations in patients with acute hypertension, congestive heart failure,or heart valve disease [14].

High levels of (ANP) have been associated with (HF), but it is still not clear if ANP, But it remains unclear whether ANP has a role in protecting the heart muscle [15], experimental data indicated that the (ANP) hormone plays a major role in cardiomyocytes hypertrophy healthy hearts to increase its efficiency in pressure and volume[16] or the Atrial natriuretic peptide (ANP)regulates the contraction process of cardiomyocyte by its role in Protein phosphorylation called Titin, also Troponin [17]showed that importance ofNatriuretic peptide cannot exclude because of the reasons that prevent the incidence of (IHD) and (HF) diseases, because (ANP) hormone may Stimulate the process of urination, by the secretion of sodium urinary and thus lead to the expansion of vessels and reduce the reduction of blood volume and cardiac output, is linked to increase the level of (ANP) hormone in the plasma with the condition of left ventricular hypertrophy and (HF) and increase blood flow[18].

The effect of heart disease in the concentrations of Troponin (T): Table (2) shows significantly superiority (0.01≥P) in Troponin consecration for healthy male compared with healthy female, studies showed that the consecrations High-sensitivity Troponin (hs-Tn) of healthy persons are unclear ability [19].

Table 2: Comparison of some types of healthy heart disease in Troponin (T) concentrations

Standards	Heart disease	Mean±Stander div.			
		N	Male	N	Females
Troponin ng/L	Healthy	10	**42.31±8.29 d	20	21.38±6.01 d
	Patient with MI	12	*4051±89.9 a	3	3210±29.16 a
	Patient with UA	7	1519±68.1 b	8	1317±24.01 b
	Patient with IHD	6	*494.0±35.3 c	9	362.0±6.70 c
	Patient with HF	7	61.60±4.47 d	8	**268.0±44.3 c

From the same table and through the vertical comparison note that the superiority of male patients with MI on all heart patients and healthy women are significant (0.05≥P) of Troponin consecrations, we did not observe any significant differences among patients with (UA) and male and female patients with (IHD),while male patients outnumber females at a tolerable level (0.05≥P) of Troponin consecrations,we observe (HF)significant superiority at level (0.01≥P) in Troponin consecrations of female patients comparative to male patients also previous studies showed that the levels of High-sensitivity Troponin I (hs-TnI) were higher with men that in women and was associated with all causes of death in both sexes[20].

As noted in our current study when comparing the various heart diseases of male patients with healthy males in the table significantly higher level of probability (0.05≥P)for male patients compared with healthy males in Troponin concentrations,a previous study indicated

that there was a high concentration of Troponin in the heart of older men,who were 70 years old.

These are signs of cardiovascular disease (CVD), because it is associated with an increased risk of coronary heart disease (CHD)[21], also the results of previous studies connect increase of levels High-sensitivity Troponin I (hsTnI) with increase the risk of cardiovascular disease [22].

Also it is noted in same table (2)that the patients with (MI, UA)were morally superior(0.05≥P)to patients with (IHD) and (H),also the patients with (HF) are less affected of Troponin consecrations for men, it was noted in many studies that heart Troponin is a typical diagnostic mark of myocardial,as the molecules of the heart muscle type of inhibitor(CTnI) and based onTropomicine (CTnT), they are essential elements of a cardiomyocytes job.

Measurement of cardiac Troponin has become a biochemical criterion for diagnostic testing myocardial and IHD[23], andthe experience of the heart Troponin revealed very low concentrations of cardiac troponin I(CTnI) and T(CTnT) in patients with (IHD)[24], studies showed that the Troponin increases from 20 to 50 times in patients with (MI)[22], it was observed that risk of MI and Acute coronary syndrome was four times higher in patients who suffer of high cardiac troponin (CTn), Troponin T will raises during 3-4 hours from the beginning of myocardial that continues for 10-14 days,at previous studies it had been depended on Troponin I level as a base to predict an increase in the number of dangerous events including HF and MI, appearance of effect of Troponin I level increase to be the biggest fatal event in all non-fatal cardiovascular events [23], increase of Troponin in patients with Coronary Heart Disease (CHD)Because the tear of microemboli plaque causes the myocyte necrosis,so Troponin consecration increase in patients with (IHD)[19], also with MI[24]. Other studies showed Increased troponin and its adverse effects in patients lead to chest pain (8) also with (HF), especially the older patients. The same table, there is a significant superiority in the level of (0.05≥P) probability of female patients on healthy females, Previous studies have shown that patients with heart disease have high concentrations of Troponin I and the risk of death in patients with increased Troponin I occurs gradually with increased Troponin I.

Effect of nitric oxide on heart disease: Table (3)shows significant differences between males and females in nitric oxide (NO)concentrations, the results were (27.18+1.62)(33.20+4 .94) respectively. Previous studies showed that NO which produced from vascular endothelial Nitric Oxide synthase (eNOs)`s job is to Relax the smooth muscles of the blood vessels and prevent thrombocytopenia and adhesion [26]

Table 3: Shows Comparison between some types of heart disease and healthy in (NO)concentrations

Standards	Heart disease	Mean±Stander div.			
		N	Male	N	Females
NO µl	Healthy	10	27.18±1.62 a	20	33.20±4.94 a
	Patient with MI	12	14.38±1.43 d	3	*23.00±2.06 b
	Patient with UA	7	21.70±1.29 b	8	21.13±8.12 b
	Patient with IHD	6	*19.15±1.60 bc	9	13.14±2.78 c
	Patient with HF	7	21.57±1.36 b	8	20.61±1.68 b

Our results from the same table showed that the healthy females were significantly higher at a potential level (0.05≥P) in (NO)consecrations on patient females alsos uperiority of patients with (MI, UA) and (HF),Compared with the same table,we note the superiority of female patients with (MI) at a probability level (0.05≥P) with male patients in nitric oxide concentrations, the results were (23.00+2.06) (14.38+1.43) respectively.

Conclusion

The totality of patients with (MI) is more likely to increase the concentration of (ANP) hormone and Troponin, while nitric oxide concentrations in all groups of heart patients decreased compared with healthy.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors have no conflict of interest.

Funding: Self-funding

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The Influence of Biosurfactant on Hardness and Roughness of Heat Cured Acrylic Resin

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Abstract

The object of this study was to evaluate the effect of biosurfactanton roughness and hardness of heat cured acrylic resin.

Total numbers of (30) specimens have been intended. Immersing was conducted using two solutions: A. biosurfactant (biosurfactant produced from leuconostocmesenteriodes sp.) B.5% Sodium hypochloride. Distilled water was used as the control. Immersion time was 30 hours. The change in hardness was measured using shore D hardness tester and TR220 portable roughness tester was used for measuring the surface roughness**.** The statistical test used one-way ANOVA and post hoc- Tukey test.

The result showed a significant difference between control and experimental groups in the roughness tests and regarding the effect of soaking in 5% Naocl, there was no significant difference in hardnesstest. The immersing of heat cured acrylic resin in biosurfactant decreased the hardness and increased thesurfaceroughness.

Based on the result of this study the soaking of acrylic resin in biosurfactantdecreased its hardness and increased the surface roughness

Keywords: *Biosurfactant, acrylic resin, Naocl, hardness,roughness.*

Introduction

Poly (methyl methacrylate) is the most popular material used for the fabrication of denture resin because it has good esthetic, low water absorption and low toxicity; however this material is also has weakness that is its porous condition in which food attach and microorganism can proliferate in that area which in turn may contribute to oral disease[1] This situation can be avoided by disinfecting denturechemically. The need to disinfect prostheses has resulted in the widespread search for disinfectant agents that are innocuous to the prosthesis surface. Various chemical agents are used in actual prosthesis disinfection e.g aqueous formaldehyde, hydrogen peroxide, sodium hypochlorite, chlorhexidine which are effective in reducing the numbers of microorganism[2,3]. Several studies[4,5] demonstrated that various disinfectants affect the physical properties of denture base resins such as hardness[6], transverse strength[7,8], roughness[9] and deterioration on the surface of the denture resin[7].

The roughness of acrylic resin surfaces is a critical property because surface irregularities increase the likelihood of microorganisms remaining on the denture surface after the prosthesis is cleaned [10]. Another property that can influence the surface characteristics of acrylic resins is the hardness, which indicates the ease of finishing a material and its resistance to in-service scratching during cleaning procedures [11].

Biosurfactantsare microbial produced surface active compound. They are amphiphilic compounds

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with hydrophobic and hydrophilic regions that confer the ability to accumulate between fluid phases, thus reducing surface and interfacial tension at the surface and interface respectively[12]. They possess the characteristic property of reducing the surface and interfacial tension using the same mechanisms as chemicals surfactants[13]. Biosurfactants are produced by several microorganisms which include *Acinetobacter sp., Bacillus sp, Candida antartica, Pseudomonas aeruginosa*. The physiological role of biosurfactant production in microorganisms includes antimicrobial activity and the ability to make substrates readily available for uptake by the cells in adverse environmental conditions[14]. Several applications of biosurfactants with medical purposes have been reported. Biosurfactants are considered relevant molecules for applications in combating many diseases and as therapeutic agents due to their antibacterial, antifungal and antiviral activities. Furthermore, their role as anti-adhesive agents against several pathogens illustrate their utility as suitable anti-adhesive coating agents for medical insertional materials leading to a reduction of a large number of hospital infections without the use of synthetic drugs and chemicals[15].

However, the beneficial antimicrobial effect and best preventive agent for acrylic resin as compared with other denture cleanser[16]. The surface properties of PMMA denture base material after such addition has not been investigated. This study is under taken to evaluate the hardness and roughness of acrylic resin denture after soaking in biosurfactant and Naoclas compared to control group.

Materials and Method

Sample Grouping: A total of 30 specimens were prepared from heat cure acrylic resin (vertex dental B.V.-Holland). Acrylic specimens were divided in to three groups, each group consist of 10 specimen according to type of disinfectant solution : first group immersed in distilled water (control group), second group immersed in 5% sodium hypochlorite, third group immersed in the biosurfactant. The biosurfactant produced from *Leuconostocmesenteroides* ssp. *cremoris,* Department of Biology/College of Science/Mustansiriyah University/ Baghdad/Iraq was used in this study. Each three main group further subdivided in to two groups according to physical test that performed (hardness and roughness).

Preparation of acrylicresin specimen's: For the preparation of the stone mold, the waxpatterns were prepared with dimensions of (10mm× 5mm ×3mm length, width and thickness respectively). Acrylic specimens (30 samples) (figure 1)were prepared from heat cure acrylic resin with 22gm/10ml (powder/liquid) ratio according to manufacturer's recommendation . The liquid was measured using a pipette and the powder was weighed using a precision scale. The conventional flasking technique for complete dentures was followed in the mold preparation. The Curing process was carried out according to the manufacturer's directions. The specimens were then stored in water at room temperature for 24 hours.

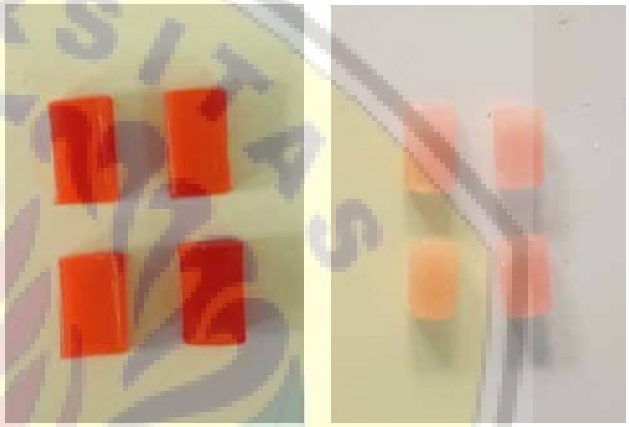

Figure 1: Wax patterns and acrylic specimens

Time of Immersion: All the specimens immersed in the solutions for 30h to stimulate the cleaning or immersion of acrylic dentures in cleansing solution for 5 minutes every day.[17] So immersion for 30h will stimulate the daily immersion for 360 days. Samples were taken out and cleaned with water and then were put on papers towel at room temperature and thereafter samples were ready for testing.

Mechanical and Physical Tests:

Surface Hardness Test: Test was performed using durometer hardness tester (TH 210, CHINA) (shore D hardness) as shown in figure 2. The usual method was to press down firmly and quickly on the indenter and to record the maximum reading. Three measurements were recorded on different areas of each specimen and an average of these three readings was recorded.

Figure 2: Durometer hardness tester

Figure 3: Surface Roughness Tester

Roughness Test: The surface roughness test by using an analyzing surface roughness tester(TR220 portable roughness tester, Beijing, time high technology. Ltd, China) device as shown in figure 3. The mean value for the four readings of the sensible needle on the surface of the tested material was dependent.

Results

Hardness Test: Table (1) showed descriptive data of tested groups. The mean of control group (water) is nearly the same as experimental group (5% Naocl). while the mean of biosurfactant specimens lower than others which mean that the immersion in biosurfactant decreases the hardness. From the result of One way analysis of variance (ANOVA) for hardness test in **table (2)** P- value is 0.02 which mean that there are significant differences among the tested groups. To determine which group has a significant difference between the treatment groups, i.e., between biosurfactant, 5% Naocl and water. Tukey HSD of multiple comparisons between studied groups for hardness test was made at **table (3)** which showed:

1. There was none significance difference between control (water) and Naocl groups (P>0.05).
2. There was significance difference between control and bio surfactant experimental groups (P<0.05).

Table 1: Descriptive Statistics data of hardness test

Group	N	Minimum	Maximum	Mean	Std. Error	Std. Deviation
Water	5	89	90	89.16	.121	.270
5% Naocl	5	89	90	89.08	.146	.327
Biosurfactant	5	84.50	89.10	87.1800	.86568	1.93572

Table 2: ANOVA test of hardness test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.561	2	6.281	4.798	.029
Within Groups	15.708	12	1.309		
Total	**28.269**	**14**			

Table 3: Tukey HSD of multiple comparisons for hardness test between studied groups

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	.080	.724	.993	-1.85-	2.01
	3	1.980*	.724	.044	.05	3.91
2	1	-.080-	.724	.993	-2.01-	1.85
	3	1.900	.724	.054	-.03-	3.83
3	1	-1.980-*	.724	.044	-3.91-	-.05-
	2	-1.900-	.724	.054	-3.83-	.03

*. The mean difference is significant at the 0.05 level.

Roughness Test: Regarding the surface roughness of the control and experimental groups, it was found that the mean of control group (water) is lower than experimental groups (Naocl, biosurfactant) which mean the roughness increase of treated groups. One way analysis of variance (ANOVA) of roughness data in Table (5) revealed a highly significant difference among the groups (P value 0.000). So Tukey HSD of multiple comparisons between studied groups for hardness test at Table (6) was made which showeda significance difference between control and other experimental groups (P<0.05) and in the same table showed none significance difference between Naocl and bio surfactant groups (P>0.05).

Table 4: Descriptive Statistics data of roughness test(Mm) for control and experimental groups

	N	Minimum	Maximum	Mean	Std. Error	Std. Deviation
1-water	5	.81	.99	.8950	.03426	.07661
2-biosurfactant	5	1.43	2.23	1.8360	.14746	.32974
3-5%Naocl	5	1.74	2.62	2.2408	.16120	.36046

Table 5:ANOVA test of roughness test

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.764	2	2.382	29.264	.000
Within Groups	.977	12	.081		
Total	**5.741**	**14**			

Table 6):Tukey HSD of multiple comparisons for roughness test between studied groups

(I) group	(J) group	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-1.34520-*	.18044	.000	-1.8266-	-.8638-
	3	-.94100-*	.18044	.001	-1.4224-	-.4596-
2	1	1.34520*	.18044	.000	.8638	1.8266
	3	.40420	.18044	.104	-.0772-	.8856
3	1	.94100*	.18044	.001	.4596	1.4224
	2	-.40420-	.18044	.104	-.8856-	.0772

*. The mean difference is significant at the 0.05 level.

Discussion

The purpose of immersing dental prostheses in a disinfectant solution is to in activate infectious viruses and bacteria and maintain adequate denture hygiene. In routine use of denture cleaner may affects the physical properties like surface roughness and hardness and then it may be determinable todental prosthesis rather than improving its longevity.

Surfactants are widely used for industrial, agricultural, food, cosmetics and pharmaceutical application however most of these compounds are synthesized chemically and potentially cause environmental and toxicology problem due to the recalcitrant and persistent nature of these substances[18]. With current advances in biotechnology, attention has been paid to the alternative environmental friendly process for production of different types of biosurfactants from microorganisms[19]. In comparison to their chemically synthesized equivalents they have many advantages. They are environmentally friendly, biodegradable, less toxic and non-hazardous. Biosurfactant showed inhibitory effect against several pathogenic bacteria[20].

Hardness is important property as it is important in preventing bending or breaking of the PMMA denture base[21]. The result of this study revealed that hardness of acrylic decrease as soaked in biosurfactant as compared with water and Naocland this may be due to leaching out of the monomer from the PMMA matrix and/or the diffusion of moleculesfrom the cleansing solution and into the PMMA resin through the formation of side group chains and water absorption can be affected by the occurrence of diffusion. Both of the above would result in thesoftening of the resin that affect strength of polymer chain which subsequent decrease the hardness of acrylic resinand this agree withPavarina et al [3]stated that prolonged immersion of denture in cleanser caused softening of the acrylic resin. Absorbed water has been shown to affect the surface properties of all forms of acrylic.

There was no significant effect on hardness after immersing in 5%Naocl and this agree with CristianeF[22] which showed that 60 minutes immersion in Naocldidn't affect surface hardness of acrylic resin. But this disagree with Neppelenbroek *et al.*[23] who demonstrated a significant decrease in hardness after immersion in chemical disinfectant solutions, including sodium hypochlorite and this may be to the different concentration and immersion time.

Roughness affects the patient's comfort and prosthesis longevity. A smoother surface leads to better esthetic results and less biofilm retention [24].In this study, roughness values increased in the samples that were immersed with biosurfactant and sodium hypochlorite in comparison to the control group(water) as the biosurfactant decrease the surface tension and this lead to increase the surface roughness in addition biosurfactant may pass into the matrix and widen space between the chain, causing the separation of the polymer chains to easily deforms plastically and cause roughness on acrylic resin. Disinfectant agent also may alter the surface of acrylic resin[6,8].

Conclusions

The following conclusions can be drawn from this study:

1. Immersion of heat cured acrylic specimen's in biosurfactant solution produced a significant increase in roughness and significant decrease in hardness.
2. No significant effect was observed on surface hardness of the tested specimens after immersion in Naocl while there was significant increase in surface roughness.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors have no conflict of interest.

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Histological Study of Hyperthyroidism (Goiter) in Women in Al- Muthanna Province

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Abstract

To investigated the main histological changes of thyroid gland that infected with hyperthyroidism in the female patient in Al-Muthana province . The current study carried out forty samples of thyroid gland collected from Al-Hussien hospital tutorial. The tissue samples were divided into twenty infected samples with hyperthyroidism and other twenty as control group. The tissue samples were pass through the steps of histological technique the staining with H & E. The histological results of thyroid gland in control group showed The tissue section of healthy thyroid gland showed the thyroid parenchyma contained many follicles different in size which include (large, medium, small). The large follicles have low prevalent compared with other follicles types. The histological result of infected thyroid gland showed the large follicles present in the most prevalent that have significant increased the diameter (78.8 ± 1.9 µm) compared with large follicles in control group. The histological result of female hyperthyroidism noted parenchymal hyperplasia and several type of follicles lined by simple flattened epithelial rest on the prominent basement membrane.

Keywords: *Women; Goiter; and Histological study.*

Introduction

A goiter is an enlarged thyroid gland. The most common cause of goiter is lack of iodine in the diet. Hypothyroidism, hyperthyroidism, thyroid nodules or inflammation of thyroid and cancers cause goiter[1].

Hyperthyroidism (goiter) is define increased in the production of thyroid hormonestriiodothyronine (T3), thyroxin (T4) to the bloodstream, as this increase leads to a faster metabolic rate [2]. also known as thyrotoxicosis, a general term, refers to hyper metabolic state that results because of excess thyroid hormones[3].

The major causes of hyperthyroidism (goiter) are: Grave's disease, Toxic multinodular goiter (Solitary toxic adenoma thyroiditis), exogenous iodine and iodine-containing drugs, e.g. amiodarone, excessive T4 or T3 ingestion, ectopic thyroid tissue, e.g. Struma ovarii, functioning metastatic thyroid cancer HCG dependent e.g. choriocarcinoma, pituitary tumor (very rare)[4].

Evaluate dietary use of iodized salt as a risk factor for hyperthyroidism in people living in iodine deficient areas [5].Also factors associated with an increased risk of development of thyroid nodules and goiter include pregnancy and presence of uterine fibroids, probably related to estrogen and other physiopathologicalmechanism). The pathogenesis of the association between goiter and oral contraceptives remains to be settled and is probably a combination of several direct and indirect effects of sex steroids on the thyroid [6].

The aim of study is to determine the histological changes inhyperthyroidism (goiter) of female patient

Materials and Method

Histological technique: The current work carried out 40 samples of thyroid gland from AL-Hussien

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hospital in AL-Muthana province. The thyroid samples were divided into two groups, twenty samples were collected from female patient that infected with hyperthyroidism and other twenty as control group. The tissue samples for histological study were pass through the histological technique which included (fixation with 10% formalin for 48 hours, dehydration by used deferent concentration of Ethanol –Alcohol (50%,70%, 80%, 90%, 100%) two hours for each concentration, Clearing with xylene, Embedding with paraffin wax, Blocking, Cutting, Loading and Staining with H & E)[7].

Results and Discussion

Histological results of the Female control

Follicles: The tissue section of healthy thyroid gland showed the thyroid parenchyma contained many follicles different in size which include (large, medium, small). The large follicles have low prevalent which have diameters (33.62 ±1.0 µm) and medium follicles were the most prevalent that have diameter (15.89 ±0.83 µm) that distributed among the thyroid parenchyma, while the small follicles distributed between other type of follicles which have diameter (6.57 ±0.35 µm) (fig1) .

The tissue section of infected thyroid gland showed the follicles lined by simple cuboidal epithelial with thickness (1.283±0.11µm), the basement membrane was prominent in the wall of follicles (fig 2). The thyroid follicles were filled with clear fluid called (colloid) (fig 3). The follicular cell was prominent nucleus with diameter (2.20 ±0.16 µm).

Histological results of the Female hyperthyroidism

Follicles

The histological result of infected thyroid gland showed the large follicles present in the most prevalent that have significant increased the diameter (78.8 ± 1.9 µm) (Diagram1) compared with large follicles in control group. The large follicles contained on the huge amount of colloid. The inner lumen of follicle was lined by simple squamous epithelial compared with control group (fig 4). This result agreement with to[8]which said amacro follicular pattern is characterized by large, flat sheets containing numerous regular follicular cells with small, dark, round nuclei in honeycomb arrangement, usually in a background of moderate to abundant colloid.

The type of large follicles have irregular in shape were appeared as wide cystic dilation (fig 5), the colloid in the large follicles have prominent spot dark in colour. The histological result showed high proliferation in the epithelial cells that lined the inner surface of large follicles (fig 6).

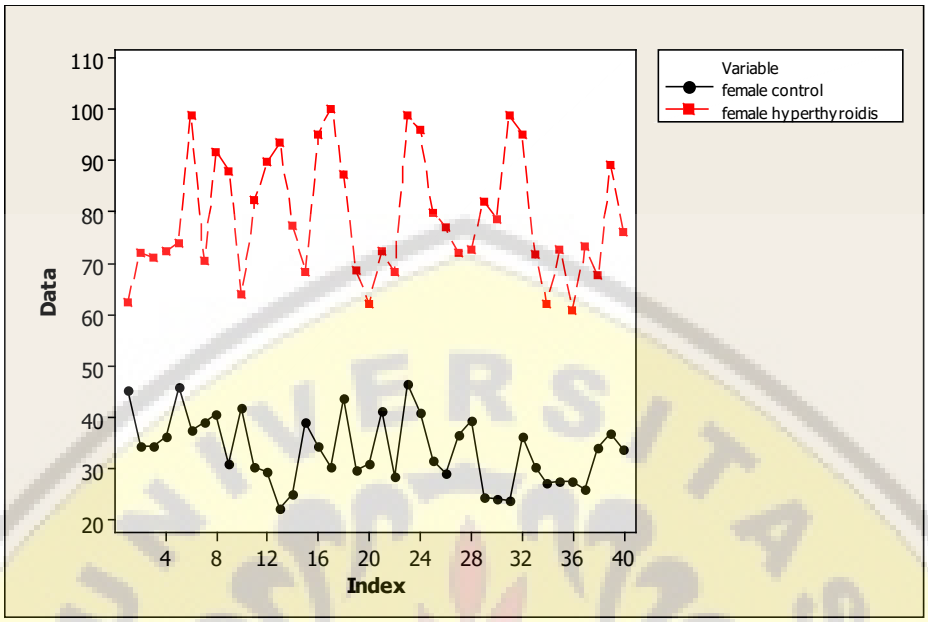
The histological result of infected thyroid gland showed the medium follicles have small amount of colloid material and predominance of follicular cells, which have significant increased the diameter (38.96 ±1.3µm) (Diagram 2) compared with medium follicles in control group and have significant decrease in diameter compared with male hyperthyroidism. This result agreement with to[8] which said nonmacrofollicular aspirates tend to be hypercellular with scant colloid and a predominance of follicular cells in small ring like micro follicles (composed of 6–12 follicular cells), ribbons, or trabeculae, or large 3-dimensional crowded arrangements.

The tissue section of infected thyroid gland showed the large follicles have thin follicular wall. The tissue sections noted many small follicles have spherical in shape filled with secretion were distributed between the fully large follicles.

The histological result of female hyperthyroidism noted parenchymal hyperplasia and several type of follicles lined by simple flattened epithelial rest on the prominent basement membrane, which have significant decrease in epithelial thickness (1.214 ±0.12) (Diagram 4) compared with control group and have significant decrease thickness of epithelial compared with infected male group .This result were agrrement with [9]were noted Follicles were lined mostly with flattened thyrocytes have promenint nuclei with increased chromatic density.

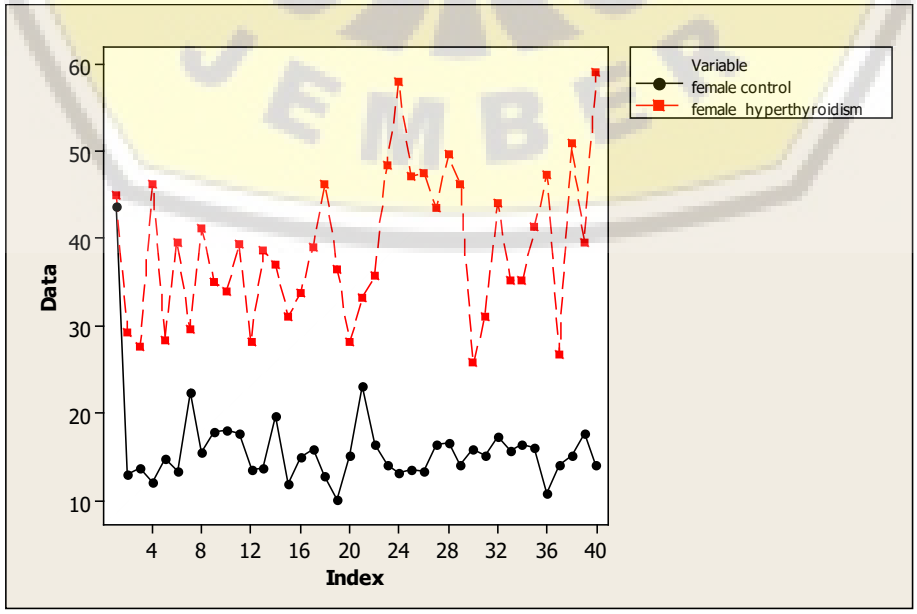
Statistical Analysis:

Diagram 1: The diameter of large follicles of thyroid gland in control group compared with female infected with hyperthyroidism.



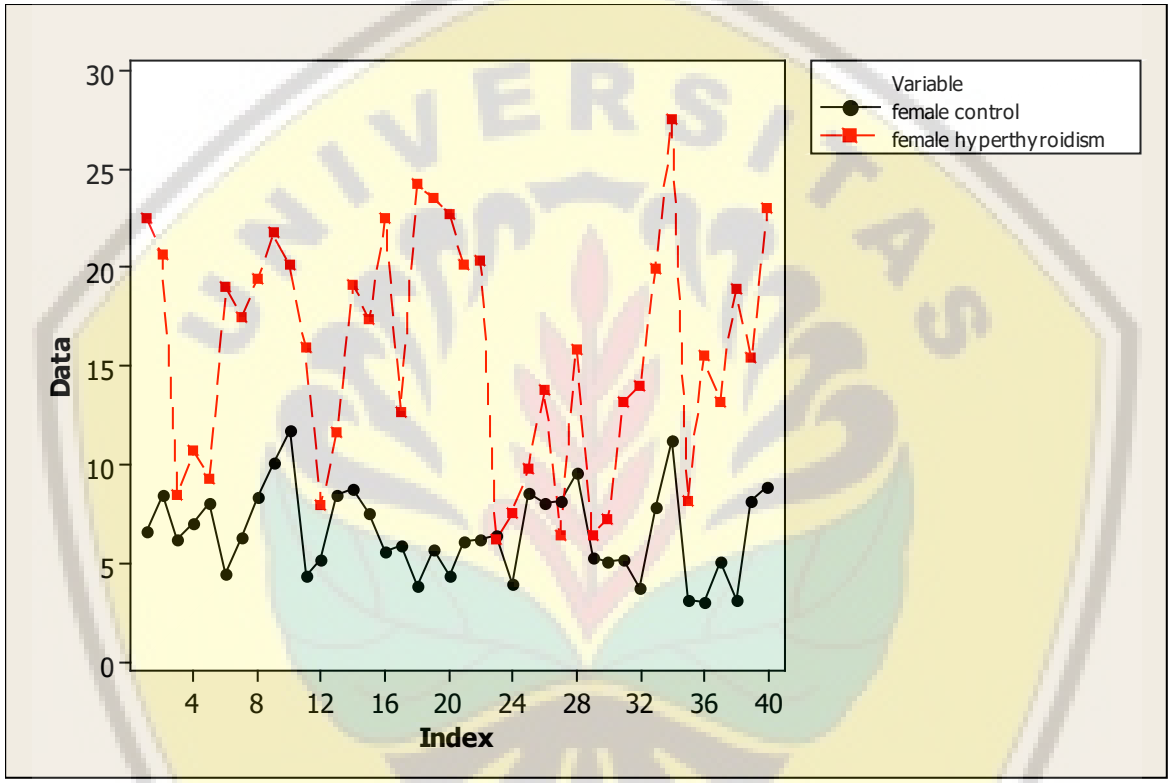
Two-sample T for female control vs female hyperthyroidism				
Group	**N**	**Mean**	**StDev**	**SE Mean**
female control	40	33.62	6.61	1.0
Female hyperthyroidism	40	78.8	12.0	1.9
Difference = mu (female control) - mu (female hyperthyroidism) Estimate for difference: -45.19 95% CI for difference: (-49.50; -40.88) T-Test of difference = 0 (vs not =): T-Value = -20.87 P-Value = 0.000 DF = 78				

Diagram 2: The diameter of medium follicles of thyroid gland in control group compared with female infected with hyperthyroidism



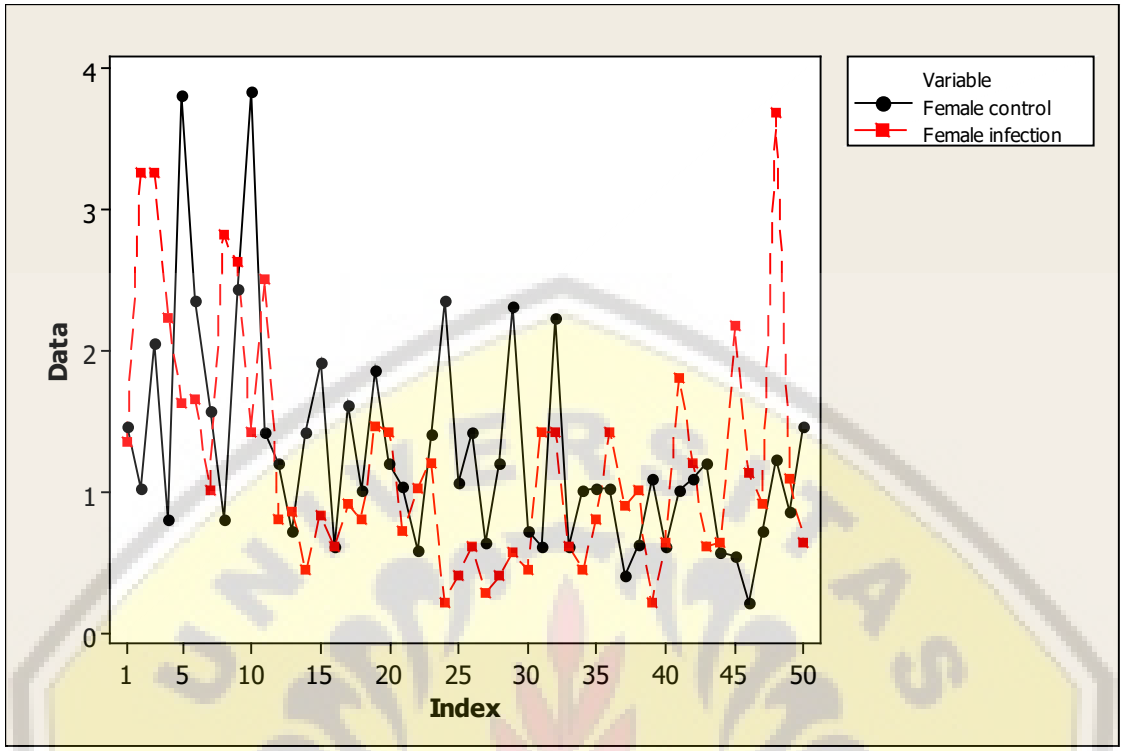
Two-sample T for female control vs female hyperthyroidism				
Group	**N**	**Mean**	**StDev**	**SE Mean**
female control	40	15.89	5.25	0.83
female hyperthyroidism	40	38.96	8.52	1.3
Difference = mu (female control) - mu (female hyperthyroidism) Estimate for difference: -23.06 95% CI for difference: (-26.21; -19.91) T-Test of difference = 0 (vs not =): T-Value = -14.58 P-Value = 0.000 DF = 78				

Diagram 3: The diameter of small follicles of thyroid gland in female control compared with female infected with hyperthyroidism (µm)



Two-sample T for female control vs female hyperthyroidism				
Group	**N**	**Mean**	**StDev**	**SE Mean**
Female control	40	6.57	2.21	0.35
Female hyperthyroidism	40	15.72	5.94	0.94
Difference = mu (female control) - mu (female hyperthyroidism) Estimate for difference: -9.15 95% CI for difference: (-11.15; -7.16) T-Test of difference = 0 (vs not =): T-Value = -9.13 P-Value = 0.000 DF = 78				

Diagram 4: Thickness of epithelial layer in female control compared with female infected with hyperthyroidism (µm)



Two-samples T-test for Female control vs Female infection				
Group	**N**	**Mean**	**StDev**	**SE Mean**
Female control	50	1.283	0.763	0.11
Female infection	50	1.214	0.833	0.12
Difference = mu (Female control) - mu (Female infection) Estimate for difference: 0.069 95% CI for difference: (-0.247; 0.386) T-Test of difference = 0 (vs not =): T-Value = 0.43 P-Value = 0.665 DF = 98				

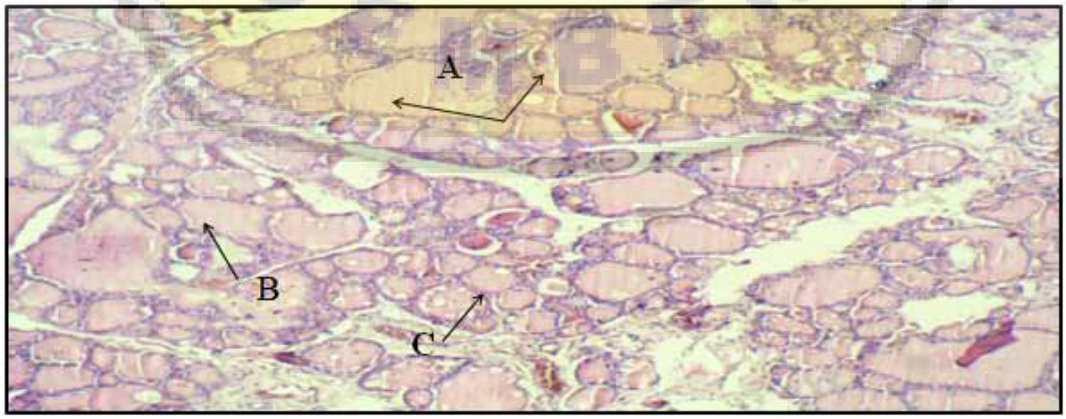


Fig 1: cross section of healthy female thyroid gland showed, A-large follicles, B-medium follicles, C-small follicles, H & E 4X

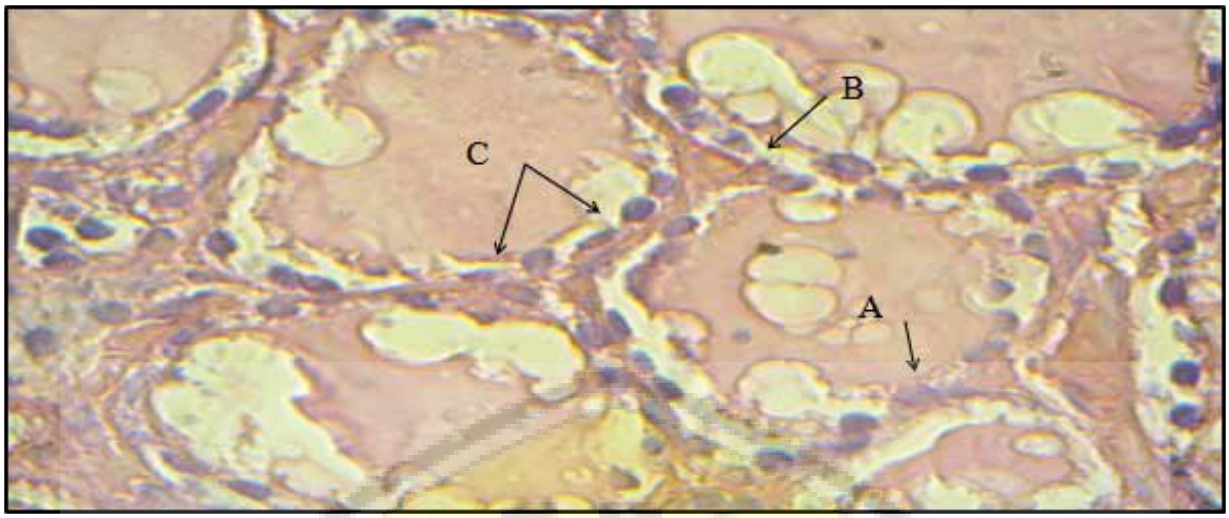


Fig 2: cross section of healthy female thyroid gland showed, A- simple cuboidal epithelial, B- Basement membrane, C- prominent nucleus, H & E, 40X.

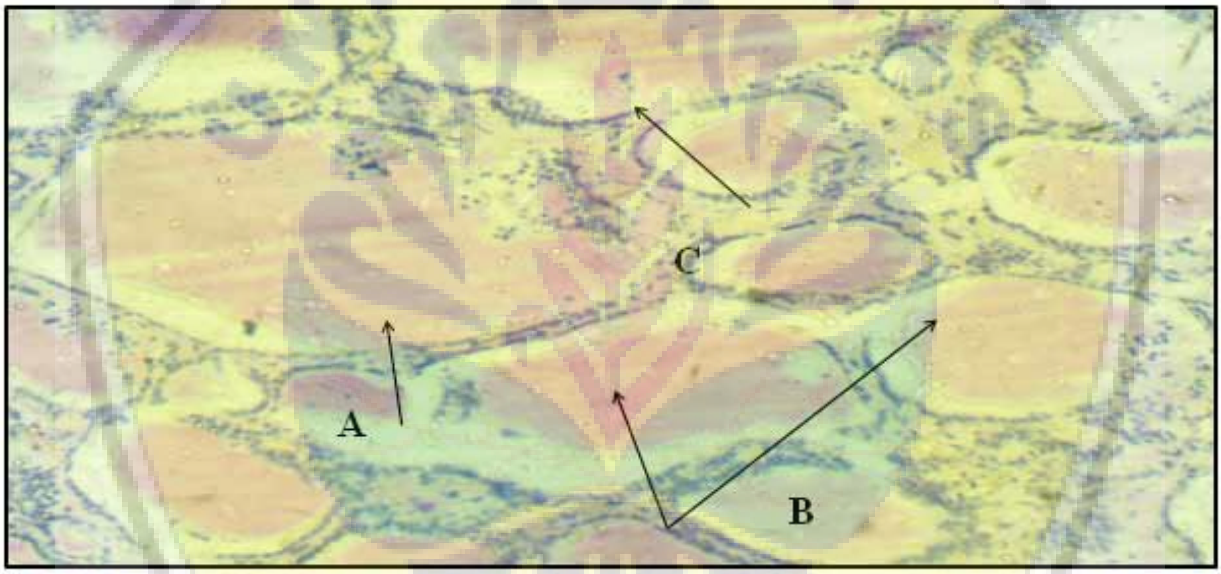


Fig 4: cross section of infected female thyroid gland showed, A-large follicles, B- colloid, C- separated basement membrane, H & E, 10X.

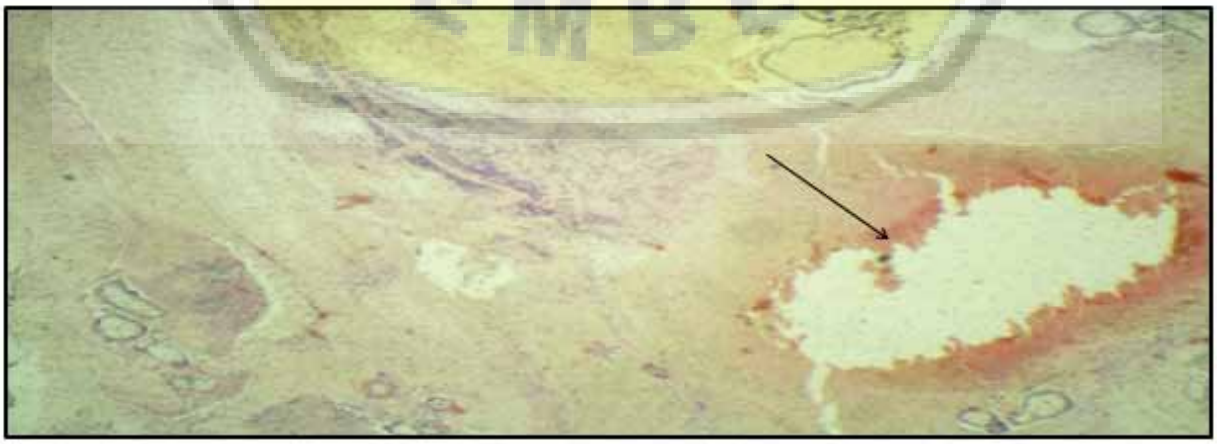


Fig 5: cross section of infected female thyroid gland showed cystic dilation, H & E, 10 X

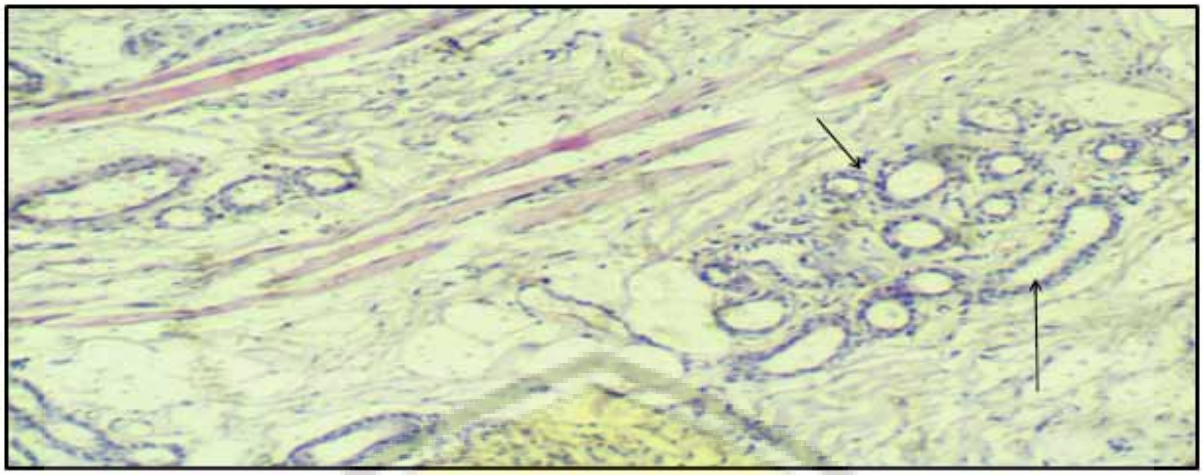


Fig 6: Cross section of infected female thyroid gland showed proliferation in the epithelial cells, H & E, 10X.

Conclusion

The histological result of female hyperthyroidism noted parenchymal hyperplasia and several type of follicles lined by simple flattened epithelial rest on the prominent basement membrane.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors have no conflict of interest.

Funding: Self-funding

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Histological Changes of Endometrium in Women with Postmenopausal Uterine Bleeding

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Abstract

This prospective cross sectional study aims to establish the histological changes in the endometrium in women suffering from postmenopausal bleeding (PMB)to exclude endometrial malignant changes. Forty patients were collectd from Al-Khansaa Teaching Hospital in Mosul from December 2017 to October 2018. Detailed history about the age, parity, obstetric, menstrual and drugs history was recorded. Dilatation and curettage under general anaesthesia was performed to obtain endometrial biopsy . The specimens were fixed in 10% neutral buffered formalin for 24 hours then processed to obtain tissue sections which were stained with Harris Hematoxylin and Eosin (H & E) and examined using light microscope. Statistical analysis of the results was done with significant level set as $P < 0.05$. Most of patients with PMB (62.5%) were between 51 and 65 years, (92.5%) of them were multiparous, (37.5%) were obese and hypertensive. Diabetes mellites was observed in (12.5%).Histological findings revealed (30%) endometrial atrophy, simple endometrialhyperplasia without atypia (25%), with atypia was found in (5%) while endometrial carcinoma was observed in (10%) and the incidence of endometrial carcinoma increases with advanced menopausal age. We conclude that postmenopausal bleeding is a significant symptom and should not be neglected and the incidence is significantly associated with multiparty, menopausal age between 51 and 60 years, high BMI, hypertension, diabetes and thyroid dysfunction. Majority of patients with postmenopausal bleeding showed benign atrophic changes (30%) which is the most common cause, proliferative and secretory endometrium, endometrial polyp and simple endometrial hyperplasia without atypia.

Keywords: *Postmenopausal bleeding, Endometrial hyperplasia, Atrophic endometrium.*

Introduction

Postmenopausal bleeding (PMB) is abnormal uterine bleeding occurring one year after menopause [(1)]. It may be just spotting, or normal menstruation or heavy bleeding, the approximate age of menopause is 49 ± 3 years with average age of 51 years, the possibilities of PMB decreases with increasing age [(2)]. Woman who bleeds after the menopause has a 10% risk of having genital cancer and the frequency of malignancy is increased with increased age and increased interval between PMB and menopause specially if no history of hormone replacement therapy [(3)]. The initial diagnosis is made by curettage and endometrial biopsy [(4)].A common cause for bleeding after menopause is the haphazard use of oestrogens for hormone replacement therapy in 10% of women otherwise, those with continuous or frequent bleeding should be investigated for malignant diseases of the uterus or cervix[(5)]. Multiple causes of post-menopausal bleeding has been established, but endometrial atrophy account for 60-80% of cases (6). Endometrial hyperplasia wheather simple, complex or atypical and endometrial carcinoma usually presents as PMB, cervical polyps and carcinoma of cervix may be a source of recurrent bleeding [(7)].Atrophic endometrium after menopause resulted from inadequate estrogen while in endometrial hyperplasia,Oestrogen is an established risk particularly in women with exogenous oestrogen, obesity, or ovarian tumour[(8)]. Endometrial hyperplasia occurs when the *endometrium* continue to grow in response to excessive estrogen stimulation, thelining

endometrium become abnormal and crowded [9]. Clinical significance of endometrial hyperplasia is due to possibility of PMB which may procede to endometrial cancer which is commonly presented as PMB[10]. Pelvic ultrasound and hysteroscopy with biopsy are appropriate procedures to recognize which woman is at higher risk of endometrial cancer and to evaluate the underlying etiology of PMB[11].We aimed in this study to establish the etiology of PMB and the significance of each cause based on histopathological changes in the endometrium .

Materials and Method

Forty patients were collectd from Al-Khansaa Hospital in Mosul during the period from December 2017 to June 2018 complaining from uterine bleeding appearing 1 year or more after menopause. The age of women ranged from 45 to 65 years .For all patients,full informations were collected from every patient about name, age, parity, with a detailed history including medical,obstetric, menstrual and drughistory were recorded and physical examination & investigations including complete blood picture & pelvic ultrasound were done. Dilatation and curettage under general anaesthesia was performed to obtain endometrial biopsy. The specimens were fixed in 10% neutral buffered formalin for 24 hours then the specimens were processed into paraffin blocks and serial sections were obtained from each block using Reichert's Rotatory Microtome and stained with Harris Hematoxylin and Eosin (H & E) then the stained sections were examined using light microscope. Statistical analysis of the results was done using Statistical Package for Social Sciences (SPSS) version 13 for windows.

Results

Most of patients with PMB (62.5%) were between 51 and 60 years age, (92.5%) of them were multiparous, (25%) were obese >100 kg and suffer from hypertension. Diabetes mellites was observed in (12.5%) of postmenoposal women whearas thyroid dysfunction was found in (7.5%) of them and (5%) have no specific medical problem. All the characteristics of patients with PMB are shown in (Table 1).According to the histological findings, the patients were classified into the following categories :

Twelfpatients (30%) of the pateints showed endometrial atrophy (Fig. 1) (Table 2).Six patients (15%) showed proliferative endometrium (Fig. 2) (Table 2). Two patients (5%) showed secretory endometrium (Fig.3) (Table 2).Ten patients (25%) showed simple endometrial hyperplasia without atypia (Fig.4) (Table 2).Two patients (5%) showed simple endometrial hyperplasia with atypia (Table 2).Two patients (5%) showed cystic endometrial hyperplasia as cystic dilatation of some glands (Table 2).Two patients (5%) showed endometrial polyp(Table 2).Four patients (10%) showed endometrial carcinoma (Fig.5) (Table 2).

Table 1: Characteristics of patients with PMB according to their age, parity and medical disease

	No. of Patients (N=40)	Percentage (%)
Age of patients (yrs)		
45-50	5	12.5%
51-55	10	25%
56-60	15	37.5%
61-65	7	17.5%
>65	3	7.5%
Parity		
Nuliparous	3	7.5%
Multiparous	37	92.5%
Medical disease		
Diabetes mellites	5	12.5%
Hypertension	15	37.5%
Thyroid dysfunction	3	7.5%
Obesity>100 kg	10	25%
Obesity ≤100 kg	5	12.5%
None	2	5%

Table 2: Histopathological findings of endometrium in women with PMB

Histopathological findings	No. of Patients (N=40)	Percentage (%)
Endometrial atrophy	12	30%
Proliferative endometrium	6	15%
Secretory endometrium	2	5%
Endometrial hyperplasia without atypia	10	25%
Endometrial hyperplasia with atypia	2	5%
Cystic endometrial hyperplasia	2	5%
Endometrial polyp	2	5%
Endometrial carcinoma	4	10%

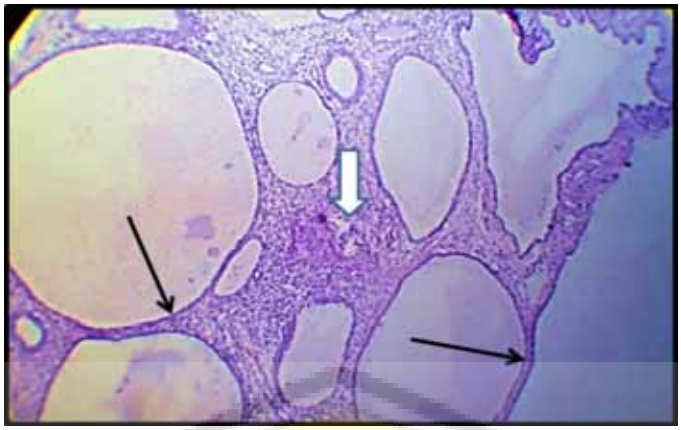

Fig. 1 :Endometrial atrophy showing closely packed cystically dilated endometrial glands (black arrows) surrounded by loose stroma (white arrow)(H & E X 10).

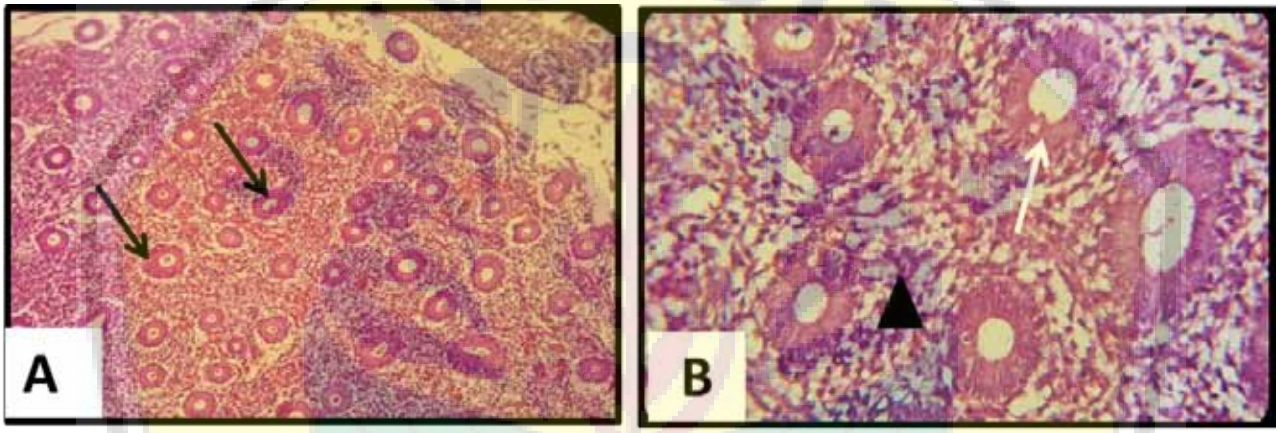

Fig. 2: A: Proliferative endometrium with round, narrow endometrial glands (black arrows) (H & E X 10).B: The glands are lined by single layer of columner epithelium (white arrow) and surrounded by edematous stroma(arrow head) (H & E X 40).

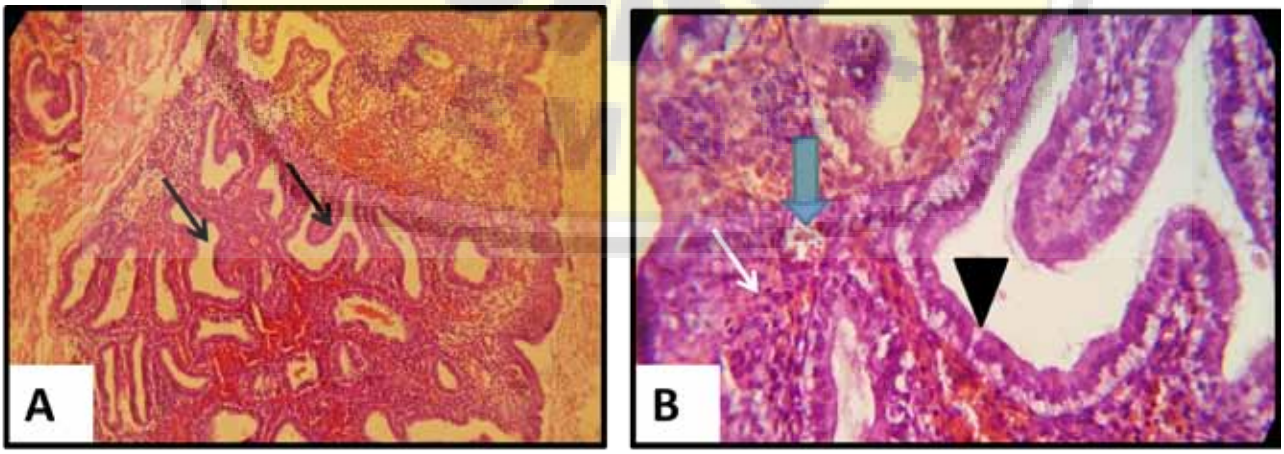

Fig. 3: A: Secretory endometrium with dilated, tortuous glands (black arrows) (H & E X 10), B: Secretory endometrium with coiled arteries (blue arrow), columnar epithelium lining the glands (arrow head), stromal edema(white arrow)(H & E X 40).

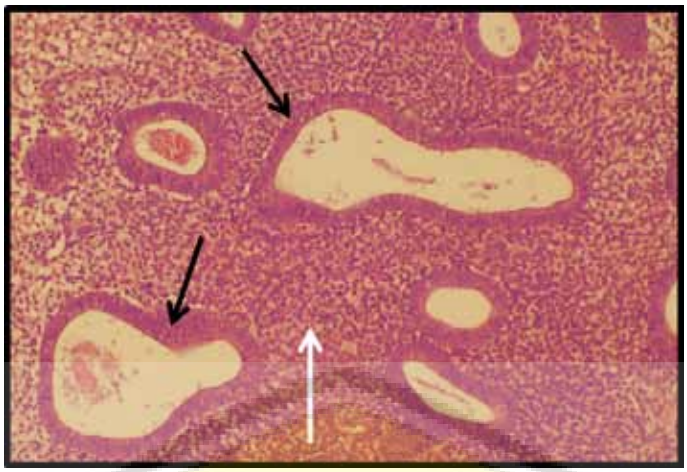

Fig. 4: Endometrial hyperplasia without atypiashowing irregular shape of endometrial glands lined by simple columner epithelium (black arrows) surrounded by abundant cellular stroma (white arrow) (H & E X 40).

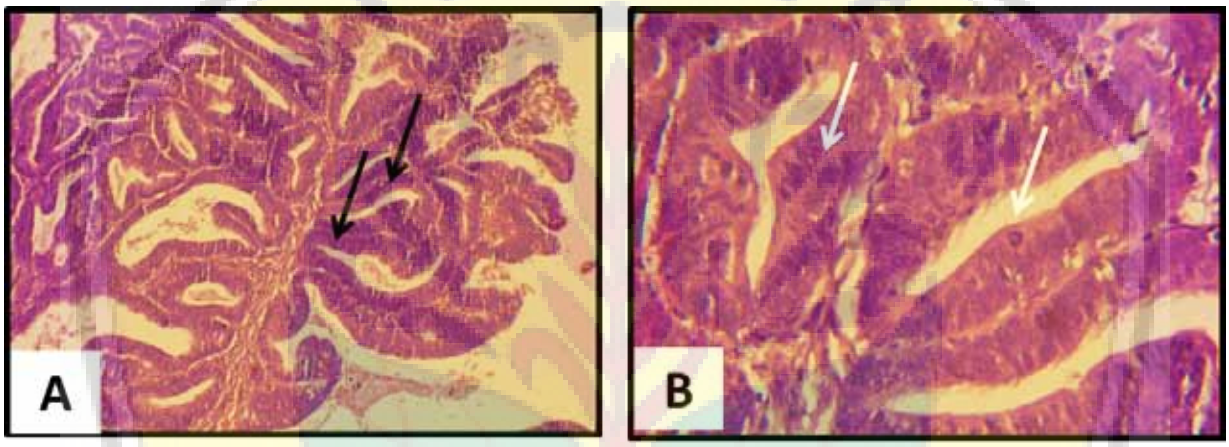

Fig. 5: A- Endometrial carcinoma show back to back irregular endometrialglands with scanty intervening stroma (black arrows), B- The glands are lined by pseudo stratified pleomorphic columnar cells some of them with prominent nucleoli(H & E X 40).

Discussion

Postmenopausal bleeding is a disturbing illness of postmenopausal women, the representative complaint of post menopausal women is the base of clinical analysis of the etiology of this problem [12].Most of patients with PMB (62.5%) were between 51 and 60 years age and decrease to (3%) in women more than 75 years, such finding agrees with previous studies reported that the rate of PMB declined with increasing age in the postmenopausal period>60 years whearas the incidence of endometrial carcinoma increase [13].On the other hand, Breijer*et.al*, (2010)[14]mentioned that the peak incidence of PMB and malignancy was in the age group of 55-64 years. The rised number of patients in this age group could be explained that at menopause, the number of ovarian follicles decrease and their resistance to gonadotrophic stimulation increased, resulting in a lower level of estrogen which is inadequate for the growth of normal endometrium causing desequamation followed by bleeding [15]. In the advanced menopausal ages, fewer cases of PMB are recorded may be due to earlier assessment and optimal management of the disease [16]. Majority of the study sample 92.5% were multiparous and this may be attributed to the early menarche and early childbearing and multiple pregnancy in our society besides, the association of multiparity with ovulatory cycles and hormonal effects [17]. In this study, (37.5%) of women with PMB were hypertensive, the exact reasons

is not fully understood but many studies revealed that oestrogen hormonerelaxes theblood vessels maintaining optimal blood flow thus the decline in oestrogen levels during menopause may contribute to hypertension and bleeding in addition to otherfactors like stress, anxiety, andlack of exercise [18].Obesity >100 kg was found in 25% of patients, nearly a similar figure was previously noticed by Acmaz et.al, (2014)[19] who reported a statistical significant association between postmenopausal bleeding and body mass index even that obese women at the postmenopausal periodwere significantly affected by serious precancerous lesion since that the obesity increase estrogen hormone by decreasing levels binding globulin which stimulate the endometrial growth or by increasing theconversion of androstenedione to estrone in the adipose tissue [20]. Diabetic patients were 12.5% of the study group similar to previous reports about a significant association between PMB and risk of diabetes in the diabetes prevention program [21].7.5% of patients have thyroid dysfunction, similar finding have been observed by other worker who noticed frequent nodular goiter and hypothyroidism associated with postmenopausal bleeding with difficult diagnosis due to nonspecific symptoms particularly in thyroid cancer which worse the prognosis [22].Dilatation and curettage still used as an accurate method for diagnosis besides clinical examination and pelvic ultrasound but recently, biopsy guided by hysteroscopy is the investigation ofchoice [23].

Histopathological evaluation of the curettage sample is necessary in identifying the cause of abnormal uterine bleeding [24].In this study a predominant observation in women presented with PMB is endometrial atrophy (30%), such finding is comparable to that of (Bani-Irshaid et. al, (2011)[25]. The cause of bleeding from an atrophic endometrium is not knownbut the anatomical vascular changes particularly thinning of the wall of veins lying superficial to the dilated cystic endometrial glands making the vessel more vulnerable to damage in addition to irregular local haemostatic mechanisms in the uterus [26].Proliferative endometrium (15%) and secretory endometrium (5%) were identified in the postmenopausal women which is a comparable finding to otherstudies which reporteda proliferative endometriuml with dense stroma and increased extracellular matrix in the postmenopausal women under effect of oestrogen similar to the endometrium found in the premenopausal monthly cyclewhile progesterone induces further thickening of the endometrium, increased vascularity,large tortuous glands filled with secretions [27].Endometrial hyperplasia was identified in 30% of the cases such finding is significantsince it is considered to be a precursors of endometrial carcinoma with a wide variations in percentage of progression according to the type of hyperplasia[28]. Simple endometrial hyperplasia without atypia found in 25% of patients which is comparable to Ellenson et.al 2010[29]who reported that endometrial hyperplasia results from chronic estrogen stimulation unbalanced by the counter effects of progesterone and characterized by proliferation of endometrial glands. The role of progesterone is to eradicate endometrial hyperplasia. through its receptorand to promote inhibition of growth and apoptosis of the malignant cells by regulating the genes that direct these processes [30].Endometrial polyps found in 5% of women, might be attributed to the difference between the endometrial polyp and normal endometrium regarding the cell proliferation, receptor expression and apoptosis suggesting that polyp may be considered as a precancerous pathology [31].Endometrial carcinoma was found in 10% of cases similarly, other studies conducted a significant risein the incidence of malignancy with recurrent PMB, advancing age, prolonged time interval between the menopause and onset of bleeding, increasing amount and duration of bleeding and enlarged uterus [32,33].

Conclusion

Postmenopausal bleeding is a significant symptom and should not be neglected. The incidence of PMB is significantly associated with multiparity, menopausal age between 51 and 60 years, high BMI, hypertension, diabetes and thyroid dysfunction. While The incidence of endometrial carcinoma increases with increased menopausal age. Majority of patients with postmenopausal bleeding showed benign changes of endometrium including atrophic changes (30%) which is the most common cause, proliferative and secretory endometrium, endometrial polyp and simple endometrial hyperplasia without atypia. Premalignant changes like simple endometrial hyperplasia with atypia and endometrial carcinoma should not be excluded and require thorough clinical evaluation and management.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors have no conflict of interest.

Funding: Self-funding

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Treatment of Receding Gingiva with Gingival Mask in Patient with Aggressive Type of Periodontitis

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Abstract

Periodontitis is a destructive disease that inflame the supporting tissues of the teeth and is caused by specific microorganisms, resulting in progressive destruction of periodontal ligament and alveolar bone with periodontal pocket formation, gingival recession, or both. There are many type of periodontitis and one of them are Aggressive type that cause a very sever destruction of bone and gum recession. Receding gums can disrupt a perfect smile, the reconstruction of these areas with prosthesis like gingival veneer can be useful to correct the deformities remaining after the control of periodontal diseases, especially in the maxillary anterior region. The gingival replacement unit is designed to simply create an esthetic replacement for missing gingival (gum) tissues associated with bone and soft tissue loss around natural teeth or dental implants. It is unlike a denture in as much as it depends on the natural teeth or implants for it retention and not the palate or the residual ridge which would retain a removable denture.

Keywords: *Periodontitis, Aggressive periodontitis, gingival veneer.*

Introduction

Aggressive periodontitis is considered to be a type of periodontal disease and includes two classifications of periodontitis:

- **Localized aggressive periodontitis (LAP):** Which is localized to first molar or incisor interproximal attachment loss
- **Generalized aggressive periodontitis (GAP):** Is the interproximal attachment loss affecting at least three permanent teeth other than incisors and first molar.[(1)]

Clinical Features are: Mostly in individuals under 35 years old, the amount of plaque present is inconsistent with the amount and severity of tissue destruction with a high plaque pathogenicity due to the presence of increased levels of bacteria like *Aggregatibacter actinomycetemcomitans* (A.a) and *Porphyromonas Gingivalis* (P.g) and the key diagnostic feature is vertical bone loss around teeth including the first molars and incisors, it also runs in the patient's family. [(2)]

The correction of such recessions can be done by various type of surgical root coverage procedures but sometimes gingival recession can be generalized and very extensive that it cannot be corrected by surgical root coverage procedures. The alternative for such a clinical situation is gingival prosthesis. [(3,4)]

Gingival prosthesis (gingival mask or gingival veneer) is a flexible removable periodontal prosthesis that used to replace receding gum due to periodontal surgery, gum recession or due to trauma. Materials that can be used for gingival veneer include pink auto cure and heat cured acrylics, porcelains, composite resins and thermoplastic acrylics as well as silicone based soft materials. [(5,6)]

The indications for gingival mask are:[(7)]

- Gum recession with root exposure and open

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interdental areas due to loss of papillae after periodontal disease or post-periodontal treatment therapy.

- Provisional coverage prior to definite restorations. Temporary splint.
- As a gingival augmentation for implant supported prosthesis.
- When there is proclination of teeth along with mild recession.
- As an interim measure in cases where final treatment planning is delayed.

Contraindications of gingival mask include:[7]

- Poor or unstable periodontal health.
- Poor oral hygiene.
- High caries activity.
- Known allergy to silicone.
- Heavy smoker's patients.

Case Report: A 34 year-old female patient reported to the Department of Periodontics, AL-Esra'a university collage with the complaint of teeth mobility, gum recession, sensitivity and food impaction in the maxillary anterior region. The patient expressed dissatisfaction with esthetics of her existing dentition [figure 1, figure 2]

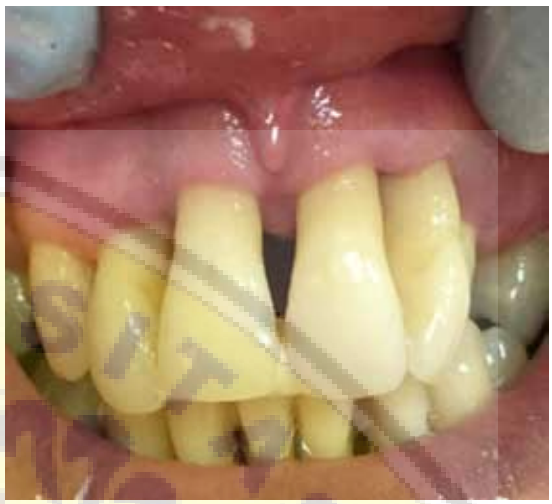

Figure 1: Patient with anterior gingival recession

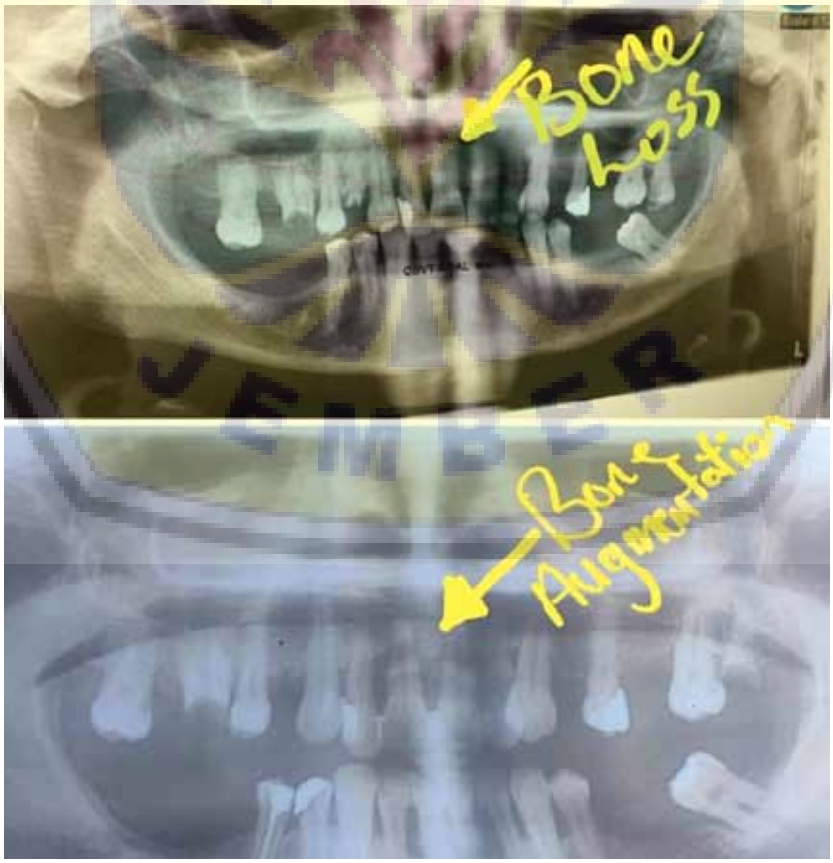

Figure 2: Orthopantomogram before bone augmentation

After ORAL examination, medical, dental history and radiographic (O.P.G) FINDING:

- The diagnosis : aggressive periodontitis
- The treatment plan :
- The patient first received phase-I therapy, which included oral-hygiene instructions. Scaling and root planning by ultrasonic and hand instruments.
- Splinting for anterior teeth for stabilization of the teeth. (figure 3 a)
- One month after initiation of phase-I therapy a surgical procedure was planned. A Kirkland flap operation with bone augmentation for anterior teeth was planned. A crevicular incision was placed and a full-thickness periosteal flap was elevated. The flaps were repositioned and sutured using interrupted non-resorbable 4-0 silk suture, after which the operated site was covered with a non-eugenol periodontal dressing for protection [Figure 3b]. Postoperative instructions included advice not to brush the operated area for 2 weeks and to rinse the oral cavity with chlorhexidine (0.2%) mouthwash twice daily for 2 weeks. After 1 week, the periodontal dressing and sutures were removed and the surgical area was flushed with antimicrobial solution.

A periodontal surgery of the maxillary teeth improved the periodontal condition, but left the patient with a significant loss of papillae. The patient found the resulting tooth sensitivity extremely uncomfortable and was also very unhappy with the unaesthetic appearance of the elongated teeth.

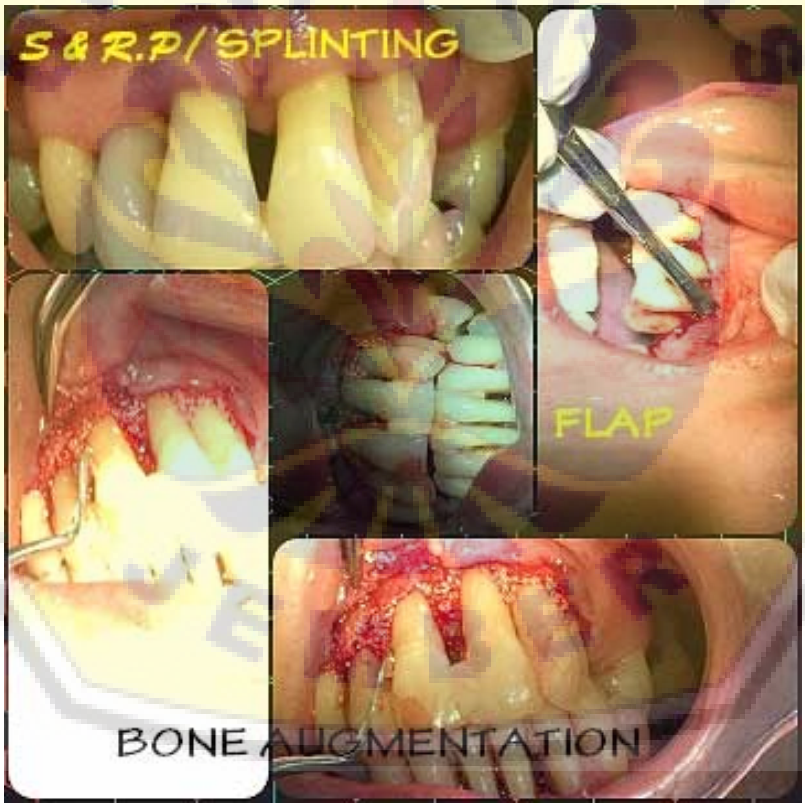

Figure 3: (a) Scaling and root Planning/splinting (b) Flap/Bone Augmentation

- After healing Impression for anterior teeth for gingival veneer was done for the patient, a diagnostic impression was made using alginate impression material (Tropicalgin, Zhermack, Italy). The impression was then poured with type III dental stone (Kalrock, Kalabhai, India). A labial custom tray was made using Self cure methyl methacrylate (DPI, Self-cure, India) after blocking the interdental spaces from palatal side on the model using utility wax. The tray extended from incisal edges to

vestibular sulcus from canine of one side to canine of contralateral side. The custom tray tried in the mouth and practiced for orientation and a buccal approach was used to create the master impression with a complete interproximal detail. The impression was made using addition silicone impression material (Reprosil, Regular Body, Dentsply, USA). The cast was prepared using type IV die stone (Kalrock, Kalabhai, India) and a gingival prosthesis was waxed up and processed in heat-cured acrylic resin (DPI Heat cure, India). Retention was achieved with minor interproximal undercuts. The prosthesis was made extremely thin and had enough flexibility to engage these undercuts. (Figures 4,5)

- Prosthesis delivered to patient (figure 6)

Figure 4: Impression for anterior teeth

Figure 5: Fabrication of flexible gingival prosthesis

Figure (6): Prosthesis delivered to patient

Discussion

Progression of periodontal disease can cause deep gum, pocket formation and with resective osseous surgeries often lead to creation of recession and a potential for a compromised esthetic outcome, especially in the maxillary anterior region[8] .With successful surgical treatment, the result mimics the original tissue contours. Such treatments include minor procedures to rebuild papillae and also bone augmentation to support the soft tissue. It is possible to create esthetically pleasing and anatomically correct tissue contours when small volumes of tissue are being reconstructed, but this method is unpredictable when a large volume of tissue is missing.[9]

The gingival veneer is a viable treatment option for restoring anterior esthetics in clinical situations where there are esthetic concerns caused by significant gingival recession. Case selection is important for predictable and successful outcome.[10]

In the present case, this material was chosen to construct gingival veneer as mentioned by Green et al. Loss of interdental papillae in maxillary anterior region can often lead to esthetic and functional clinical problems. [11] The gingival mask can replace a large volume of tissue that has been lost to the disease process or its treatment. The advantage of the prosthesis is that it can be easily cleaned, creates an ideal contour with removable prosthodontic materials and does not disturb the other dental units. In the present case the prosthesis provided an esthetic result, reduced hypersensitivity significantly, prevented food impaction and improved phonetics.

Conclusion

The periodontal attachment loss, loss of interdental papilla and gingival recession in the maxillary anterior

region can often lead to esthetic and functional clinical problems which disturbs patient's life. Dental esthetics is based not only on the "white component" of the restoration, but also on the "pink component. Gingival veneer is a good treatment option for patients with generalized/multiple recessions to achieve good esthetics. Prosthetic option of a gingival veneer helps in mimicking natural appearance of the gingiva in a predictable way, which is cost-effective to the patient.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Constructing and Standardizing the (Social Affiliation) of the Players of the Universities of the Middle Euphrates Futsal Club

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Abstract

The research included the introduction and the importance of research in which the role of (social affiliation) for the futsal players of the gymnasiums in the universities of the Middle Euphrates and in the construction of the criterion of social affiliation of the players of the universities of the Middle Euphrates futsal of the halls was pointed out. The research included research procedures in the field. The researchers used the descriptive method in the survey method and also included the society and the sample of the research and how to choose them. They represented the players of the universities of the Middle Euphrates futsal clubs (105) players for the 2018-2019 season. The tools and tools used by the researchers to reach the goals of his research, which was a measure of (social affiliation) consisting of (10) paragraphs and prepared from the researchers.

The study consisted of presenting and discussing the results of the social affiliation after applying the measure to the players and evaluating the relationship between the players of the universities teams of the Middle Euphrates futsal clubs. After sampling and statistical treatment, the following researchers concluded, a standardized scale has been obtained which is capable of detecting the weakness and strength in the social affiliation of the players of the universities of the Middle Euphrates futsal clubs.

Keywords: *Building Scale, Social Affiliation and Futsal.*

Introduction

Sport psychology is an effective factor in the performance of the individual towards success as it is a science that benefits the trainers, players and administrators to achieve excellence in their performance, as it comes in the forefront of science to help the success and development of the level of sports performance and closely linked to them, the psychological aspect is one of the pillars of the training process And sports competitions because of its importance in enhancing the chances of winning. Sports psychology has acquired great importance in the study of the psychology of players in order to reach all the basic elements that will upgrade the players to the higher levels and cast a shadow on the level of their achievements and achievements and hence began to focus on the most important concepts that can be related to sports psychology, including the concept of (social affiliation) loyalty, which is a key factor in the promotion and build confidence between the people and institutions that belong to them in order to achieve the common goals of athletes in general and athletes Which in turn represents a real motivation to achieve achievements by showing a spirit of mutual cooperation and striving to achieve gains with diligence and dedication.[1]

And that social belonging is the result of socialization that helps in the implantation of social belonging to the individual, as some studies believes that “socialization is the responsibility of the family, where is considered a crucial indicator and a significant behavior”.[2]

Research Aim: Building and standardizing the (social affiliation) of the players of the universities of the Middle Euphrates futsal club.

Research Methodology

The approach is defined as "a way in which a person reaches a reality". Because the research approach is the path chosen by researchers to arrive at the truth and the nature of the problem determines the approach used, it is the success of the research and this is why the problem has forced the researchers to use the descriptive method in the survey method. "The survey is one of the basic method of descriptive research".[3]

Community and sample search: "The objectives set by the researchers for their research and the procedures used by them determine the nature of the sample to be chosen." Thus, the research community represented the players of the universities of the Middle Euphrates futsal universities for the academic year 2018-2019 (105) representing (7) teams, The total number of students is 100% of the research community distributed to the universities of the Middle Euphrates represented by universities (Karbala, Kufa, Babel, Al-Qasim Green, Central Technical University, Muthanna and Qadisiya). (100%) of the population and sample of the research, table (1).

Table (1): Shows the distribution of building sample, standardization and sample application

Sample construction and standardization			Sample application		
S	**The club**	**Number of Players**	**S**	**The club**	**Number of Players**
1	Qadisiyah	15	1	Qadisiyah	15
2	Karbala	15	2	Karbala	15
3	Kufa	15	3	Kufa	15
4	Babylon	15	4	Babylon	15
5	Muthanna	15	5	Muthanna	15
6	Middle Euphrates Technology	15	6	Middle Euphrates Technology	15
7	Al-Qasim Green	15	7	Al-Qasim Green	15
Total		**105**	**Total**		**105**

Measures to build the scale:

Determining the phenomenon studied: The current research aims to build and standardize the scale of social affiliation of the players of the universities of the Middle Euphrates futsal club.

Determining the purpose of the study: The need to determine the purpose of the scale stems from the hypothesis that the shape and characteristics of the scale differ according to the purpose of the scale. Therefore, the purpose of the current research is to construct and standardize the scale of the players of the universities of the Middle Euphrates Futsal Federation.

Select the metric paragraphs: Identified paragraphs scale (social affiliation) b 10 paragraphs of all positive followed ladder alternatives quintet (not OK, OK somewhat, OK, OK significantly, OK very large degree), followed balance (1, 2, 3, 4, 5), respectively, to be the maximum degree of the scale (50) degree.

Pilot Study: In order to ensure that the scales of the scale are clear to the players and to identify the time taken to answer them as well as to identify the conditions of application of the scale,(30) randomly selected players for the period from 5/1/2019 to 13/1/2019, it became clear from the experience that the paragraphs of the scale are clear and the researchers did not face difficulties with the survey sample. It also found that the time taken to answer ranged from (5 - 10) minutes, a mean (5.7) minutes.

Validity of metric paragraphs: The researchers presented the scale in its first form to the experts and specialists in the field of psychology to identify the validity of the scales of the scale using a questionnaire

containing two choices (valid), (not valid) and after collecting the forms the researchers extracted the value of the square of each paragraph to identify the paragraphs to be used in Scale (social affiliation) as shown in Table (2).

Differentational Ability: To determine the possibility of acceptance or rejection of the paragraph in the light of the coefficient of distinction of the status of (AIPL) as stated a set of rules after conducting several studies, namely:[4]

1. If the coefficient of excellence greater than 0.40, the paragraph is characterized by high distinction and excellent.
2. If the coefficient of distinction is between 0.30 and 0.39, the paragraph is considered to be of good character.
3. If the coefficient of distinction is between 0.20-0.29, the paragraph is considered to be fairly good (marginal paragraphs that need to be improved).
4. If the coefficient of excellence is less than 0.19, the paragraph is weak and it is recommended to delete it.

Therefore, the researchers applied the criterion of "social affiliation" on the building sample of the players of the universities of the Central Euphrates futsal of the 105 gymnasiums on 25/1/2019 in order to achieve the discriminatory power of the standard terms, In Table (3).

Internal Consistency: The relationship of each paragraph to the field to which it belongs is found by finding the correlation coefficient for each paragraph in the field. The purpose is to know whether these paragraphs are expressed in this field, they represent an aspect of this area.[5]

Honesty Authenticity: The researchers used the validity of the content. This type of honesty depends on the examination of the content of the scale in a precise way. This means that the quality of the content of the scale is represented in a class of positions. The scale is true if its divisions and branches are properly represented. In the search for experts by a questionnaire that included two options (valid) and (not valid). After collecting the forms, the researchers extracted the value of the square of each paragraph, as shown in Table (2).

Reliability: The researchers used the method of applying the scale twice the period between the first and the second three weeks on (30) players from the teams of the universities of the Middle Euphrates futsal of the halls, the first application was applied on 2/2/2019 and the second time on 16/2/2019 and This method is applied to the same sample twice under the same conditions as possible and the use of correlation coefficient between the results of the application at both times and indicates the correlation coefficient of stability of performance and this coefficient is called the stability coefficient.[6]

Standardization:

Extracting levels for the studied fields: After extracting the relative weight of each paragraph of the scale, the levels were found by finding the length of the class by subtracting the highest score the player can get from the lowest score the player can get divided by the number of levels and then collecting the lowest score the player can get. The domain along the class can extract the least class.

Results

View, analyze and discuss results:

Table (2). Chi square value for scale scales (social affiliation)

Paragraph	Expert opinion		(Chi square) value	Type of significance
	Suitable	Not suitable		
1	15	0	15	Sig.
2	15	0	15	Sig.
3	14	0	11	Sig.
4	15	0	15	Sig.
5	15	0	15	Sig.

Paragraph	Expert opinion		(Chi square) value	Type of significance
	Suitable	Not suitable		
6	13	2	8	Sig.
7	13	2	8	Sig.
8	15	0	15	Sig.
9	15	0	15	Sig.
10	15	0	15	Sig.

The value of square (Chi square) in all the paragraphs is significant and all of them are greater than the numerical value of (3.84). This indicates that all the paragraphs of the scale are suitable for measuring what was set for it, to measure the social affiliation of the players of the Middle Euphrates futsal.

Table (3). The coefficient of discrimination of the social interaction scale

S	Coefficient of discrimination	S	Coefficient of discrimination
1	0.49	6	0.44
2	0.44	7	0.37
3	0.41	8	0.61
4	0.38	9	0.37
5	0.40	10	0.51

Table (3) shows that all the values of the coefficient of discrimination are statistically significant in the light of the criteria set by Ebel, which indicates that all the paragraphs of the scale are highly marked.

Table (4). Correlation between application of the scale and re – application

S	Variables	Coefficient of correlation
1	(Social affiliation)	0. 89

Table (5). Shows the paragraph and the axis that belongs to the correlation coefficient

S	Coefficient of correlation	S	Coefficient of correlation	S	Coefficient of correlation
1	0.66	5	0.77	9	0.60
2	0.63	6	0.59	10	0.61
3	0.63	7	0.64		
4	0.59	8	0.61		

Table (5) shows that the correlation value calculated between the paragraph and the dimension to which it belongs is greater than the tabular value at a significance level (0.05) of (0.32), which means that there is a significant correlation between them and then .

Table (5). Shows the levels of the scale (social affiliation)

The Level	Degree
Very good	8-42
Good	8-34
Average	8-26
Acceptable	8-18
Weak	8-10

In Table (5) we find that the level is very good, ranging from (8-42), the level is good ranging from (8-34), while the average level is between (8-26), the acceptable level ranges from (8) -18), while the level is weak (8-10).

Table (6).Shows the arithmetic mean and level of the scale (social affiliation)

The Level	Duplicates
Very good	8
Good	22
Average	51
Acceptable	17
Weak	7

The length of the class was calculated by subtracting the highest value that can be obtained by the individual from the minimum value divided by the levels. The length of class (8) has reached the frequency of the sample on the scale at a very good level (8) and (22), while the average level reached (51) and reached the acceptable level (17), while it reached the weak level (7).

Discussion of Results

As shown in Table (5), the level is weak (7), the acceptable level is (17), the average level is (51), the level is good (22) and the level is (very) good. (8) From the above results, it is found that the individual sample of the research sample was distributed at different test levels and in different proportions. This indicates that the test distinguishes between the individual differences of the sample members in the evaluation process since the sample members are distributed naturally. Quantification of phenomena - as in analogy but goes further it refers to judging the value These phenomena, if provided as excellent or good or medium, not all of them have any strong or all of them are weak. It is worth mentioning in the same context to mention the importance of socialization of athletes in general and athletes of the effectiveness of football halls specifically as it is a dynamic interactive process lasting to bring about processes of change and harmony between the team to achieve its goals and satisfy their needs,[7] and also to the importance of the character and characteristics of collective The effectiveness of football for the halls, which is dominated by cooperation and unity of purpose and that the players face a common destiny and depend so much on each other so that if one of them faced a problem, its effects will be reflected on the rest of the team, as mentioned above The target group (the research sample), which is represented by university students possess a high level of educational level, they certainly understand the value of their harmony and harmony with others and are aware that the basis of regular life away from psychological and social problems is due to the nature of the relationship with others in the team or outside the team they belong It is the basis of the normal life of the individual and without it the relationship with others becomes blurry and incomprehensible marred by conflicts and psychological crises and the development of reciprocal relations inside and outside the stadium which is a requirement to work with any team, so that it can be employed for the benefit of only The goal of the team that the team seeks to achieve, which is reflected positively on increasing the effectiveness and productivity of the team .[8]

The interaction between the members of the team is critical to achieving the desired results of the team and is one of the key elements that cause the players to reach a state of collective harmony, as it plays a pivotal role in giving players the ability to solve the motor problems to reach the maximum degree of cooperative behavior among the team members. Therefore, the players of the collective games and the football players of the halls recognize the importance of developing this aspect in order to achieve what they want. This indicates that all the paragraphs of the measure are suitable for measuring what they were set for, to measure the social affiliation of the players of the middle Euphrates teams.[9] This indicates that the test distinguishes the individual differences of the sample members in the evaluation process since the sample members are distributed naturally. The evaluation is not limited to quantifying the phenomena as in the measurement, but goes further. Judging the value of these phenomena as if presented as excellent or good or medium not all are strong or all weak.[10]

Conclusions

1. The scale of the ability to detect weaknesses and strength in the social affiliation of the players of the university's futsal teams of the halls
2. The scale of the ability to choose the players of futsal teams of universities for the halls according to social affiliation
3. The measure is valid for measuring the social affiliation through the clarity of its paragraphs and

comprehensiveness and through the distribution of sample members moderately.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: Self-funding

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Using Multiple-Criteria Decision Analysis for Emergency Health Centers for the Visit Million Based-Gis (Holy Governorate of Karbala)

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Abstract

This research aims at presenting a scientific method in the integration of statistical method and statistical programs in the arrangement and analysis of raw data to obtain criteria and weights used with GIS programs and spatial analysis in locating the emergency health centers for the visit of the Labrabinia within the center of the holy province of Karbala and (The number of visitors to the centers, the health center near the Husseiniya procession, the flow of visitors entering the city center, the influx of visitors out of the city center and the number of Hussainian processions within the area of each proposed health center).

While using the analytical hierarchy method (AHP) using the matlab program for the purpose of analyzing the factors and limiting them in the main factors and knowing which factor is the most influential. Based on the results of the analysis of the matrimonial matrix based on the weights resulting to the main vectors For the decision matrix, the weighting method for each of these factors was determined. Therefore, based on the Priorities for Criteria, it was found that the potential weights for the criteria based on the marital comparisons are (12.7)) And near the health center of the procession Husseiniya (27.7) and the flow of visitors entering the city center (5.7) and the flow of visitors a departure from the city center (3.3) and the number of processions Husseiniya within the area of each proposed health center (50.7)).

Keywords: *Multi-standard MCDM; GIS; choice of health center sites; AHP.*

Introduction

The visit of the 40th day of the death of Imam Hussein (peace be upon him), is one of the most important religious events in all parts of the world. The city of Karbala receives millions of people from all over the world. Millions of visitors come from all the provinces of Iraq and from neighboring countries to Karbala to visit Aba Abdullah Al Hussein, and his brother Abu al-Fadl al-Abbas (peace be upon him). If some visitors walk more than 500 kilometers on foot and the increase in the number of visitors each year needs to provide logistical supplies such as medicine and food and the provision of roads and health supplies and other It is necessary to provide emergency centers in the city for the first aid and also transport the injured due to overcrowding .

The development of techniques and the use of Geographic Information Systems (GIS) to convert spatial data and addresses as points on the map through the process of geocoding and then using spatial analysis of geo-processing and statistical analysis models of points, polyLines, polygons and each geographical characteristic has their own data, which are of particular importance in the statistical perspective of their ability to adapt to the various sciences because they represent the link between them and are used to serve them. The health aspect is one of the important aspects dealt with in the study analysis and distribution The study of public health falls within the topics of community services, which became a basic requirement should be available properly in accordance with health planning according to specific criteria as well as the importance of the health aspect as a standard Is important for measuring the human development of communities and peoples.

Analytical Hierarchy Process (AHP): The decision-makers are calling for the adoption of modern

method of strategic decision-making using the scientific method and the process of hierarchical analysis presented by the scientist Thomas[1] to analyze and formulate alternatives and proposals, a useful way to check the consistency of decision maker evaluations, Bias in the decision-making process[1].

AHP is one of the tools used in decision making (MCDM), a mathematical theory of measurement and decision making developed by the world of Thomas (Saaty 1980) in the mid-seventies.

These are the simple ways we actually deal with problem-solving through decision-making (Saaty 1980). In general, the AHP process is as follows:[2]

1. A complex problem is organized by analyzing it into a hierarchical series with sufficient levels to include all criteria to reflect the objectives of the decision maker.
2. Standards are compared in a systematic manner using the same measure to measure the relative importance of each criterion and the priorities among which are to build standards within the hierarchy.
3. Relative position of each alternative For each criterion, an element in the hierarchy is selected using the same metric.

Decision Making

The decision of a group of operations is:

1. Having a problem needs to be solved
2. There are a number of alternatives to solve the problem
3. Choose the most appropriate alternative depending on proper thinking

4. Chieve the desired goal based on the choice of the most appropriate alternative of the alternatives offered [3]

Criteria Criteria can be grouped into three groups:

1. In terms of quality of the standard, the standards are classified as quantitative and descriptive
2. In terms of the composition of the criteria are classified into two complex and simple standards
3. In terms of change in time, standards are classified as dynamic and static (static)

Euclidean Distance Scale[4]

To illustrate the idea of this measure, we assume that both elements K and L are represented in Figure 8,

To find the distance between the two elements K, L uses Pythagoras' theorem:

$$D^2_{K,L} = (Ok)^2 + (OL)^2$$

$$= (X_{K1} - X_{L1})^2 + (X_{K2} - X_{L2})^2$$

$$D_{K,L} = \sqrt{\sum_{j=1}^{2} \left(X_{Kkj} - X_L\right)^2}$$

Generally:

$$D_{K,L} = \sqrt{\frac{1}{p}\sum_{j=1}^{n} \left(X_{Kkj} - X_L\right)^2} \quad \ldots(1)$$

As p represents the number of elements (n > p) taken into the calculations. In reference to equation (1), vector notation can be obtained as follows[5]

$$X_K = (X_{K1}, \ldots\ldots X_{Kj} \ldots\ldots X_{Kn})$$

$$L_K = (L_{K1}, \ldots\ldots L_{Kj} \ldots\ldots L_{Kn})$$

Then,

$$D_{K1L} = \hat{\sum_{j=\bullet}} (X_K - X_L)^2 = (X_{K.} - X_{L.})'(X_{K.} - X_{L.}) \ldots(2)$$

Symmetrical Analysis Model [6]: The model of the P-symmetric analysis of two dimensions shows that the elements of the P matrix after approximation in a weighted euclidean domain after k ^ *, we will return the formula of matrix p of the matrices Du, G, F and approximate formula using partial matrices to approximate the smallest squares Equivalents of the rank k ^ *.

$$P = rc^T + D_r F_k \cdot D_{uk}^{-1} \cdot G_k^T \cdot D_c \quad (4)$$

That's Mean:

$$Pij = ricj\left(1 + \sum_{z}^{k} \frac{f_{iz} g_{jz}}{u_z}\right) \quad (5)$$

$$= ricj\left(1 + \sum_{z}^{k^*} \frac{f_{iz} g_{jz}}{u_z}\right) \quad (6)$$

The approximation of the approximate Pij form of

the main axis format was used to determine the missing values of the data matrix[7]

Steps of the process of hierarchical analysis: Based on the selection criteria and we obtain the comparisons of priorities and the extent of stability and the extent of overlap between the elements have been calculated.[7]

1. The hierarchical structure of each criterion is constructed
   a. For best results, criteria and sub-criteria must be defined and all selection factors used to consider the best suitable site should be considered.
   b. Determination of weight for all criteria, sub-criteria and alternative using AHP[8]

Table (1): Measures of relative importance[9]

Scale	Description
1	Equally Important
3	Weak importance of one over another
5	Essential or strong important
7	Very great importance
9	Extremely preferred
2,4,6,8	Intermediate values between the two adjacent judgments

Priority Analysis Hierarchy analysis:

a. **Setting priorities:** The determination of the binary comparisons in the hierarchical form with an evaluation ranging from (1-9) on the basis that the numbers give comparisons that can be increased or decreased according to the following equation

n (n -1)/2

Where n equals the number of parameters

When comparing, a matrix must be designed according to the following conditions

a. It has a diameter of one because it represents a comparison of the standard with the same breath
b. The values below the inverse diameter values are higher than the diameter
c. The provisions shall be free of contradiction [10]
2. Consistency Verification When a compatibility matrix is A Inverted so that the sum of the two values equals one.

This value known as λ max will be greater than n The amount of difference is measured by the degree of contradiction.[9]

Suppose we want to compare a set of n elements in pairs according to their proportions and weights. Refer to the items by A1, A2 ... ..An and their weights by W1, W2 .....Wn

The comparisons can be represented by a matrix as follows[11]

$$A = \begin{bmatrix} \frac{w1}{w1} & \frac{w2}{w1} & \cdots & \frac{wn}{w1} \\ \frac{w1}{w2} & \frac{w2}{w2} & \cdots & \frac{wn}{w2} \\ \frac{w1}{wm} & \frac{w2}{wm} & \cdots & \frac{wn}{wm} \end{bmatrix}$$

The Eigen value and the characteristic roots of matrix A of class PXP are the following set of solutions:

$$|A - \lambda I| = 0 \quad \ldots (7)$$

Equation (1) is called the characteristic equation, which is polynomial of P in λ and has only P of the characteristic roots of Morrison [5]The distinct values are not necessarily all distinct or all non-zero or even all real.[12]

Therefore, from the theory of multidimensional equations we deduce that:

The multiplication of the characteristic roots of the matrix A is equal to | A | is that

$$|A| = \prod_{i=1}^{n} \lambda i$$

2. **The sum of the characteristic roots of A is equal to the effect of matrix A:**

$$tr(A) = \sum_{i=1}^{n} \lambda i$$

Applied Side: The best health emergency center for the quaternary visit using weight standards to compare the centers that were presented in the theoretical side, the Analytical Hierarchy Process (AHP) using the GIS the purpose of obtaining the results and applying them to data affecting the selection of the optimal location for health centers.[13]

Sample Size: Five criteria were identified and the expert opinion was taken in GIS, statistics, health and Al-Husseiniya and Abbasid holy sites through a number of 60 experts 'assessment and the proposal of 270 health emergency centers to choose the most important on the main streets And subsidiary.

Data Description:

The research data criterion are as follows:

A1: Preparation of processions within the area of each center.

A2: Near the procession from the center.

A3: Preparation of reviewers.

A4: Preparing Visitors.

A5: Preparing Visitors Out.

Emergency Health Centers N = 1,2 ....., 270

Analysis of Results

Decision Matrix: Setting the Matrimonial Matrices The resulting weights are based on the main vectors of the decision matrix. Note that all the columns in the regular matrimonial matrix contain one

Table (2): Matrimonial Maturity Matrix

Criteria	A1	A2	A3	A4	A5
A1	1	0.33	2	7	0.2
A2	3	1	7	7	0.33
A3	0.5	0.14	1	2	0.14
A4	0.14	0.14	0.5	1	0.11
A5	5	3	7	9	1
Column Totals	**9.64**	**4.61**	**17.5**	**26**	**1.78**

Then we divide each element of the matrix on its total column and convert the values in the matrices comparison matrix to a decimal formula as follows:

We then extract the average elements in each row and then repeat what is represented as the priority (relative) vector of the criteria

Priorities for Criteria Through the Decision Matrix, it was found that the resulting probability weights for the criteria based on marital comparisons are as follows:

Table (3): The (relative) priorities of the resulting weights of the standards

Category	Criteria	Priority	Rank	(+)	(-)
Preparing processions within the area of each center	A1	50.7	1	19.7	19.7
Near the procession from the center	A2	27.7	2	9.2	9.2
Prepared by reviewers	A3	12.7	3	5.5	5.5
Preparing Visitors	A4	5.7	4	1.2	1.2
Preparing Visitors Out	A5	3.3	5	1.3	1.3

Estimating Consistency Ratio:

Calculate the consistency index (CI): (Compute the consistency index (C):

$$C = \frac{\lambda_{max} - n}{n-1}$$

Where n is the number of items that are compared

Compute the consistency ratio (CR)

$$CR = \frac{C}{R}$$

Where RI is a random pointer, a consistency indicator for a matrices comparison matrix that was randomly generated. It can be shown that RI depends on the number of items that are compared.

Multiply each value in the first column of the matrimonial matrices by the relative priority of the first element examined. Same procedures for other items. Collect values across rows to obtain a vector of values named "weighed sum."

$$0.278\begin{bmatrix}1\\3\\0.5\\0.14\\5\end{bmatrix}+0.143\begin{bmatrix}0.33\\1\\0.14\\0.14\\3\end{bmatrix}+0.077\begin{bmatrix}2\\7\\1\\0.5\\7\end{bmatrix}+0.045\begin{bmatrix}7\\7\\2\\1\\9\end{bmatrix}+0.457\begin{bmatrix}0.2\\0.33\\0.14\\0.11\\1\end{bmatrix}=\begin{bmatrix}0.278\\0.834\\0.139\\0.039\\1.39\end{bmatrix}+\begin{bmatrix}0.047\\0.143\\0.020\\0.020\\0.429\end{bmatrix}+\begin{bmatrix}0.154\\0.539\\0.077\\0.038\\0.539\end{bmatrix}+\begin{bmatrix}0.315\\0.315\\0.09\\0.045\\0.405\end{bmatrix}+\begin{bmatrix}0.091\\0.151\\0.064\\0.050\\0.457\end{bmatrix}=\begin{bmatrix}0.885\\1.982\\0.39\\0.193\\3.22\end{bmatrix}$$

$$\lambda_{max} = 5.265$$

$$C = \frac{\lambda_{max} - n}{n-1} = \frac{5.265-5}{5-1} = 0.066$$

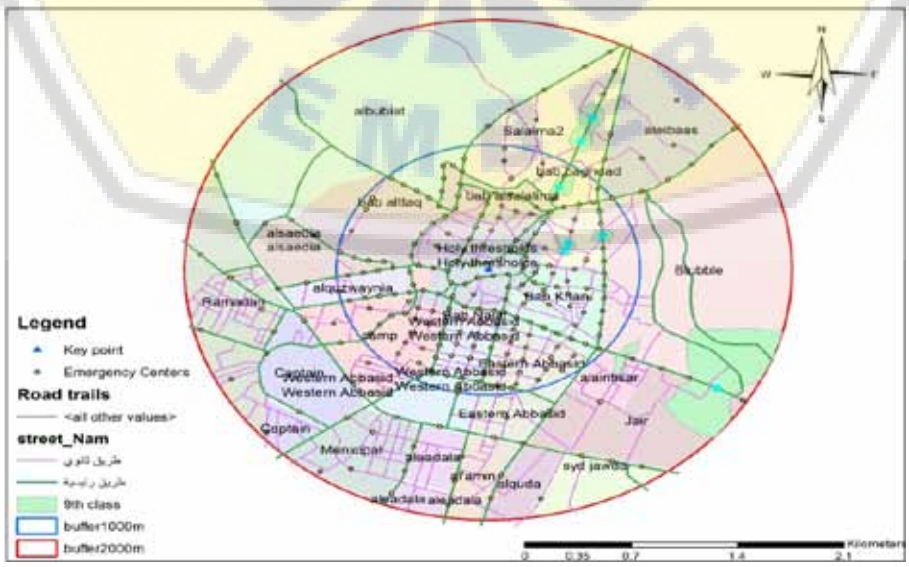
$$CR = \frac{C}{R} = \frac{0.066}{1.1} = 0.059 \le 0.066$$

Note that the degree of consistency resulting from the matrimonial matrimonial matrix is acceptable

The conversion of digital maps of all standards from Vector to Raster using spatial analysis and recalassify functions to map and divide data as follows:

9th class: Emergency health centers of utmost importance

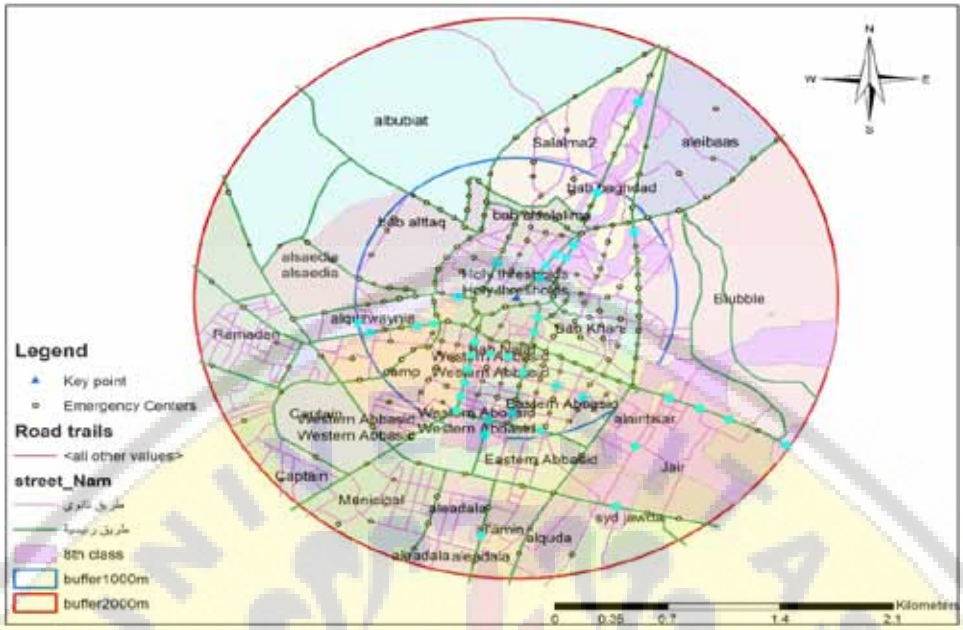
There are 7 temporary health centers of utmost importance and 3% of the proposed temporary health center



Map (1) 9th class for emergency centers of utmost importance

Map (1) 8th class: - The most important health emergency centers

There are 39 most important temporary health centers and 14% of the proposed temporary health center



Map(2): 8th of the most important emergency centers

7th class: Important health emergency centers

There are 42 most important temporary health centers and 16% of the proposed temporary health center

Conclusions

1. Through the decision matrix, it was found that the most important criterion with the highest possible weights for the criteria based on the marital comparisons is the preparation of the processions within the emergency center and was 50.7 and then the average number of reviewers of the proposed centers and the maximum 27.7.
2. The proposed emergency centers were classified according to importance and the following are shown
   A. Class classification 9th class Importance degree utmost importance it was No. of suggested centers 7 and Percentage %3
   B. Class classification 8th class Importance degree the most important it was No. of suggested centers 39 and Percentage %14
   C. Class classification 7th class Importance degree mission it was No. of suggested centers 42 and Percentage %16
   D. Class classification 8th class Importance degree less important it was No. of suggested centers 28 and Percentage %10.

Where the number of centers 270 centers proposed and found that 154 centers were not important and almost insignificant and by 57% of the centers that were proposed.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Milk Proteins Co-precipitate Preparedusing Zinc and Ferrous Salts

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Abstract

The ideal conditions forskim cow milk protein co-precipitate preparation byusing zinc and ferrous salts were investigated. The optimum concentration of zinc and ferrous salts (chloride and sulfate) used to milk proteins co-precipitate preparationwas 18 mM for zinc chloride, ferrous chloride and ferrous sulfate and 24 mM for zinc sulfate. These ion concentrations yielded 93.95, 93.63, 93.71 and 94.01 % of total milk proteins respectively.

The best pH values forpreparing milk proteinsco-precipitate was 6.6, while the best heat treatments were at 90 °C for 20 min.

Keywords: *Cow milk, Proteins co-precipitate, Zinc, Iron.*

Introduction

Milk contains two main protein groups, casein and whey proteins. Caseins are phosphoproteins that are precipitated at pH 4.6 at 20 °C from raw milk. They make up about 80% of the complete protein content in milk. This group's main proteins are categorized as αs1-, αs2-, β-and k-caseins(1).

Only 80% of milk proteins are recovered during the manufacture of casein and about 20% of milk proteins (whey proteins) are lost. The production of coprecipitates was created due to the high dietary value and the required functional characteristics of whey proteins in addition to the need to improve the amount of the resulting proteins(2).

A milk protein co-precipitate may be described as the product containing both casein and heat coagulating whey proteins (3). Milk protein co-precipitates are generally prepared by heating the milk at a temperature above 60 °C. The protein complex may be precipitated directly after heat treatment or it may be cooled and then precipitated. Precipitation is achieved with either acidic, divalent ions (like calcium), or other ions affecting the complex's solubility.(5)

Heat treatment is crucial for the manufacturing of co-precipitates as it causes the denaturation of whey proteins and their interaction with caseins, especially through the creation of disulfide bonds (6), especially the interaction of k-casein and β-lactoglobulin.(7)

The role of adding an ion (e.g. calcium) in producing sheep milk co-precipitate is related to the fact that ions act as the cross-linking agent between whey proteins and caseins by forming ion bridges.(4) By heating skim milk at 85°C and adding an ion salt, (8) it recovered 96% of cow milk proteins and (4) also recovered 97% of sheep's milk proteins as co-precipitate.

Milk, however, has low levels of some significant vitamins and minerals, including iron and zinc(9), so increasing the quantity of some of these micronutrients in malnourished individuals could improve the dietary balance and health. Milk is widely consumed, thus the fortification of milk and milk products could provide vital nutrition to a large proportion of the world's populace, its often fortified with minerals such as Zn, Fe, Ca(9).

The purpose of the present work was to find ideal conditions (concentration, pH and temperature) for skim cow milk protein co-precipitate preparation.

Materials and Method

Milk Samples: A bulk of cow's milk was supplied from the field of College of Agricultural sciences engineering, Sulaimani University, Iraq and the milk was skimmed by centrifugation (2500 g at 5 °C for 30 min).

Preparation of Coprecipitate: Coprecipitate preparation experiments were on four batches of bulk cow skim milk for zinc and ferrous (chloride and sulfate).

Effect of different concentration of zinc and ferrous: Cow skim milk samples (100 ml) were subjected to pre-heat treatment at 85°C for 15 min. in a water bath and cooled to room temperature of 22°C. Different concentration (9-30 mM) of zinc and ferrous (as chloride and sulfate) was added to the milk and mixed thoroughly. After that samples were heated to 85°C for 20 min and then cooled to room temperature. After at least 12 hrs. The forming gels were cut to remove whey and filtered through Whatman No. 1 paper. Protein recovery was calculated from the protein concentration of the filtrate using the following equation:

$$\text{Protein recovery (\%)} = \frac{\text{protein concentration in milk} - \text{protein concentration in whey}}{\text{protein concentration in milk}} \times 100$$

Effect of pH: The pH of skim milk was adjusted to pH values between 6.0 and 6.9 using 1 M HCl and Na OH. The best concentrations of zinc and ferrous salts which resulted in the highest protein recovery were added and the milk samples were heated at 85C for 15 min. The samples were filtered through Whatman No. 1 paper. Protein concentrations in the filtrate were determined.

Effect of Heating Temperature: Cow skim milk samples were pre-heated at 80, 85, 90 and 95°C for 15 min, then the best concentrations of zinc and ferrous salts which resulted in the highest protein recovery were added and milk samples were re-heated at the same temperatures as above (80, 85, 90 and 95°C) for 15 min. The samples were filtered through What man No. 1 paper and the protein concentration of the filtrate was determined. The precipitated coprecipitate was washed with distilled water and freeze-dried.

Chemical Analysis:

Protein Determination: Total nitrogen in the filtrate was determined by the Kjeldahl method[10]. Protein concentration was calculated using a conversion factor of 6.38.

Gel Electrophoresis (SDS-PAGE): The skim cow milk co-precipitates was analyzed using SDS-PAGE electrophoresis.[11]

SDS-PAGE was performed on a 5% (w/v) polyacrylamide in 0.5M Tris-HCl buffer, pH 6.8 stacking gel and a 15% (w/v) polyacrylamide in 1.5M Tris-HCl buffer, pH 8.8 containing 0.1% (w/v) SDS separation gel. Samples were dissolved at 2 mg mL-1 in 0.5M Tris-HCl buffer, pH 6.8, containing 0.1% (w/v) SDS, 5% (v/v) 2-mercaptoethanol. After heating at 100°C for 5 min, 10% (v/v) glycerol and 0.01% (w/v) bromophenol blue added, then 10 µL of the sample was loaded in the gel. The gels were run under constant voltage of 200 V and 40 m A for about 2-2.5 hrs. The gel stained by Coomassie Brilliant Blue R-250 for 2 hrs., then the excess dye was removed from the gel by destain solution (acetic acid, ethanol and distilled water) and gel store in 10% ethanol in 5 °C.

Particle Size: The particle size distribution of the dried products was measured by laser light scattering using a Malvern Mastersizer 2000 granulometer equipped with a Hydro 2000MU sampler for liquids (Southborough, MA, USA). For the measurements, the dried powders samples were dispersed in distilled water and the particle size distribution was calculated depending on the refractive index because the refractive index of the powders was unknown. The dispersant liquid was put into a beaker and the samples were added until the instrument measured the 15% of obscuration. The mean values of the particle size measured in. Size dispersion was evaluated directly by the software of the instrument, using the span index (SI), according to the formula.

Zinc and Iron Determination: Zinc and iron were determined by ICP method[12].

Result and Discussion

Effect of Ions concentration on protein recovery in cow milk co-precipitate: The effect of the concentration of ions added to skim cowmilk on the protein recovery at 85°C for 20 min. is shown in figure (1) which shows that cow milk protein recovery increased with increasing added ions concentration especially after 12 mM. At 9 mM, the recovery of milk proteins was 91.62, 92.89,90.65 and 90.98 % for Fe

Cl2, Fe SO4, ZnCl2 and ZnSO4 respectively and this recovery increased and reached to highest at 18 mM (93.95, 93.63 and 93.71 %)for Fe Cl_2, Fe SO_4 and $ZnCl_2$, however the highest percentage of recovery was 94.01 % for $ZnSO_4$ at 24 mM. These results of recovery were nearly the same previous result found [8], who recover 96% of milk proteins by using 25 mM concentration of calcium.

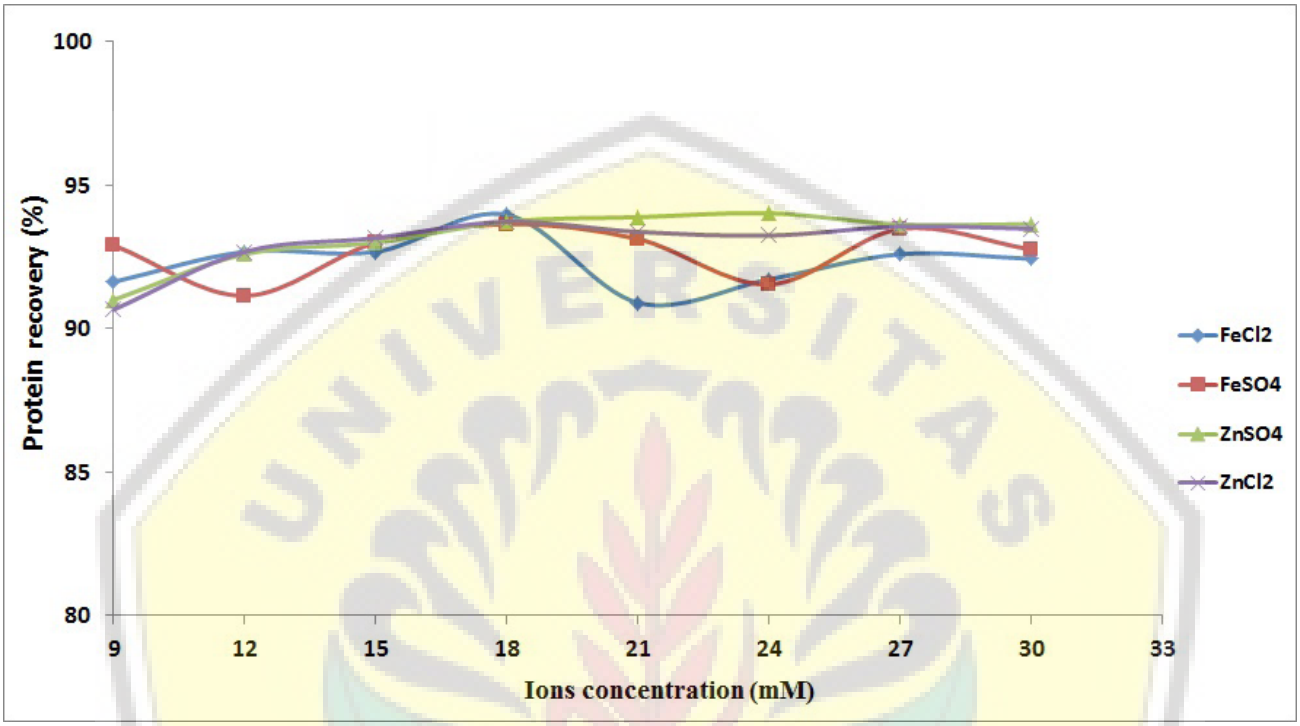

Figure 1: Effect of the concentration of ions added to cow milk on the protein recovery at 85°C for 20 min.

Effect of pH on protein recovery in cow milk co-precipitate: The effect of pH on protein recovery is shown in Figure (2). At low pH (pH=6), the recovery of cow milk protein were low (92.79, 92.66, 94.5 and 92.9% for Fe Cl_2, Fe SO_4, $ZnCl_2$ and $ZnSO_4$ respectively) because the pH is lower than normal pH of milk and close to the isoelectric point of the caseins, which is 4.6 and this led to the precipitation most of the casein after heating without taking enough time to react with whey protein and that's resulted in adecrease in protein recovery. Furthermore, lowering the pH significantly increases the denaturation temperature of β-Lg [13].

At higher pH values especially (pH = 6.6), the protein recovery increased because interactions between caseins and whey proteins through disulfide bonds occur [7]. The highest recoveries were in 6.6 which were (95.59, 93.61, 94.69 and 93.11 %) for Fe Cl_2, Fe SO_4, $ZnCl_2$ and $ZnSO_4$ respectively.

These findings are in general agreement with the result of other investigation [14]. At higher pH values (pH= 6.9), the protein recovery decreases and these can be explained by the fact that the level of denatured whey proteins associating with the micelles is depending on the pH at heating and with the rise of pH, the association of whey proteins with casein decreased [15].

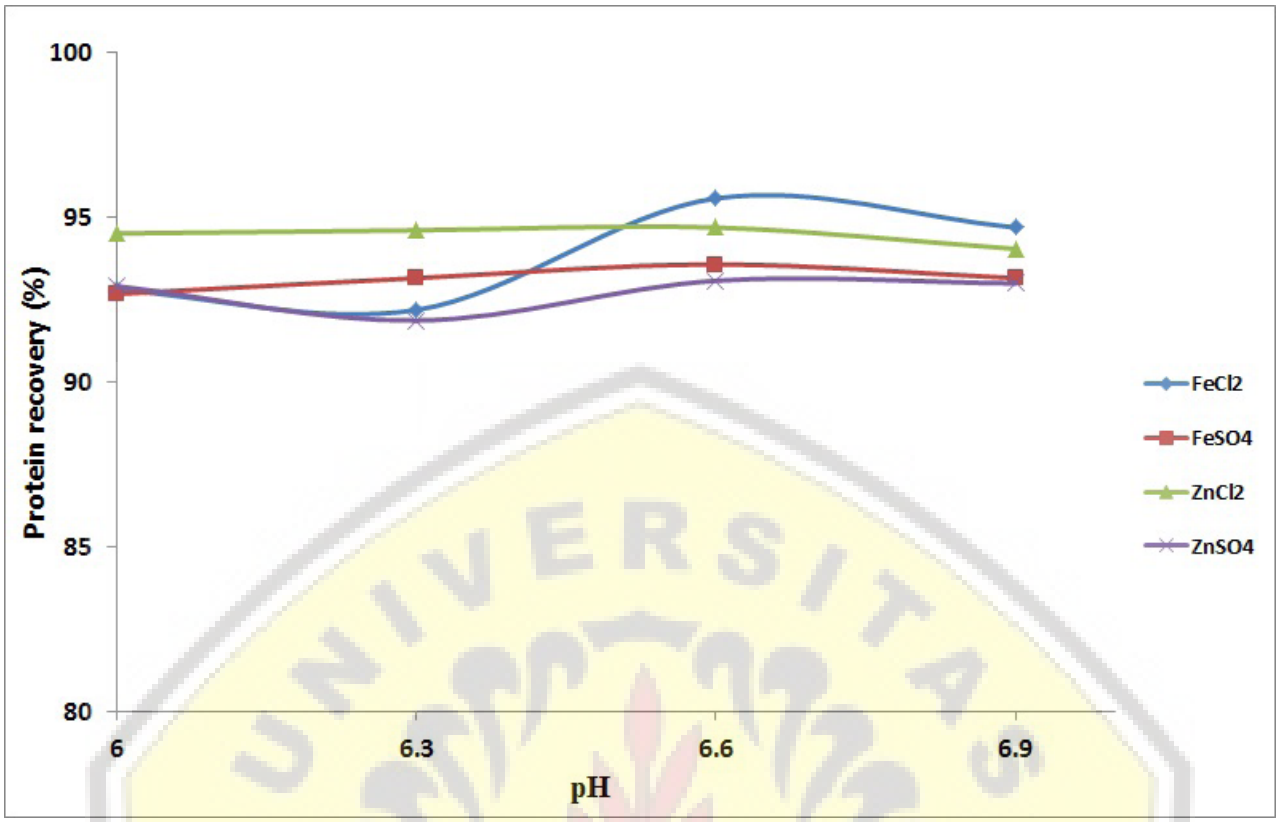

Figure 2: Effect of pH on protein recovery after adding 18 mM of for Fe Cl_2, Fe SO_4 and $ZnCl_2$and 24 mM of $ZnSO_4$ to cow milk and heating at 85 °C for 20 min.

Effect of heating temperature on cow milk co-precipitate: The effect of heating temperatures, between 80 and 95°C, on protein recovery as co-precipitate from skim cow milk, is shown in Figure (3). At the lower temperatures (70-75°C), co-precipitate gels from cow milk were not formed or were very weak, because the amount of ions (zinc and ferous) binding to casein were less than that required to saturate and cross-link the casein at these temperatures [16], so the results of these temperatures not inserted in figure.

At 80°C, whey proteins already precipitate with casein, andat 85-95°C, the coprecipitate contained the most whey proteins, resulting in complex formation between denatured β-lactoglobulin and K-casein[17] and K-casein with α-lactalbumin[18].

Protein recovery after addition best concentration of zinc and ferrous salts and adjusting milk pH to 6.6 were (95.16, 93.15, 94.12 and 92.74%) after heating at 85°C and became (95.73, 93.47, 94.84 and 93.14%) after heating at 95°C for Fe Cl_2, Fe SO_4, $ZnCl_2$ and $ZnSO_4$ respectively.

However, the highest percentage of protein recovery was after heating at 90°C for 20 min which was (96.1, 93.70, 95.01 and 93.30%) after heating at 95°C for Fe Cl_2, Fe SO_4, $ZnCl_2$ and $ZnSO_4$ respectively

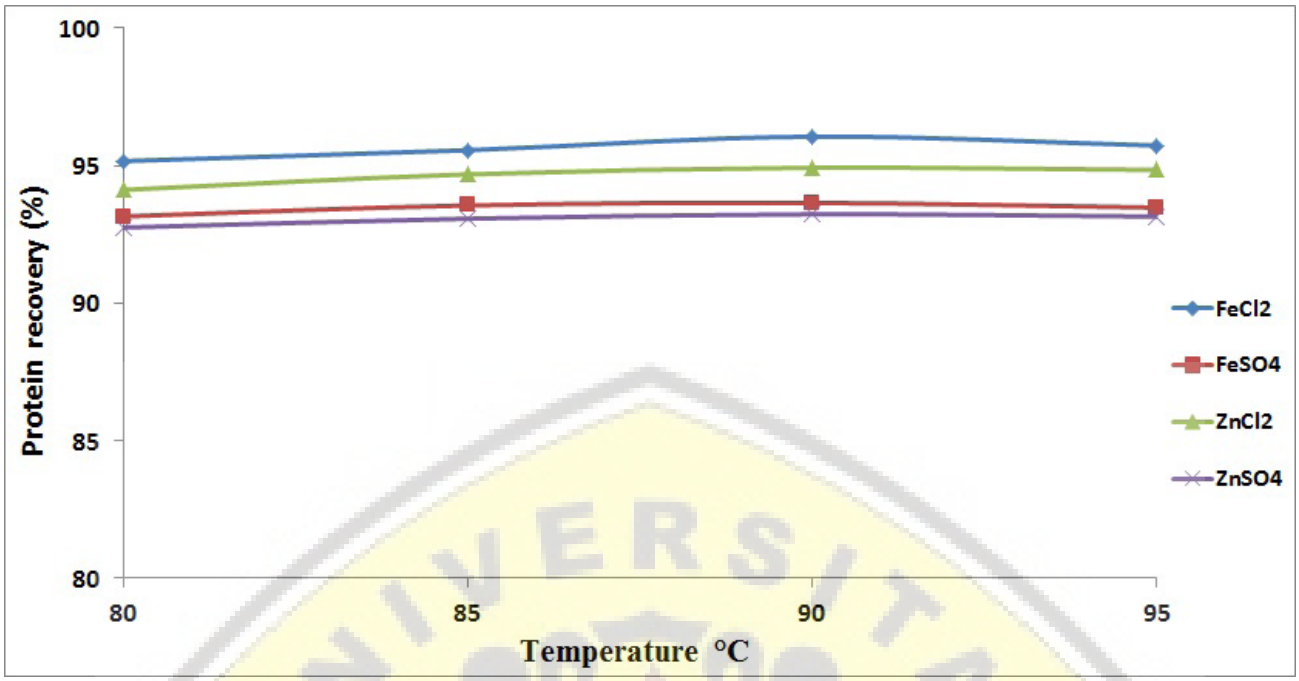

Figure 3: Effect of heating temperature on protein recovery of cow milk (pH 6.6) after adding 18 mM of Fe Cl_2, Fe SO_4 and $ZnCl_2$ and 24 mM of $ZnSO_4$ and heating at different temperatures.

Figure 4: SDS-PAGE of milk co-precipitate samples prepared using 18 mM of Fe Cl_2, Fe SO_4 and $ZnCl_2$ and 24 mM of $ZnSO_4$, milk pH 6.6 and heating at 90°C for 20 min. Lane 1, 2, 3 and 4, are co-precipitate prepared using zinc chloride, zinc sulfate, ferrous chloride and ferrous sulfate respectively.

Figure 4 showed SDS-PAGE bands of cow milk co-precipitates that made after adjusting milk pH to 6.6, adding 18 mM of Fe Cl_2, Fe SO_4 and $ZnCl_2$ and 24 mM of $ZnSO_4$ and heating at 90 °C for 20 min.

From the previous figure, we can conclude that all milk co-precipitate samples prepared using Fe Cl_2, Fe SO_4, $ZnCl_2$ and of $ZnSO_4$ contain most of the whey proteins (α-La and β-Lg) and caseins. These results are in good agreement with previous results [4] how prepared co-precipitate from sheep milk.

Particle Size: Particle size assessment, particle size measurement, or merely particle size measurement is the collective name of the technical processes or laboratory techniques that determine the size range and/or average or mean particle size in a powder or liquid sample.

The volume and the size of the particle size of skimcow milk protein co-precipitate prepared using zinc and ferrous (chloride and sulfate). We noticed a substantial difference between their particle sizes,2.5-7% of particle have size 40-300 µm as zinc chloride milk protein co-precipitate and 2-8% of particle have size 150-700 µm as zinc sulfatecow milk protein co-precipitate and this big difference in sizes maybe due to concentration used, which used 18 mM for $ZnCl_2$ and 24 mM for $ZnSO_4$. These results indicate that the addition of zinc salts in the production of cow milk protein co-precipitate cause major changes in casein micelles structure and size.

The particle size of cow milk protein co-precipitate prepared using ferrous chloride and ferrous sulfate, it noticed no significant difference between their size particle,3-10% of particle have 150-750 µm and 150-700 µm for ferrous chloride and ferrous sulfate respectively, and that's due to using the same treatment and concentration for both of them which were 18 mM.

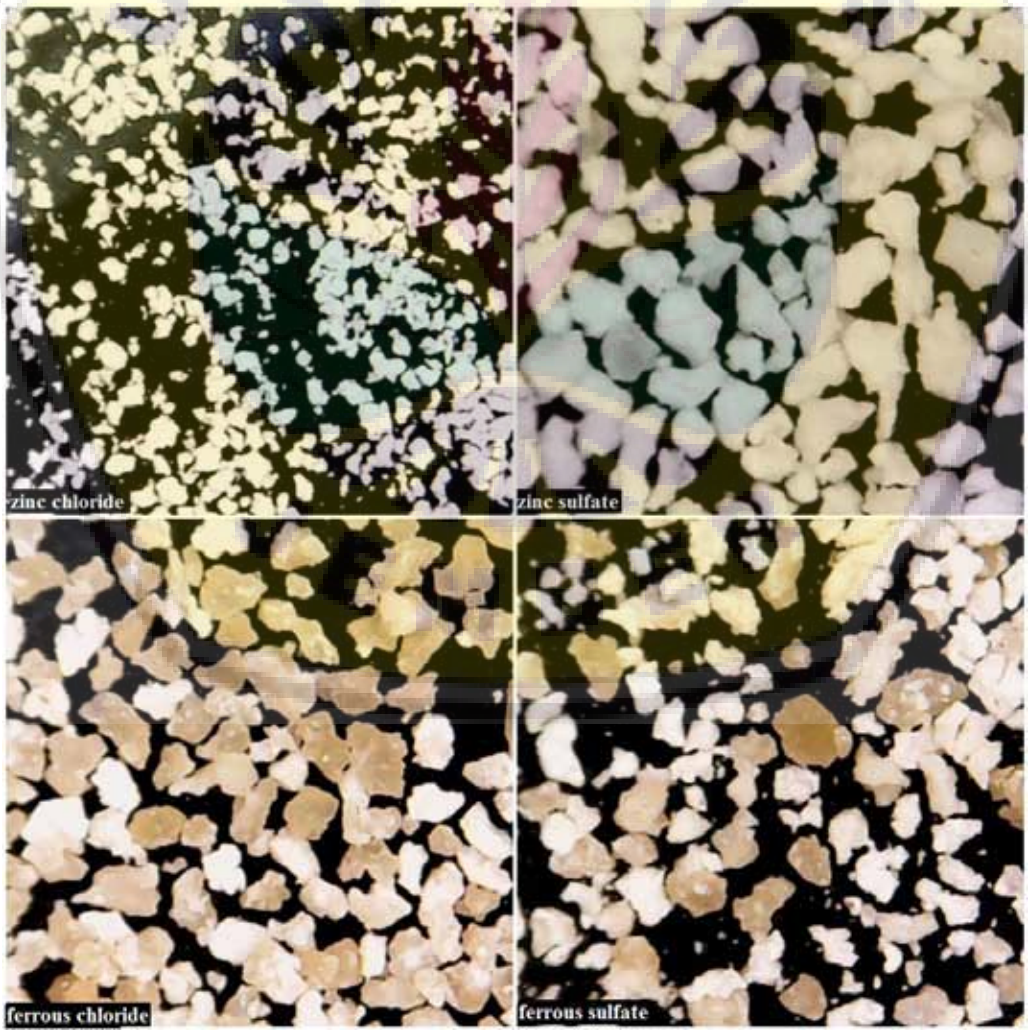

Figure 5: Particle shapes of co-precipitates under digital microscope (1000 X)

Zinc and Iron Determination: The concentration of zinc and iron in cow milk protein co-precipitate prepared in this study was a determent to establish the quantity of these minerals in milk protein co-precipitate and their effect on the calcium.

Both iron and zinc beside calcium concentrations in co-precipitates were determined by ICP and results were showed in figure 6.

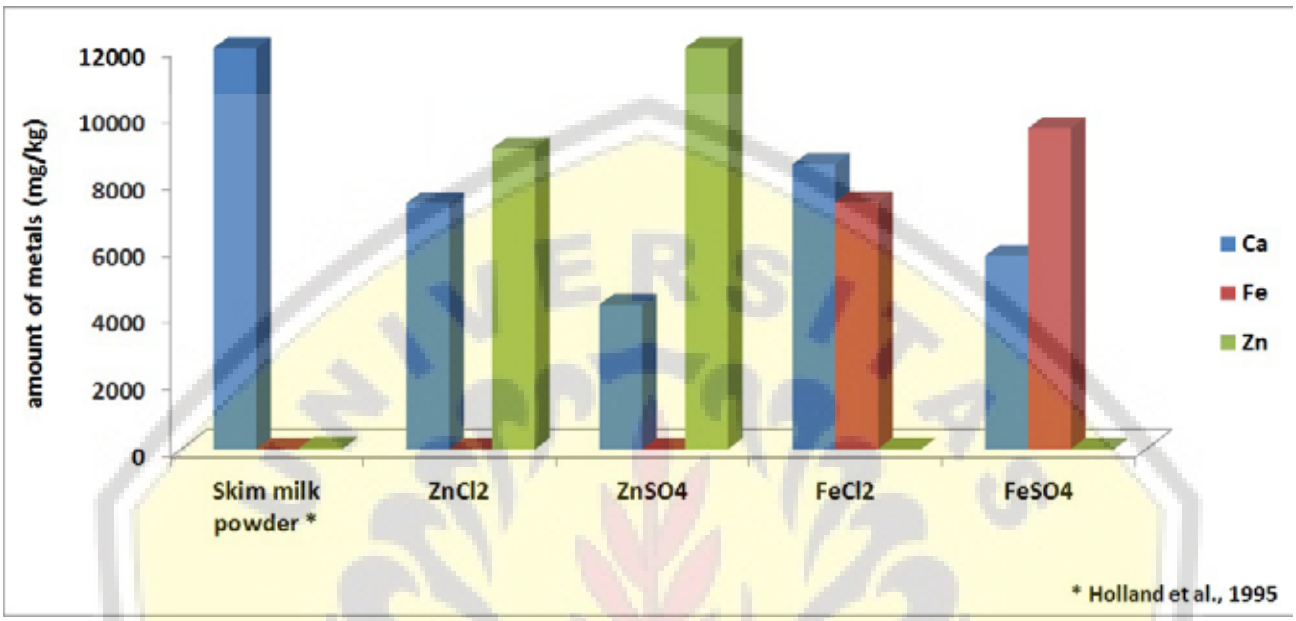

Figure 6: The amount of iron, zinc and calcium mg/kg

The amount of iron,zinc and calcium in skim milk powder are (4.5, 40, 12000) mg/kg respectively[19] and it noticed that amount of iron and zinc increased significantly when added to same metal to co-precipitate and that's mean the process of fortification was successful.

As known milk doesn't contain enough amount of iron and zinc, opposite to calcium which available in high amount. After fortified with iron, its concentration increased to 7390 and 9600 mg/kg for milk protein co-precipitate prepared with Fe Cl_2 and Fe SO_4 respectively, but calcium concentration decreased to 8520 mg/kgin Fe Cl_2 and 5790 mg/kg in Fe SO_4.

Also, zinc amount in milk protein co-precipitaterose after fortification to 9000 and 12000mg/kg for $ZnCl_2$ and $ZnSO_4$ respectively, this increment inzinc concentration was accompanied with a reduction in calcium and this indicates the replacement of calcium in casein micelles with by iron and zinc and losespart of calcium with whey.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Determination Efficacy of Natural Plant Extraction in Athletes with Joint Injuries

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Abstract

Presint study highlighted using of alternative medicine therapy in treatment of joint ankle and knee injuries of 43 athletes who injured during the exercise. Students of the College of Science from the first stage to fourth stage were divided into knee injuries) 24 cases (and ankle injuries) 19 cases (The samples were considered in department of sports activity, College of Science, University of Baghdad. Natural comparison in the period of treatment approved in the health centers of physiotherapy, the extracts of medicinal vegetable oil were used to treat a number of athletes injured during sports matches within 45 days. Two experimental groups were performed in current study in knee injuries and ankle injuries. Test group, exercises and message with using oil and control group, exercise and message without using oil. Paraffin oil, olive oil and radish oil were used. The biological activity of these oils have been checked in the laboratory to find the best biological effect against four pathogenic bacteria related to inflammation of arthritis. Olive oil has been found to be the most effective against the studied bacteria causing inflammation in injury area. The finding identified through the results recorded in the experiments. The healing of the injured have improved to return to exercise in less than three weeks for mild and moderate cases of injury due to the use of these oils as a combination in topical treatment of natural chemical compounds that reduced the treatment period by about four days with well-known exercises in the sports activity department at the College of Science for aseveral weeks.

Keywords: *Knee, Ankle, Exercises, Joint injuries, Plant extractes.*

Introduction

Using of alternative medicine for the treatment of arthritis as a very effective and local treatment, which introduce good results for many patients with arthritis and these types of treatments do not cause problems in the joints ankle and knee, they are natural oils and useful for the skin as well as joints[(1)]. Many of the consultants in diseases of obesity, thinness and physical therapy, pointed out that the ability of alternative medicine to treat arthritis is large, especially in reducing the pain of patient throughout the day[(1)].

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Olive contains effective oleuropein, an antioxidant that removes atherosclerosis and rejuvenates tissues. Vitamin E, K also contains three powerful antioxidants, hydroxytyrosol, vanillic acid and verbascoside, which are useful in the treatment of rheumatoid arthritis[(2)]. The oil of olive contains a high proportion of unsaturated fats, vitamin E and K, multiple phenols, chlorophyll, pheophytin, sterols, squalene and compounds that give it odor and flavor[(2)].

When the joint is contaminated with infected microorganizem, the surrounding area becomes inflamed and infected. The source of the inflammation is bacterial [(3)]. In general, the infection is concentrated in one large joint, such as the knee or thigh. However, there are cases where the spread of arthritic and affects several joints in the body, depending on the source of pollution and frequency of spread. The most widespread bacteria that cause infection in the joints in adults and children are: *streptococcus*, *staphylococcus* and

Haemophilusinfluenza[3]. These microorganisms are carried into the bloodstream and run through to the joint, leading to an inflammatory reaction and severe aches. Septic arthritis may also result from a viral or fungal infection. Viruses that may cause aggressive arthritis are: hepatitis, herpes, acquired immunodeficiency virus (HIV) and the virus that causes mumps [4].

Its pointed to the importance of natural oils for the treatment of arthritis, pure and original paraffin oil, as well as virgin olive oil of the original, they are high-quality natural oils that are easily absorbed through the skin applied to the inner layer under the skin, by painting on the knees properly from Continuous and continuous massage for at least 10 minutes at a time [2].Natural oils are a solution of alternative medicine for the treatment of arthritis, provided that the olive oil used is cold and not as warm as some believe so as not to spoil and lose its value and thus lose its function, which is the lack of massage which is continuous to the joint directly and tries to work in the field of oil and compensate for the deficiency of natural oil or what is known as "albumin,", as well as olive oil should be cold and cold [5]. The natural oils such as paraffin and olive oil are gradually and continuously used to soften the joints as a natural laxative [6]. It is an ideal solution offered by alternative medicine for the treatment of arthritis, which reduces the roughness and friction between the bones of the knees and limits its continuous infections and pain and improves the ability to walk better, provided that this process is repeated more than 3 times a day on a regular basis [7].

Arthritis is a common disease among many people. It is inflammation and pain in one or more of your joints, including the knees, the palm of the hand, the backbone. There are more than 100 different types of arthritis with different causes and treatment method. The most common types are osteoporosis (OA) and rheumatoid arthritis (RA), in the following lines we recognize the symptoms of arthritis and its causes and treatment, according to the site Health line [8].

Cartilage is a connective tissue that is flexible in the joints. It protects the joints by absorbing pressure and shock caused by movement, but the reduced natural amount of this cartilage tissue causes arthritis [9].

As for the large separation, it is caused by damage and torn cartilage causes the movement of bones on one another and the disease is more serious if you have a family history of the disease. These attacks affect the synovial membrane, a soft tissue in your joints that produces fluid that feeds the cartilage [9].

The main aim of the treatment of arthritis is to reduce the pain suffered by them and prevent further damage to the joints, such as heating pad or ice cubes and mobility aids such as: stick or walker to help relieve pressure on the joints painful. There are medicines for the treatment of arthritis such as: Analgesics, including: hydrocodone or Acetaminophen, which is effective for the treatment of pain but does not reduce inflammation. Alternative medicine treatment using medicinal vegetable oils for massage work for its importance in relieving the pain and then doing simple exercises known [10].

Materials and Method

The sample consisted of 43 patients aged between 19 and 25 years of age and was divided into two groups,control and experimental groups according to type of injuries. 1ml from each oil were mixed together and being 3ml, then used for every treated locally point about 10 minutes, three times a week.In current study, 24 cases of knee injuries, Twelve were treated with vegetable oil mixture, message and special exercises (test group) and twelve were treatment with message and special exercises without mixture oil (control group). In another experiment 19 cases of ankle injury group was divided to 9 treated with vegetable oil mixture, message and special exercises (test group) and 10 were treated with message and special exercises without using mixture of oil (control group) to record time differences and the effect of the oil mixture on the time of medical rehabilitation of the injured. The message is a mild message around the injury area. The excersie and n] message that used in current study were three times per week for 30 minutes.

Three medicinal plant oils were purchased from the local herbalist: olive oil extract, paraffin oil extract and radish oil extract. These oil were used by 1 ml and their biological activity was carried out against the bacteria that cause responsible for the inflammation in injury area of athletics. The study samples were taken by 43 sportsmen who were injured in the time of exercise and visited physiotherapy center in Baghdad. The use of a mixture of these medicinal vegetable oils in the local injury areas to determine the improvement in their health status and recording the time period for obtaining complete healing.

The exercises of knee injuries: Different exercises that used in this case, i, flexsion and relaxation (3 x 15); ii, rotation of knee join (3 x 15) in side and outside; iii, Lightweight resistanceby half a kilogram for 10 times.

The exercises of ankle injuries: Different exercises that used in this case, i, upward and downward of ankle join (3 x 15); ii, inward rotation (3 x 15) and outward rotation (3 x 15). iii, Lightweight resistance by half a kilogram for 10 times. iv, lateral even roataion (3 x 15) and medial rotation (3 x 15). v, plantar flexion (3 x 15) and dorsi flaxsion (3 x 15). vi, eversion rotation (3 x 15) and inversion roation (3 x 15).

Arthritis Symptoms: The main symptoms of arthritis are joint pain and joint stiffness that worsen with age. Here are the symptoms (joint pain, joint stiffness and swelling, drop motion rate, redness of the skin around the joint, symptoms are worse in the morning in most cases with arthritis).

Biological efficacy of therapeutic oils: The anti-bacterial effect of several plant oil extracts (Olive oil, Paraffin oil and Radish oil) against several pathogenic bacteria (*Streptococcus*, *Staphylococcus*, *Pseudomonas aeruginosa* and *acinetobacter*) was evaluated in vitro, the clinical isolates of pacteria were procured from department of Biology, College of Science, University of Baghdad (gifted from Assistant Professor, Ayaid K. Zgair, Ph.D). The plates method was used to evaluated the anti-bacterial effect of oils against above clinical pathoges [11].

Statestical Analysis: All values were calculated as the mean ± standard deviation (SD).Differences between test and control groups were analysed using Student's t-test using Origin version 8.0 software. A value of $P<0.05$ was considered to be statistically significant[12,13,14].

Results

The results showed clear difference in the use of medical oils as a biological effect against the pathogenic bacteria causing infection and inflammation. Table 1. Shows that all used oil had high antibacterial effect on the pathogenic bacteria that used in current study. This study showed that this highest effect was observed in case of using olive oil.

Table 1. Antibacterial effect of three oils against pathogenic bacteria associated with join injury. The results showed in diameter of inhibition zone on culture media (in vitro)

Name	Streptococcus	Staohylococcus	Pseudomonas	Acinetobacter
Olive oil	22.3 mm	21.2 mm	18.4 mm	18.9 mm
Paraffin oil	18.6 mm	19.7 mm	17.1 mm	16.5 mm
Radish oil	16.5 mm	18.1 mm	16.2 mm	14.4 mm

The present study showed that using of three oil extracts gave a good healing of injury of joints a topical treatment of knee and ankle injuries. The results were read according to the healing of join damage with the time. The results showed that the use of these oils were highly effective in treating of join injury the use of these oil considered as a safe treatment without complications on the human body or place of injury through health improvement with treatment in rehabilitation exercises. This consistents with the advice of doctors specialized for joint and orthopedic injuries and through public interest. The currents study showed that the using of mixture of three oils reduse the duration of healing as compare with healing without using of oils treatment (Figure 1).

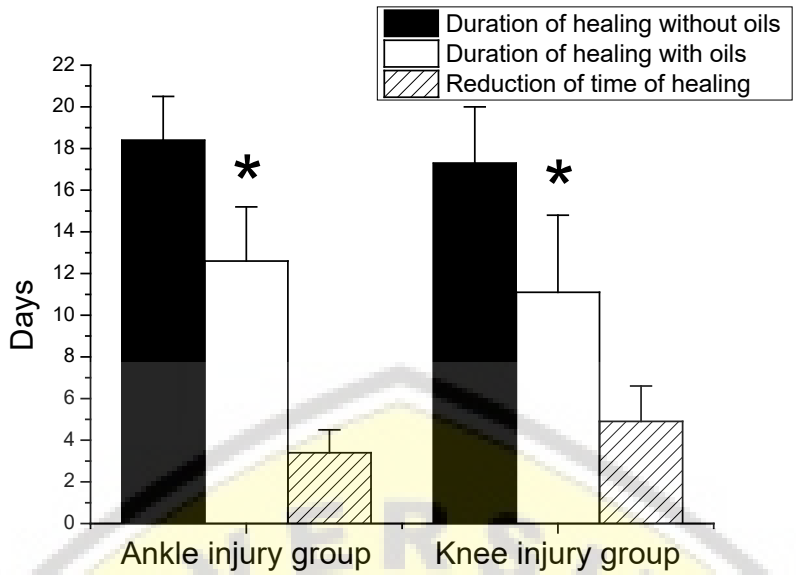

Figure 1. Effect of using of mixure of three oils (Olive oil, Paraffin oil and Radish oil) on the time of healing in days. Asterisks indicat of significant different from duration of healing without using mixture of oils. P<0.05 indicates of significant difference. All values were represented in mean ± standar errar.

Discusion

Through repeated injuries to athletes, especially ankle and knee injuries, simple and medium recommended the use of medicinal vegetable oils as a safe treatment of complications and contain the compounds soothing pain and multiple vitamins useful to the body.Ankle healing of torsion must be strengthened through exercise. The muscles and ligaments must be strengthened to stabilize the ankle firmly in place. Consult doctor or physiotherapist and follow the instructions and exercises that are prescribed for patients. The patients should never feel pain during exercise. If it happened immediately the exercise should be stopped because there are inevitably speeches [15].

In present study, the several oils that extracted from plant to treat the athletes suffering from repeat injury. The oils were used to reduce the population of bacteria that may effect on the injury during stimulation of inflammation. Also the mixture of using of oil were used to reduce the time of healing of athletes.

The presence of pathogenic bacteria may estimulate the inflammation in the infection area. The repeat injure athlates may be suffering from small distruction in their skin during hard exercise and that may be the access of pathogenic bacteria and their appendages that responsible form infaction and inflammation [16]. These phenomena may responsible for increasing the duration of healing of athletes, that is why when these oil used during the treatment time, reduced the duration of healing significantly.

Several study fucosed on the positive effect of using of plant extracts oils on the healing of repaeat in jury athlates [17]. The reason on using of these kind of oil in treatment of repeat injury athletes is the safe of using of these kind of oils and highly effect of healing of athletes, because of these kinds of oils reducing the duration of healing as compared with other kind of midicins [15].

examination of the injured athletes show that the gradual development during the use of this herbal medical combination topically by relieving the pain until the recovery of full and the time period was less than the time recorded without the use of this medicinal plant treatment. The medicinal plant mix contains a lot of natural chemical compounds and vitamins and important elements such as turbines, flavonoids and alcohols, which have the properties of reducing the feeling of pain as well as the ability to absorb by the skin and contribute to the speed of healing.

It is also recommended to practice swimming, Aqua gym and bike riding because these sports stimulate the

ankles without putting pressure on the joints. Also pay attention to shoes, It is necessary to use the appropriate shoes for each type of sport and move away from high heels shoes because it may be a cause of loss of balance while walking.

Conclusion

From this study it can be concluded that the using of oil that extracted from plant such as Olive oil, Paraffin oil and Radish oil highly effective in healing of athletes suffering from repeat injuries.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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The Effect of the Stepans Model on Improving the Arbitration Mechanism of Students in Volleyball

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Abstract

The importance of research is evidenced by the search for method, strategies and models of advanced teaching and the use of modern means and techniques interspersed with a kind of suspense and excitement taking into account the gradual in difficulty in order to promote the mechanism of arbitration volleyball. The research problem arises on the following:

The researchers noted through the follow-up lessons volleyball material for the third stage, that there is fluctuation of the level of students in the arbitration performance confirmed that the researcher back to the forms of students grades and previous years, so we must seriously think about this problem and find the appropriate solution to address it and look for method, strategies and teaching models In order to improve the mechanism of arbitration volleyball for students of the Faculty of Physical Education and Sports Sciences at the University of Kerbala and all universities in Iraq for the better.

The researchers used the experimental method by designing two equal groups (experimental and control). The research sample was (40 students) through physical education and sports sciences - University of Karbala. After unloading the data and processing them statistically and to achieve the research objectives, the following conclusions were reached:

The use of the (Stepans) model further improve the arbitration mechanism when improving the arbitration mechanism of students of the third stage compared to the method used for teaching.

Keywords: *Stepans model, arbitration and mechanism.*

Introduction

There is no doubt that the tremendous advances in modern means and technologies have an impact on the teaching and learning processes. The current models of education are no longer the traditional teaching models that rely on direct indoctrination, which was used by the learner in the role of passive recipient only, but became entirely dependent on the interaction between the student and the material Educational and provide the opportunity to reach creative processes by relying on available means and employ them to serve the student in achieving the goals set and relying on himself and under the direct guidance of the teacher.

Many modern teaching models are designed in the civilized world because of their impact on the capabilities of the human mind. The means of teaching and learning in particular, therefore, became the means of education is a necessity for learners and those who are responsible for the educational process in all stages of university education to raise the level of efficiency of the process of education and its outcomes.[1]

Volleyball is a game full of opportunities that help learners to grow (physically, mentally, emotionally and socially). In front of large numbers of students, without the actual participation of the student in the educational situation, which makes him not enough attention to his individual performance and due to the increase in the number of students in one class made them spread in a large area away from the teacher, which makes follow-up Explanation or vision of the model is very difficult

and then shows the differences in individual differences between students and this method, although it has advantages, but it does not respect the subjectivity of the student to the degree that enables him to highlight his personality by treating the teacher individually according to his tendencies, attitudes and abilities.[2]

The importance of the research is to use the Stepans model as an attempt by the researcher to use it to increase the visual intelligence in improving the arbitration mechanism of students in international volleyball law cognitively and practically and to draw the attention of the teaching staff towards the use of this model, especially in teaching the subject of international law volleyball and reflect this statement on The level of their students in theory and practice.

Research Methodology

The experimental method was used to design the two equal groups (experimental and control) with pre- and post-measurement, which is consistent with the requirements and problem of research and achievement of objectives.

Table (1). Shows the research design

Groups	Pretest	Independent variable	Posttest
Experimental group	Volleyball arbitration mechanism	Stepans model	Volleyball arbitration mechanism
Control group	Volleyball arbitration mechanism	The teaching mechanism followed by the teacher	Volleyball arbitration mechanism

Community and Research Sample: The research community included the third stage students in the Faculty of Physical Education and Sports Sciences - University of Karbala for the academic year (2018-2019) and the number (109) students divided into four divisions (A, B,C and D) and was chosen two divisions random method are (A, D) and excluded practicing students For the game and repeaters and teachers studying, where the number of excluded (15) students and thus became a sample of the research (40) students distributed to two groups, the sample of the exploratory experiment, which number (10) students and the selection of (20) students for the research sample, which constitutes a ratio (18.34)(20%) of the research community, which constitutes (18.34%) of the research community. The totals (55.02%) of the research sample.

Determine the Volleyball Arbitration Mechanism Test: For the purpose of determining the test of the arbitration mechanism of volleyball for students of the third stage in physical education and sports sciences-University of Kerbala, the researcher adopted the evaluation form of the refereed performance test of international volleyball law and presented to a group of experts and specialists in volleyball in the faculties of physical education and sports sciences, which depends on The virtual construction of arbitration performance in the evaluation process through the arbitration of a match between students and the evaluation of referees by experts by the form of arbitration performance evaluation.

Fields: Through the survey of sources and scientific references and personal interviews with a group of professors of volleyball in the faculties of physical education and sports sciences and presented to them a set of forms contained in a number of studies and in light of this was approved to choose a study (David, 2016) has been identified areas The arbitration mechanism is divided by (7) areas for each of (the first referee, the second referee).

Arbitration Mechanism Form: Based on the study, the researchers formulated the evaluation form of the arbitration mechanism in its preliminary form. The assessment is through direct observation by three evaluators.

Design of educational modules in the model of Stepans[3]: For the purpose of achieving the research objectives and the application of the independent variable mentioned above, the vocabulary of volleyball material for the third stage (the law of the game) was selected

and the choice of vocabulary from (hand signals for the first and second referee) and the steps of the Stepans model (6) and the integration of a set of applications of imaginary intelligence, including (Instructional brochures, flexes, educational films Within these steps to enhance the work and application of the model Stepans), the time of the educational program was divided by the model of Stepans) to teach international law in volleyball, which consists of (8) units of instruction and one educational unit per week, a group of sources were surveyed And scientific references father The previous studies, which dealt with the use and application of the model of Stepans according to specific steps mainly according to the six levels of cognitive field of Bloom)) was taken into account in the selection of units to be consistent with the objectives of the research and proportionate in its content with the characteristics of the sample members and take into account the excitement and suspense and to suit the possibilities The modules included a set of steps. The researcher believes that these steps can be implemented in practical lessons in general and in volleyball lessons in particular if they are modified and categorized. Several sources mentioned from Pan Applications Visual intelligence is (movies, flex, audio and video ... etc.) and are classified as follows:[4]

- **Commitment to Outcome:** The arbitration case is explained in theory by the teacher.
- **Presentation of ideas:** Presentation of a set of educational poster images for a set of arbitration cases pertaining to the vocabulary of the units of education and ask students to choose the correct arbitration case that has been theoretically explained and participation in the form of small cooperative groups and then the group as a whole.
- **Facing Ideas:** Here is a comparison between the correct answer and expectations of students regarding the arbitration situation using the educational book prepared by the researcher and included (a set of tests, including the image of the correct reference to the arbitration status, what does the following referencing refer to you and the next referee)? Educational units as a whole.
- **Representation of the concept:** Display the correct answer by watching videos (educational films) related to the arbitration case was discussed, for example (hand reference to the first referee where the ball is inside).
- **Expanding the concept:** Give additional examples and models (Power Point contains more pictures and educational films that refer to arbitration cases in the educational unit for a period not exceeding (1) minutes).
- **Going beyond the concept:** The application of the arbitral situation through the establishment of full matches and applied by students during the lecture and linked to arbitration in full.

Results

Presentation of the results of the pre- and post-test teams of the experimental group members (Stepans model) in the variables studied, analyzed and discussed:

Table (2). Shows the difference between the pre and posttests of the members of the experimental group in the arbitration mechanism in volleyball

Variable	Units	Pretest		Posttest		Diff.	(t) value	Sig	Statistical significance
		Mean	SD	Mean	SD	Means			
Arbitration mechanism	Degree	19.900	2.100	52.150	3.703	33.250	69.193	0.00	Sig.

Table (3). Showing the difference between the pre and posttests of the members of the control group in the arbitration mechanism

Variable	Units	Pretest		Posttest		Diff.	(t) value	Sig	Statistical significance
		Mean	SD	Mean	SD	Means			
Arbitration mechanism	Degree	20.750	1.712	30.600	2.479	9.850	8.226	0.00	Sig.

From table (3)There are a significant difference between the two means and it means that there is a significant effect of the mechanism used for teaching by the subject teacher in improving the arbitration mechanism of the third stage students in the Faculty of Physical Education and Sport Sciences/Karbala University. The control group provided the teacher with theoretical information, explanations and presentations related to international law in volleyball, which contributed to the improvement of the members of the control group in telemetry. All education and the emerging innovations are only models and educational formats to achieve the needs and desires of a part of learners and to solve the immediate problems that emerge from time to time.

Table (4). Showing the value of (t) calculated between the post-tests of the two groups (experimental and control)

Variable	Units	Experimental group		Control group		(t) value	Sig	Statistical significance
		Mean	SD	Mean	SD			
Arbitration mechanism	Degree	52.150	3.703	30.600	2.479	21.626	0.00	Sig.

Discussions

From Table (2 and 3)this theory through the development of students' concepts and presentation they have new concepts and this is confirmed that theory which is concerned with building the knowledge of the learner, as it is influenced by the social and cultural environment of the learner, so learning is viewed from this angle as: The learner has to establish a balance between his knowledge and his previous ideas and new knowledge and ideas, since the constructivist theory supports the construction of knowledge and uses all mental processes, the use of visual intelligence through the use of images and shapes and references of the rulers and tabulated in the form of fragmented images and sometimes link images with texts and phrases (right words, Wrong words) and leave the space for the student in the educational units to realize the correct and emphasizes it and eliminates the error and helps in the process of feedback, of intelligence in the use of educational means use purely according to specific data and this is confirmed by images are working on raising operations and mental capacity, where there is a relationship between memory operations and the use of images and illustrations, especially in the call and the identification process.[5]

Recent scientific studies have confirmed that the greater the impact on the senses of learning, the greater the success of the educational medium (image) in determining the objectives of the lesson. The importance of the use of images and drawings and the need to develop their reading skills among learners and the researcher sees a positive role for the teacher where his role differed from the traditional method followed through guidance and problem-solving and instant feedback as well as contributed to give the learner an opportunity and this is confirmed by the constructive theory However,[6]the role of the teacher differs from traditional education through its active role by focusing on creating a learning environment and assisting in accessing learning resources and confronting learners to solve their problems and tries to find solutions to those problems through research, exploration and social negotiation of solutions. Guidance and guidance and raise issues without interfering with their parts, but the learner to analyze that issue and identify its parts and data and then infer relationships and the installation of a knowledge structure stand-alone, through the review of educational units and theoretical framework The researcher found that the learner has a positive role in the management of his work in an orderly.[7]

From table (4) the results showed that there are statistically significant differences between the average scores of the experimental and control group to improve the mechanism of arbitration in volleyball and for the benefit of the experimental group. This means that the experimental group who studied the model (Stepans) according to the visual intelligence over the control

group who studied according to the method followed. (Stepans) According to the imaginary intelligence in the learning process improved the mechanism of arbitration volleyball, because of the interaction between students and material on the one hand and between students and their peers and the teacher on the other, through the use of modern techniques and teaching method serve the model (Poster educational, instructional booklet, screen visual presentation, videos and PowerPoint) and this is unlike the usual way, which focuses on the teacher only considers the educational process center.[8]

The modern teaching models put learners in a good learning environment by encouraging them to face problems and work towards a solution in several ways, most notably that it encourages learners to participate effectively with each other and provides them with immediate opportunities to address misconceptions and concepts that increase their motivation. To learn more and when applying a small part of the image intelligence classifications to the side of the model will increase the ability to solve the problems of the student in the mechanism of arbitration volleyball with ease in addition to processing information correctly,[9] fast and accurate through feedback By the peer or teacher or modern means and techniques (educational poster, educational brochure, videos and PowerPoint) to reach the best performance in the arbitration mechanism for the learner. In the view of that modern means and techniques can overcome the problem of individual differences by resorting to the use of multimedia because these means of multi-quality stimuli and display these stimuli in different ways and method allow the learner the opportunity to choose the appropriate ones, which corresponds to his ability, desires and tendencies.[10]

Conclusions

1. There is a need when the third stage learners to use advanced teaching strategies.
2. The use of the model (Stepans) according to the visual intelligence further improve the mechanism of arbitration among learners.
3. For the model (Stepans) according to the visual intelligence the ability to make learners more confident themselves through their active participation, which generates positive concepts among learners.
4. Compatibility (Stepans) according to the visual intelligence with the modern means and techniques that make the learner the center of the educational process and the center around which all the events.
5. The model (Stepans) in accordance with the visual intelligence and modern means and techniques that have been employed in the teaching of curricula, providing effort to the teacher and further improved the mechanism of arbitration among students of the third stage.

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Effect of Exercises by Different Media (Water, Sand and Tartan) in the Development of Some Physical Abilities and the Skill of Spike Volleyball for Students

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Abstract

Volleyball is one of the team games and one of the most games that achieve opportunities for practice, competition and recreation, therefore, the success of the volleyball team depends on the ability and ability of its players to perform basic skills of all kinds and with the least amount of errors possible through the performance of skills accurately and quickly and smoothly and at an equal level.

The research aimed to identify the impact of exercises with different floors (Tartan-water-sand) in the development of the most important physical abilities and the skill of crushing the students and the researchers used the experimental approach in the method of equal groups to suit the nature of the research problem.

After conducting the tests related to the research, the data were collected, the statistics were conducted and the results were drawn through which the most important conclusions were reached.

Keywords: *Exercises, water, sand and tartan.*

Introduction

Volleyball is one of the team games and one of the most games that achieve opportunities for practice, competition and recreation, therefore, the success of the volleyball team depends on the ability and ability of its players to perform basic skills of all kinds and with the least amount of errors possible through the performance of skills accurately and quickly and smoothly and at an equal level. In order to be able to achieve these skills to a level of ideal performance and mastery must be found ways and method of training and different atmospheres and floors, which must be the diversity of training places in order to take the volleyball to the required level so that it is easy to learn accurately and correctly.

Through the follow-up the two researchers noted that training on basic skills, especially the skill of overwhelming multiplication in one environment is not reflected positively on physical abilities and most basic skills, including overwhelming multiplication and also that the stability of the environment leads to boredom by the learner or trainee, so the researchers wanted to answer the following question.[1]

Does the different environments have the effect of developing some physical abilities and the skill of spike? Therefore, the researchers wanted to find a new way of training using a different environment based on the types of floors, including tartan, water and sand for the purpose of answering this question. Therefore, consideration should be given to the importance of diversity in training settings, in order to gain the required fitness, in addition to the basic skills of the game.

Research Aims:

1. Preparation of exercises with different floors (Tartan - water and sand) in the development of the most important physical abilities of students.
2. Identify the impact of exercises with different floors (Tartan - water and sand) in the development of the most important physical abilities and the skill of overwhelming beaten students.

Hypothesis: Exercises with different resistors a positive impact on the most important physical abilities and skill of spike volleyball for students.

Research Methodology

The researchers used the experimental method in the method of equivalent groups to suit the nature of the research problem.

Community and Research Sample: The research community consisted of the team of the College of Education for Girls/Department of Physical Education and Sports Science/University of Kufa for the academic year (2018-2019) and the number of 30 students. The students were divided into three equal groups randomly and by lot, with ten students per group.

Exercise vocabulary using different resistors:

- The total number of units (24) training units per group by 3 units per week.
- Time of application of exercises using different resistors (50) minutes and each student from the group of water, sand and control exercises the same.

The researcher supervised the implementation of exercises using different resistors on (18/11/2018 until 15/1/2019).

- The sample consisted of three groups trained the first group (control) in the internal hall Department of Physical Education and Sports Science/College of Education for Girls/University of Kufa (Tartan land). The second group was trained in water in the first swimming pools at the level of the knee (52 cm) by (8 units) and in the swimming pool Millennium Center with pelvic level (90 cm) (8 units) and in the chest level (1.30 m). The third group trained in the sand.

Post Testing: After the completion of the implementation of all the units conducted after the tests of the sample (the first experimental and second and control), on (16-17/1/2019) The researcher has followed the method that I used in the pretest tests under the same conditions and under the same spatial and temporal conditions for almost two days the first day physical tests The second day motor and skill tests.

Results

Table (1). Shows the mean values, standard deviation, calculated (t) value and sig value for the pre- and post-tests of the three groups

Variables		Units	Pretest		Posttest		(t) value	Sig.	Type of significance
			Mean	SD	Mean	SD			
First experimental group	Sergeant	Grade	24.10	2.68	29.80	1.98	10.20	0.00	Moral
	Medical ball		224.50	20.47	262.40	21.94	10.11	0.00	Moral
	Reaction speed		1.20	1.07	1.11	0.85	0.85	0.00	Moral
Second experimental group	Sergeant		23.30	1.82	27.90	1.59	13.53	0.00	Moral
	Medical ball		224.90	20.57	238.70	20.02	6.61	0.00	Moral
	Reaction speed		1.18	0.92	1.03	0.73	6.51	0.00	Moral
Control group	Sergeant		23.90	2.330	25.70	2.11	4.32	0.02	Moral
	Medical ball		223.50	21.08	224.00	21.32	1.93	8.52	Moral
	Reaction speed		1.19	1.12	1.16	0.99	2.64	0.27	Moral

Table (2). Shows the mean values, standard deviation, calculated (t) value and sig value for the pre- and post-test tests of the three research groups

Variables		Units	Pretest		Posttest		(t) value	Sig.	Type of significance
			Mean	SD	Mean	SD			
First experimental group	Technical performance of the skill of spike	Grade	3.30	6.74	7.20	7.88	10.30	0.00	Moral
	Accurate spike		6.30	6.74	14.20	9.18	18.23	0.00	Moral
Second experimental group	Technical performance of the skill of spike		3.10	8.75	6.40	6.99	9.00	0.00	Moral
	Accurate spike		6.20	7.88	12.70	9.48	16.19	0.00	Moral
Control group	Technical performance of the skill of spike		3.20	7.88	5.50	5.27	7.66	0.00	Moral
	Accurate spike		6.30	6.74	10.30	9.48	10.14	0.00	Moral

Table (3). The variance analysis of the three research groups shows the physical abilities under consideration for the post test

Variables	Source of variation	Sum of squares	df	Average squares	F	Sig.	Type of significance
Sergeant Medical ball	Between groups	84.20	2	42.10	11.52	0.00	Moral
	Within groups	98.60	27	3.65			
Reaction speed Sergeant	Between groups	07507.	2	3.75	8.42	0.00	Moral
	Within groups	12036.50	27	445.79			
Medical ball	Between groups	0.90	2	0.45	2.307	0.00	Moral
	Within groups	5.27	27	0.19			

Table (4). Shows the differences between the mean averages of the three research groups in the technical performance and accuracy of the crushing skill compared to the value of the least significant difference (L.S.D)

Variables	Groups	The difference between the means	Difference	L.S.D value	Sig.	Type of significance
Technical performance of the skill of spike	Group1-2	7,20-6.40	0.8	1.22	0.14	For the benefit of the first experimental group
	Group1-Cont.	7.20-5.50	1.70		0.00	
	Group2-Cont.	6.40-5.50	0.90		0.06	
	Group1-Cont.	6.90-5.40	1.50		0.00	
	Group2-Cont.	6.10-5.40	0.70		0.08	
Accurate spike	Group1-2	14.20-12.70	1.50	2.49	0.01	For the benefit of the first experimental group
	Group1-Cont.	14.20-10.30	3.90		0.00	
	Group2-Cont.	12.70-10.300	2.40		0.00	
	Group1-Cont.	11.30-8.700	2.60		0.00	
	Group2-Cont.	10.10-8.700	1.40		0.07	

Table (5). The variance analysis of the three research groups shows the technical performance and accuracy of the overwhelming multiplication skill of the post-test

Variables	Sources of variation	Sum of squares	df	Average squares	F	Sig.
Technical performance of the skill of spike	Between groups	14.46	2	7.23	15.62	0.00
	Within groups	12.50	27	0.46		
Accurate spike	Between groups	77.40	2	38.70	43.92	2
	Within groups	23.80	27	0.88		

Table (6). It shows the differences between the mean of the three research groups in the most important physical abilities tests compared to the value of the least significant difference (L.S.D)

Variables	Groups	The difference between the means	Difference	L.S.D value	Sig.	Type of significance
Sergeant	Group1-2	29.800-27.900	1.900	1.6	0.35	For the benefit of the first experimental group
	Group1-Cont.	29.800-25.700	4.100		0.00	
	Group2-Cont.	27.900-25.700	2.200		0.16	
Medical ball	Group1-2	262.40-238.70	23.700	17.7	0.18	For the benefit of the first experimental group
	Group1-Cont.	262.40-224.0	38.400		0.00	
	Group2-Cont.	238.70-224.0	14.700		1.31	
Reaction speed	Group1-2	1.119-1.036	0.083	1.17	0.14	For the benefit of the second experimental group
	Group1-Cont.	1.119-1.169	0.05		2.08	
	Group2-Cont.	1.036-1.169	0.133		0.02	

Discussions

Discuss the results of physical abilities in the post-tests of the three research groups: Through the tables that show the differences between the mean to indicate the value of the least significant difference for the pretest and posttest tests of the three groups we note that the differences were in favor of the first experimental group and this shows that the exercises applied and prepared by the researcher had a positive effect in improving their level and development.In the physical abilities (sergeant and medical ball) that I was using water circles, the researcher in this field resorted to the preparation of various exercises and aids such as small barriers, ladders, circles, cones and rug in addition to water basins to create suitable training conditions for the development of physical abilities of the skill and this has been confirmed in The auxiliary tools contribute to the development of physical abilities of the specialized activity in addition to the use of a set of aids to a certain stage that pushes the players to perform more repetitions by creating the desire to be something new applied in the disadvantages of the process are different from the conventional method.[2]

Either the bases of the development of the first experimental group on the second experimental group and the control with regard to the explosive capacity of the two men, the evolution of jumping in the players of the first experimental group, which was performing physical exercises especially that the stage of training requires the players to perform specialized physical training within effective training units to create a state of upgrading At the level of special physical abilities to the impact of stomach exercises, especially physical exercises where the researcher relied on the optimal use of different means of swimming pools, people and peace with the use of these exercises similar to the performance in the development the results of telemetric measurements are proportional to the development of physical ability.[3] One of the important things that the researcher was keen to apply is to perform these exercises with the same motor range of skill in addition to performing these exercises with the same skill required in the game and

using body weight was the focus in the performance of these exercises on the speed in power generation,[4] the performance of exercises at high speed and explosive as well as the implementation exercise with maximum effort in accordance with the correct technique as well as taking adequate rest between groups in order to perform the athlete in each exercise in a state of appropriate preparation.[5]

In addition, the researcher was keen to take into account the wavy parts of the training unit and also take into account the sequence in the exercises. This applied to the explosive capacity of the arms where the optimal use of the explosive capacity exercises of the arms in terms of the gradient in the intensity of these exercises and the rise in the number of repetitions in a scientific and codified and were performing exercises in a manner that performs the correct skill to throw the ball in the game of volleyball and this was confirmed that the development of motor performance is one of the physical requirements in learning the motor path. In addition, the researchers pointed out that the research sample has never been exposed to training modules for the development of explosive power using different floors in addition to the use of Gradual load resistors for the purpose of developing strength and speed with the use of various exercises and multiple exercises, where the use of large resistance is an appropriate means to develop components (explosive power), while achieved when using muscle resistance that is less than the load of the race to develop components of speed (explosive power).[6]

Discuss the results of technical performance in the post tests of the three research groups: Through the tables that show the differences in the arithmetic media to indicate the value of the least significant difference for the technical performance tests and the performance accuracy of the post-test of the three groups we note that the differences were in favor of the first experimental group that applied the training unit using the water medium as this type of training helped players to get rid of patterns Conventional training and performance in volleyball practice and efforts to produce diverse responses thus diversify the training community and the use of new tools and work to find resistors and suitable environments.[7]

The researcher also attributes the reason for this development to the impact of training in different environments in addition to exercises prepared by the researcher and the use of auxiliary tools during educational units, including small barriers, circles and terraces, which can be used in many exercises and in all directions in addition to swimming pools, which contributed effectively to the development of physical skills researched If the exercise is one of the means that contribute effectively to the development of public and private abilities and basic movements and skill in order to reach the player to the highest level possible in the skill performance of the game or sports activity Households.[8]

Through this presentation, we show the positive and effective impact in learning the technical performance of the basic skills in volleyball, which need accuracy and concentration in its performance and high kinetic compatibility, so the practice of female volleyball players with different resistances a positive and effective impact by focusing attention and repetition again and again during Performance and perception of the positions of technical performance and accuracy of performance with training, whether physical or skillful This gives a guarantee to determine the goals and determine the accuracy of movement and reduce the proportion of errors as the sense of skill mentally and physically contributes to the development of performance level if it is within a training program Based on the scientific standards governing the training processes. [9]

Then came training in the sand second and a difference in the results and the control group came third in learning technical performance and accuracy, as well as the impact of sandy surfaces. Sand training and training means have an effective effect to increase the number of types of exercises available to the athlete can perform exercises on a daily basis and also perform exercises characterized by high strength The time limit for the training unit. Sand is the best natural environment for resistance training, which works to raise and improve the player's physical and functional performance.[10]

Conclusions

Through the results presented, the researcher reached the following conclusions:

1. Exercises have had a clear impact on the three training groups.
2. There are significant differences between the three training groups in physical abilities and was in favor of the first experimental (explosive power kinetic

speed), which uses water media has a more positive impact than training on sand and training on Tartan.

3. Training in the sand has a positive impact on physical abilities (reaction speed) where they were in favor of the second training group that used sand.
4. There were significant differences between the three training groups in the skill performance and was in favor of the first experimental group that trained in the media.

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Effect of Rotation with Phosphate and Lactic Training in Adenosine Triphosphate Enzyme and the Strength of Speed and Achievement of 800 Meters

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Abstract

Through the practice of the researcher to the effectiveness of the arena and the field and through personal interviews with the players and coaches as well as access to Arab and foreign sources shows the existence of weakness in the quality of lactic loading in the players of 800 m for young people, which leads to a decline in the level of performance as well as the lack of dependence of coaches on proper planning using Training curricula where training on the phosphine system and lactic individually both separately and the lack of use of phosphine training and reliance widely on the prevailing energy system, which is lactic from here manifested the problem of research and took the researcher rotation dates phosphate and lactic and for the same training unit where the research aimed to:

- Preparation of alternating exercises (phosphate and lactic) in the enzyme triphosphate adenosine and lactic acid and achievement of the hostility 800 meter youth.
- Recognize the effect of rotation exercise (phosphate and lactic) in the enzyme triphosphate adenosine to the hostility 800 meter youth.

The researcher used the training methodology by designing the two equal groups (control - experimental) with pre- and post-measurement. The experimental method is one of the most accurate types of other approaches and the results can be adopted, blinded and applied, thus it is more suitable for the research objectives and hypotheses.

The researchers identified the research community of Karbala governors for the effectiveness of (800 meters) and the number (6 clubs) who officially participated in the championships held by the Central Federation of Athletics and the number (10 runners) The researcher has chosen a sample by the method of comprehensive inventory of (10 runners), the sample is The same sample was used to represent the community and it used the statistical method (arithmetic mean, standard and mean deviation, torsion coefficient, variation coefficient, Chi square, correlation coefficient of rank (Pearson), t test for analog samples and t test for independent samples, The most important conclusions encompassing the following:

- Exercises characterized by alternating between phosphate and lactic exercises positively affect the enzyme triphosphate adenosine and strength characteristic speed.
- Characteristic strength exercises with speed in improving the technical stages of the competition (800 m) by improving the application of the amounts of force on the ground and rebound at high speed to be performance at high speeds.

Keywords: *Phosphate, lactic adenosine triphosphate and enzyme.*

Introduction

Sport is no longer a hobby practiced by individuals to spend the vacuum, but became a science in itself contains many other sciences, whether medical, chemical, psychological or kinetic. The interaction of knowledge in these sciences and their interdependence between them has made qualitative progress in all fields of sports, whether indexes or improve the physical

and tactical returns of sports teams in both individual and group events. Among the important sciences that contributed to the improvement of achievements is the science of physiology of sports training. Biochemistry, which is concerned with studying the chemical changes that occur during the production of energy required for muscular work as well as the various biochemical processes that occur in muscle cells as a result of metabolism.[1]

As well as known, training leads to many changes whether physical changes from the development of physical characteristics of the type of physical activity or internal changes, which include functional or chemical changes to different body systems and depending on the type of training and chemical changes that occur within the muscle cell to release the necessary energy to work The progression of the individual's athletic level depends on the positive of these chemical changes in order to achieve the adaptation of the organs and organs in order to face the fatigue resulting from training, which in turn leads to slow chemical processes, including enzymes, hormones, etc. There are changes in the blood are enzymatic changes, including the change in the enzyme triphosphate adenosine and enter these variables within the physiological and biochemical adaptations that occur as a result of the impact of sports competitions with different loads.[2]

Strength is one of the most important elements of physical preparation and physical attributes important in our daily life in general and sports training in particular, as it is the most influential attribute in all sports events, which must be possessed by the athlete to reach the highest levels and achieve the best results and strength types The maximum force is either (the characteristic force of speed, explosive power, carrying force. Since the effectiveness of 800 m is a game in which the work of the anaerobic system (lactic) at a high rate stops the player and get tired early. Hence the importance of research in the preparation of anaerobic effort (phosphine - lactic) to combat fatigue and activate the enzyme triphosphate adenosine and thus maintain Speed performance as long as possible during training competition.

Research Methodology

The researchers used the experimental approach to design the two pre- and post-scale equivalent groups (control and experimental) that are most suitable for the research objectives and hypothesis and to experiment with the experimental design of the research.

Community and Research Sample: The research community consisted of the hostile clubs of Karbala governorate for the effectiveness of (800 m) and the number of (6 clubs) who officially participated in the championships held by the Central Union of Athletics (10 runners). The researcher then conducted measurements of the extraneous variables affecting the research variables competition (800 m) namely (length, mass and training age) in order to conduct the homogeneity process in these variables.

Determine the characteristic force test at speed:

Test configuration:

First: Test name: leg strength test.[3]

The purpose of the test: measurement of the characteristic force at the legs

Required Equipment: Playground 400 m, 25 m set on a straight line, 2 cones, stopwatch, assistant.

How to take the test: A distance of 25 m is determined on a straight line and marked on the beginning and end of the line (cones). Complete the specified distance, the time taken to jump between the cones is recorded, then the test is repeated with the other legs in the same way.

Pretests: On Monday 24/12/2018 at 4:00 pm, the researcher applied the pretests to the members of the researches in the athletics training center in Karbala governorate. Then the completion of the test (800 meter) for both members of the control and experimental groups and the process of blood withdrawal immediately after the completion of the competition (800 meter) to measure the enzyme ATPase and the same procedures in the stage before the effort, but it will be numbered blood pipes (tubes) from the letters A1 to A10 A refers to the enzyme M after conducting pretests.

Equivalence Sample Search: The researchers conducted the process of equivalence between the two groups of the variables of the research under study using the statistical law (t) for independent samples of equal number, as shown in table (1).

Table (1). Shows the equivalence of the control and experimental groups with measurements and variables under study

Variables	Units	Groups	Mean	SD	(t) value	Level of Sig.	Statistical significance
Power characteristic of speed (right)	Sec.	Control	5.890	0.203	0.173	0.867	Non sig.
		Experimental	5.910	0.160			
Power characteristic of speed (left)	Sec.	Control	5.860	0.096	0.532	0.609	Non sig.
		Experimental	5.810	0.187			
Enzyme before effort	U\L	Control	14.296	0.635	0.696	0.790	Non sig.
		Experimental	14.200	0.453			
Enzyme after effort	U\L	Control	16.900	0.941	0.699	0.773	Non sig.
		Experimental	16.880	0.856			
Achievement	Sec.	Control	124.860	1.038	0.880	0.317	Non sig.
		Experimental	125.616	1.193			

Main Experience: The researchers worked on planning exercises to be included within the training program to develop the research variables (under study) for the experimental group, relying on the analysis and review of a large number of specialized scientific sources and references, from His study has been characterized by the following exercises:

1. Exercises were carried out in the special preparation phase.
2. Exercises included in the training program started on Saturday, 5/1/2019.
3. The implementation of the exercises included in the training program lasted for 12 weeks.
4. The number of training units (3 training units) per week.
5. The total number of training units (36 training units).
6. Days of training modules: Saturday, Monday, Wednesday.
7. The time of training units differed from the other according to the objectives and requirements of each, ranging between (60 d - 100 d).
8. The intensity used in the implementation of the exercise ranged between (80% - 100%) of the maximum ability of the athlete in the light of pretests applied to the research sample.
9. As for the training method, the researcher used the method of high intensity interval training (80% - 90%) and repetitive training (90% - 100%).
10. The duration of the intermodal rest between the repetitions (2 d - 3 d) and exercises (5 d - 10 d) in maximum speed exercises, but in the exercises of the lactic system, the researcher used rest by pulse to return the pulse to 120 n/d
11. The implementation of the exercises prepared in the training program ended on Wednesday 27/3/2019.

Posttests: After the completion of the implementation of the vocabulary of the training program the researchers worked to re-apply the tests and measurements conducted in the pre and the same time, place and steps for the tests and measurements of the pre variables (under study) as much as possible.

Results

Table (2). Shows the mean values, the standard deviation, the calculated (t) value and its statistical significance for the posttests of the physiological and physical research variables and the achievement of the control and experimental groups

Variables	Units	Groups	Mean	SD	(t) value	Level of Sig.	Statistical significance
Power characteristic of speed (right)	Sec.	Control	5.530	0.222	3.881	0.005	Sig.
		Experimental	5.070	0.144			
Power characteristic of speed (left)	Sec.	Control	5.570	0.168	3.097	0.015	Sig.
		Experimental	5.230	0.179			
Enzyme after effort	U\L	Control	19.770	0.626	5.099	0.001	Sig.
		Experimental	21.860	0.669			
Achievement	Sec.	Control	123.810	0.617	3.034	0.016	Sig.
		Experimental	122.592	0.652			

Discussion

Through the analysis of the results obtained by the researcher and the presence of significant differences between the two tests after the two groups of research results for the benefit of the experimental group.

The researchers attributes the reason for this preference to the use of successive exercises between the two phosphate and then lactic systems in the same training unit, as the phosphate exercises with extreme stress, which work depends on the burden on the nervous system, the amount of improvement provoked by the central nervous system of the motor units in the muscles and organs that Working with extreme intensity leads to improving the work of sensory receptors (muscle spinners) in the muscles by transferring sensory nerve excitation through the sensory nerve to the brain and increased its efficiency. This in turn led to the improvement of the brain's work in sending the nerve signals to the motor units involved in the muscular work, which is proportional to the force of excitation. This high excitement of the central nervous system followed by tactical exercises contributed to the ability of the runners to produce high performance.[4]

These exercises, which included exercises with extreme stress and followed by exercises with extreme stress, require rapid release of energy to perform work better and higher efficiency and that the enzyme (ATPase) is an important and direct factors by accelerating the release of energy in the body through the reconstruction (ATP), as the effective Its performance is characterized by fast frequency movements and requires the production of energy in the phosphate and lactic system that dominates the competition. The nature of this method of successive training in the phosphate and lactic systems contributed to improving the activity or effectiveness of the enzyme ATPase better than the control group. Usually, ATP is built to regenerate energy.[5] Pointed out is one of the most important enzymes responsible for releasing energy during physical exertion, where ATP stocks are replenished by an enzyme (ATPase) that acts on a combination of ADP. (ADP) with the phosphate ion to reproduce energy. The activity of the enzyme (ATPase) is activated (acetylcholine), which helps to activate or excite the muscle containing the substance (ATP) Stored in the muscle myosin head located within muscle fibers and also helps to activate or release calcium ions (Ca++) to curb activity Alterbonin and activate the enzyme (ATPase), which helps to release energy (ATP).[6]

Also, this method of training helped the experimental research sample to tolerate high concentrations of lactic acid since the performance in lactic exercises following phosphate exercises had a high performance speed due to the excitement of the nervous system caused by phosphate exercises and this certainly over time will generate adaptations Runners are better able to tolerate higher concentrations of this acid accumulated in the muscles making the experimental group able to perform faster while maintaining a high speed rate for as long as possible.[7] This indicates that the ability to tolerate

lactic acid has uh Especially in the runners' superiority in racing, the adaptation of the runner to withstand the increase of lactic acid in this type of training makes the continuity of high performance during competition even more despite the increase in muscle accumulation, within this we see that the high concentration of lactic acid in the blood of group members The experiment was the result of the training pattern that characterizes the motor performance or the high motor frequency of the exercise used by them. This led to the development of the experimental group. Indicator The energy from anaerobic fracture of glucose is high in terms of increasing the concentration of lactic acid in the blood, which makes the athlete able to perform at a faster rate and for a longer period.[8]

As for the variable force characteristic speed, the preference of the experimental group over the control. The researcher believes that the reason is the same as in the variables enzyme ATPase and lactic acid and this reason enabled the runners to shed a large force and high speed for as long as possible and this enables them to perform high speeds and thus reduce the time of performance,[9] whether in training or competition, whenever the power of the hostility In each step of running and less time touching each foot flattened and rebound them increased speed of hostility and this is one of the most important training requirements and The hostile arena and the field need mainly to muscle strength and speed and agility and muscle elongation with special distinction of the ability and distinctive power for speed, runners must train hard and with large quantities of muscle strength and as short as possible and that the activities of the arena and the field are activities depend in nature on the ability and strength and in the activities of the enemy and jogging completes the time of each ground flattened by a procedure of the second, so it requires the athlete rapid response And strong and this is achieved in the experimental group exercises.[10]

Conclusions

1. Exercises characterized by alternation between phosphate and lactic exercises positively affect adenosine triphosphate enzyme and strength characteristic at speed.
2. The method of training alternating between phosphate and lactic exercises is better in the development of research variables than the method prepared by the trainers.
3. Contribute strength exercises characteristic speed in improving the technical stages of the competition (800 meter) by improving the application of the amounts of force on the ground and rebound at high speed to be performance at high speeds.
4. The exercises prepared by the researcher contributed significantly to improve the level of achievement of the competition (800 meter) for the young members of the experimental group and this proved by the results of measurement and comparison between them.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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The Effect of Biometrics Training in Developing the Explosive Ability of Legs and Scoringaccuracy of Jumping in Basketball for Youth

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Abstract

The problem of research is that many of the trainers want to diversify in the exercise to develop the physical abilities, especially the explosive ability of legs and their dependence on the heaviest and without the means and other training method, which reflected negatively on many of the important offensive skills in basketball, including the skill of scoring from jumping in basketball so he The researchers aim to develop the explosive ability of the muscles of legs and the accuracy of the scoring of the jumping. The aim of the research is to prepare the retraining exercises to develop the explosive ability and accuracy of the scoring in the youth basketball in the age of 16-18 and to identify the effect of the retaliatory force exercises to develop the explosive capability and accuracy of scoring in the basketball for youth ages (16-18) years. The experimental approach was used in the style of equal groups of pre and post testing to suit the nature of the problem.

The research community consisted of (20) young players aged (16-18) years belonging to Imam Al-Motaqin Sports Club for the 2017-2018 training season. The research sample was selected in a comprehensive inventory method. The research sample consisted of the research community as a whole. Each team has 8 players and 4 players for the exploratory experience. The time plan included 24 training units per group. (8) Weeks, with three training units per week (Sunday, Tuesday, Thursday), training time (90) minutes with a total of (2160) training minutes. The following issues were taken into consideration when implementing the training curriculum: Training was organized for the three groups: (days - time - playground). Warm up: It was unified for both groups. The main part: The experimental group applies the exercises prepared by the researchers. The closing part (calm): It was unified for the two groups.

Keywords: *Biometrics, explosive ability and scoring accuracy.*

Introduction

The sports field has developed rapidly in its various tracks as it is of great importance in the life of the community as one of the important basic pillars which gives the individual the freedom to choose the activities that reflect the abilities and potential. The basketball game is one of the exciting collective games that have witnessed progress in technical terms and the public as a result of the increasing demand for its practice[1]. The progress witnessed by the game is a natural and inevitable result of scientific research and sound planning, which was based on objective scientific foundations and the correct method of training in order to reach high levels. The technique of retraining training is an important training tool that has a positive effect on the development of physical abilities. It has also been developed to raise the functional and skill level of the players due to the specificity of this technique in training. This is due to the mechanism of muscular action during the strength training. It improves muscle elasticity and increases muscle strength. Resulting from decentralized and central muscular contraction[2-4].

It is known that physical abilities, including muscle strength, have an important role in raising the level of physical fitness of basketball players, especially the youth, through which the player can master all technical skills in the best manner with the correct application of the instructor's instructions and plans on the playground and the explosive capacity of the most important physical abilities of football players The basket being "the special muscular strength of the muscles that operate primarily in the sport of the individual and qualify the muscles mainly in the motor performance of the sport practice .

Jumping is one of the most common types of scoring used by a basketball player to get rid of the defender by jumping and thus scoring. This skill is based mainly on the vertical jump strength of the target player and his concentration and his ability to avoid the defender who is jumping with him[3]. The strength and height of the jump of the target depends on the length of the defender and the height of his jump and the extent of his reaction towards the movement of the target and after the goal of the basket In light of the advanced, the importance of research lies in the preparation of physical exercises in the form of strength and a reaction to the development of the explosive capacity of the muscles of men and accuracy (B) of the jump for young basketball players.

Research Aims:

1. Preparation of retaliatory force exercises to develop the explosive capability and accuracy of scoring in the basketball for young people (16-18 years).
2. To identify the impact of strength training exercises to develop the explosive capability and precision scoring in the basketball for youth ages (16-18) years.

Research methodology and field procedures:

Research Methodology: The experimental approach was used in the style of equal groups of pre and post testing to suit the nature of the problem.

Research community and its samples: The research community consisted of (20) young players aged (16-18) years belonging to Imam Al-Motaqin Sports Club for the 2017-2018 training season. The research sample was selected in a comprehensive inventory method. The research sample consisted of the research community as a whole. Each team has (8) players and (4) players for the exploratory experience.

Field Research Procedures: To achieve the main objective that researchers want to reach, follow certain basic steps, as well as some detailed steps. These include:

1. **Determining the tests that measure the search variables:** The two researchers conducted a survey of the available sources and scientific studies in order to determine the test of the variables of the research (explosive ability, accuracy of the scoring of the jump in basketball), resulted in the nomination of the long jump test of stability to measure the explosive capacity. And then a semi-circular move to the middle and right of the standard to measure the precision of the jump in the basketball. The tests were presented to a group of experts in the field of sports training basketball, in order to determine the validity of these tests for the attribute to be measured and agreed upon by 100%.
2. **General Test Description:**

First: The long jump test of stability:

- Purpose of the test:

Measure the explosive force of the material muscles of the trunk and legs.

- **Tools:** A suitable place for the spring, taking into consideration that it is flat, free of obstacles and not smooth and on dirt if possible, determined by two parallel and perpendicular lines on the jump line, a measuring tape and chalk cutters for marking.
- **Performance Description:** The laboratory stands directly behind the line of the jump, so that the foot strap touches the starting line from the outside and at an appropriate distance between the legs. The arms are raised high and the laboratory starts with the arms moving forward and down with the knees bent half and the trunk tilting slightly forward and extending the knees to move the weight of the body with explosive force. Arms to the maximum of the back of the weighted and push the ground with feet firmly in the attempt to jump forward distance are raised feet together as they are landing on them together and otherwise the attempt is unsuccessful.
- **Registration:** The laboratory is given two attempts and the best attempt is recorded with a measuring tape. The distance to be fixed is that the strip is perpendicular to the jump line and with high alignment from the inside edge of the jump line to the inner edge of the nearest hopper body.

Second: Test accuracy in basketball:

Jumping from the front left of the free throw line then moving half-circle to the center and right (2)

- Purpose of the test: Measure the accuracy of the jump scoring.

Tools:

- Basketball court, tape measure, basketball number (2) legal, goal basketball, chalk

Measures:

- Draw three points in the form of small circles (15 cm) as markers for the three areas where the test is performed and as follows
- The first mark left of the end of the free throw line and the distance (30 cm).
- The second mark the middle of the free throw line and the distance of (90 cm) towards the line of postscoring three-point throw.
- Third mark right end of free throw line and distance (30 cm).

Performance Description:

- The player takes the position of standing in the specified place outside the free throw area and on the left (the first mark) and with the ball.
- The player to jump with one hand and towards the basket directly without touching the ball to the target plate.
- The player (15) throw performed by three groups, where each set five throws.
- The first set is done from the mark on the left of the free throw line and at 30 cm.
- The second set is performed from the mark in the middle of the free throw line and at 90 cm towards the long distance line (three point throw).
- The third group is performed from the mark on the right of the free throw line and at 30 cm.
- The player leaves the jumping position after each set and moves half-circle to the center and right.
- Before starting the second set allows another player to lead his groups and so on alternately for both players and the rest of the players.
- Each laboratory has only one training pitch before performance.

Test Instructions:

- The player took the right position (the place on the left and with the ball).
- The player has the right to perform (15) throw by three groups and each set (5) consecutive throws.
- Each player has only one attempt.
- The number recorded by the player shall be announced on the next player to ensure the factor of competition.

Test Performance: Registered: Call the names first and record the results of throws second.

Arbitrator: Stands the side of the player not to give the ball a note and correct the performance and count.

Colleagues: To withdraw the ball after the performance of the scoring from behind the middle of the free throw by the player and then give it to the referee who gives it to the player for the purpose of the second strike and so on.

Calculation of Grades:

- The player is credited with two steps for each successful shot (involving basketball).
- Calculate and score one score for each shot in which the ball touches the ring and enter the basket
- Do not count degrees when the ball touches the plate and enter the basket.
- The player's score equals the sum of the points he gets in the 15 throws.
- The maximum degree of test (30) degree.

Pretests (Equivalence): The researchers conducted the pretests on 7/5/2017 at 6:00 pm in the basketball court at Imam Al-Motaqin Club where the pre measurement was done by testing the jump from the stability and testing the accuracy of the scoring in the basketball.

Table (1): The equivalence between the research sample and the investigated variables

Variables	Units	Experimental (pretest)		Control (pretest)		The value of Mann Whitney		Type of significance
		Median	SD	Median	SD	Calculated	Level of significance	
Jump out of constancy	Cm	1.76	1.21	1.77	1.32	56.7	0.177	Non sig.
Accuracy of scoring of jumping	Degree	16.09	4.58	17.11	2.43	66.88	0.089	Non sig.

The sample size (16) and the level of significance (0.05)

General framework for the implementation of austerity exercises: The time plan included 24 training units per group. (8) Weeks, three training units per week (Sunday, Tuesday, Thursday), training time (90) minutes. The following issues were taken into consideration when implementing the training curriculum:

- Training date: was unified for the three groups: (days - time - stadium).
- Warm-up: was united for both groups.
- The main part: The experimental group applies the exercises prepared by the researchers see Annex (2), but the officer continues training the trainer.
- The closing part (calm): It was unified for the two groups.
- The intensity of the exercises are between (75-90).
- Training method used (high intensity training - repetitive training).

Posttests: The tests were carried out on Monday, 10/8/2017 under the same conditions as the pretests, where the results were proved and treated statistically.

Results

Table (2): Shows the values of the groups for the pre-trial and post-experimental tests of the experimental group and the values of the calculated Wilcoxon test and the significance level of the tests being investigated

Variables	Units	Pretest		Posttest		Wilcoxon value	Sig. level	Type of significance
		Median	SD	Median	SD			
Explosive power	Cm	1.76	1.21	1.88	0.99	0	0.001	Sig.
Accuracy scoring	Degree	16.09	2.58	20.76	2.76	0	0.000	Sig.

Sample size (8) and level of significance 0.05

Table (3): Shows the values of the groups for the pre-test and post-test tests of the control group, the measured values of the Wilcoxon test and the significance level of the tests being investigated

Variables	Units	Pretest		Posttest		Wilcoxon value	Sig. level	Type of significance
		Median	SD	Median	SD			
Explosive power	Cm	1.77	1.65	1.81	0.87	0	0.003	Sig.
Accuracy scoring	Degree	17.11	2.43	18.99	3.51	0	0.002	Sig.

Sample size (8) and level of significance 0.05

Table (4): Showing the values of the groups for the post tests of the experimental and control groups, the calculated Mann Watteni values and the significance level of the tests being investigated

Variables	Units	Experimental (posttest)		Control (posttest)		Mann Wattenivalue	Sig. level	Type of significance
		Median	SD	Median	SD			
Explosive power	Cm	1.88	0.99	1.81	0.87	14.883	0.001	Sig.
Accuracy scoring	Degree	20.76	2.76	18.99	3.51	22.33	0.005	Sig.

The sample size (16) and the level of significance (0.05)

Discuss the results of the tests of the variables investigated for the two groups: In the study of the results of the table (2, 3, 4), there was an improvement in test results (long jump of stability, accuracy test of jumping in basketball) for the experimental groups and control in the telemetry in the pre measurement, By the researchers (refractive force training), has positively influenced the search variables (explosive force, accuracy of the scoring of jumping in basketball) for his research. In general, the references to sports training that we mentioned in selecting the content of the curriculum emphasize the need to plan the training curriculum to achieve the goals that translate into observable performance and measurement and this is what the researchers struggled to achieve. The researchers attribute this improvement to the exercises prepared by the researchers for development the explosive capacity of legs's muscles, which was carefully prepared based on studies, research and sources, as well as the opinions of the trainers involved in the field of sports training[5].

These exercises contributed effectively to the development of explosive capacity, Explosive style. In conclusion, we conclude that the exercises used in this study have had a significant impact on the accuracy of the performance of the scoring of the jump in basketball. Both charity and Mohammed Bareqa (2010) agree that the strength training is one of the most effective training method, to produce movements that are muscular and based on a physiological and surgical basis, is the best method of developing muscular ability effectively and leads to strength and speed of performance[6].

The researchers attributed this development in the variables studied to the exercise force, which was prepared by the researchers and applied to the experimental group, which has a clear impact on the explosive capacity of legs and reflected this remarkable development on the technical performance of the skill of jumping in basketball. This is confirmed by in addition to the amount of strength gained for the hands, wrists, arms and shoulders, the player must have two legs with a large degree of ability and strength for ease of movement and wide range,most explosive force will be used to jump up[7,8].

Conclusions

1. Exercise (retraction) has contributed significantly to the development of the explosive capacity of the muscles of legs, for the sake of research.
2. Exercise (Abrasive Strength) has contributed significantly to the development of precision scoring of jumping in basketball, for his research.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Evaluation of Serum Osteopontin Level and Growth Differential Factor Growth-15 in Chronic Renal Failure

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Abstract

Background: Chronic renal failure (CRF), describes the gradual loss of kidney function. It is a major public health problem, estimated to 200 million individuals worldwide. Many researchers in the field of chronic kidney failure tried to link the CRF with many factors, but few of them worked to link the disease with growth differentiation factor 15 (GDF15) and Osteopontin (OPN) together. Osteopontin (OPN) is a pleiotropic glycoprotein expressed in various cell types in animals and in humans, including bone, immune, smooth muscle, epithelial and endothelial cells. Moreover, OPN is found in kidneys (in the thick ascending limbs of the loop of Henley and in distal nephrons) and urine. The protein plays an important role in mineralization and bone resorption. It was demonstrated that OPN and some OPN gene polymorphic variants are associated with the pathogenesis and progression of multiple disorders, such as cancer, autoimmune, neurodegenerative and cardiovascular diseases. GDF15 a member of transforming growth factor-beta (TGF-beta), family is involved in several pathological conditions, which include inflammation, cancer, cardiovascular, pulmonary and renal diseases.

Aim: The aim of this study were to determine the changes in serum levels of osteopontin (OPN) and growth differential factor 15 (GDF15) in chronic renal failurewith stage 2, 3, 5.

Methodology: A control study was included 60 renal failure patients (26 females and 34 males) whose ages between 18-86 years olds attended the renal failure unite in Kirkuk General Hospital in the period time April to June 2019. The data were collected from the cases group in 3 different stages of the renal failure cases;(30) cases were with stage 5, (15) cases were with stage 3 and (15) cases were with stage 2. The control group who were match to the patients studied includes 28 healthy controls.

Results: The study showed that there is the significant difference between serum level of patients and the control groups. In this study showed that is high levels of Osteopontin (OPN) in patients stage 5 only with no deferens in stages 2,3 compare with control group and high levels of Growth differential factor growth-15(GDF-15) in all stages (2,3,5) compare with control group.

Conclusion: The results of the current study showed a significant increase in the level of OPN in stage 5 as an indication of the renal failure reached the end stage. On the other hand, GDF-15 gradually increases with progression of renal failure stages.

Keywords: *Chronic renal failure, Osteopontin, Growth differential factor growth-15.*

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Introduction

Chronic renal disease is a clinical disorder which occurs when there is a gradual decline in renal function over a period of several months to years and most of the functional alterations seen in chronic renal impairment can be explained in terms of a full solute load falling on

reduced number of normal nephrons [1-3]. Osteopontin (OPN) is a highly negatively charged and glycoprotein and was first identified in osteoblasts [4, 5]. In the normal adult kidney, OPN is expressed by the thick ascending limb of the loops of Henley. Moreover, OPN expression is observed in collecting duct epithelium, where it correlates with the number of macrophages in the tissue [6,7].In addition GDF-15associated with chronic renal failure.GDF15 is a divergent member of the TGF-b cytokine superfamily that was discovered and cloned as a divergent member of the TGF-b superfamily in the late 1990s independently in at least seven different laboratories. Names were given based on relationship to TGF-b members or different cloning strategies applied. Using a subtraction cloning approach designed to identify genes related to macrophage activation, previously called macrophage-inhibitory cytokine-1(MIC-1) and is expressed by activated macrophages[8,9]. In recent years, GDF-15 has emerged as a biomarker forrenal failure[10].

Objective: The objective of this study was conducted to evaluate serum levels of OPN and GFR15 in different stage of chronic renal failure and study the ability of using both of OPN and GRF15 as a markerin adults patients undergoing with renal failure.

Methodology

The study is a control study that was conducted on 88 individuals, comprised of 60 patients' who had undergone a chronic renal failure and 28 controls. Patients were subjected to chronic renal failure in General Kirkuk Hospital, Kirkuk - Iraq between 1st of April, to 1st of June, 2019. Patients' data were collected and compared with 28 apparently healthy subjects who participated as control group. Cancer patients, liver patients and autoimmune disease were excluded in all cases . The levels of osteopontin and growth differential factor growth-15 measured by ELISA technique. The principle of ELISA, various antigen-antibody combinations are used, always including an enzyme labeled antigen or antibody and enzyme activity is measured calorimetrically.

Blood Samples: A volume of 5ml of blood sample was taken by vein puncture from each subject enrolled in this study. Blood samples were placed into sterile test tubes, after blood clotting, the samples were centrifuged at 3000 rpm for 15 min and the obtained serum were aspirated using mechanical micropipette and transferred into clean plain tubes with screw which labeled and stored in deep freeze at -20 C° for the biochemical measurement of osteopontin and growth differential factor growth-15 in chronic renal failure, by ELISA.

Normal Value: OPN: 0.156-10 ng/ml, GDF-15:23.438-1500 pg/ml.

Statistical Analysis: Computerized statistically analysis was performed using IBM SPSS V21.0.0 statistic program. Comparison between study groups was done using ANOVA (Analysis of Variance). Numerical variables were reported in terms of mean and (T-test) for comparison between categorical variables. The (P<0.05) was considered statically significant for interpretation of result.

Results

Table 1: Comparison of Osteopontin level between control group and each state of the cases group (stage 2, stage 3, stage 5)

Group	Mean ± SE			
	Control	Stage 2	Stage 3	Stage 5
Patients	0.06 ± 0.07	0.46 ± 0.15	0.60 ± 0.16	4.17 ± 0.91
P-value		>0.05	>0.05	<0.005

* (P<0.005)Significant, ** (P>0.05), NS: Non-Significant.

Table 1 and figure 1 showed Cases were compared in three different stages of chronic renal failure: stage 2, stage 3 and stage 5. The levels of OPN in patients with renal failure stage 5 (4.17±0.91) was increasing significantly (p<0.005) compared with control groups (0.06±0.07) while stage 3 (0.60±0.16) and stage 2(0.46±0.15) non-significant difference from control group (0.06±0.07) (p>0.05).

Table 2: Comparison of Growth Differential Factor-15 level between control group and each state of the cases group (stage 2, stage 3, stage 5)

Group	Mean ± SE			
	Control	Stage 2	Stage 3	Stage5
Patients	11.29±5.26	77.14±11.12	65.87±5.73	662.54±112.74
P-value		<0.003	0.012	<0.005

* (P<0.05)Significant.

Table 2 and figure 1 showed the levels of GDF-15 in patients with renal failure stage 5 (662.54±112.74) was increasing significantly (P<0.005) compared with control groups (11.29±5.26) whereas in patients with renal failure stage 3 (65.87±5.73) was increasing significantly (P=0.012) and stage 2 (77.14±11.12) was increasing significantly (P<0.003) compared with control group.

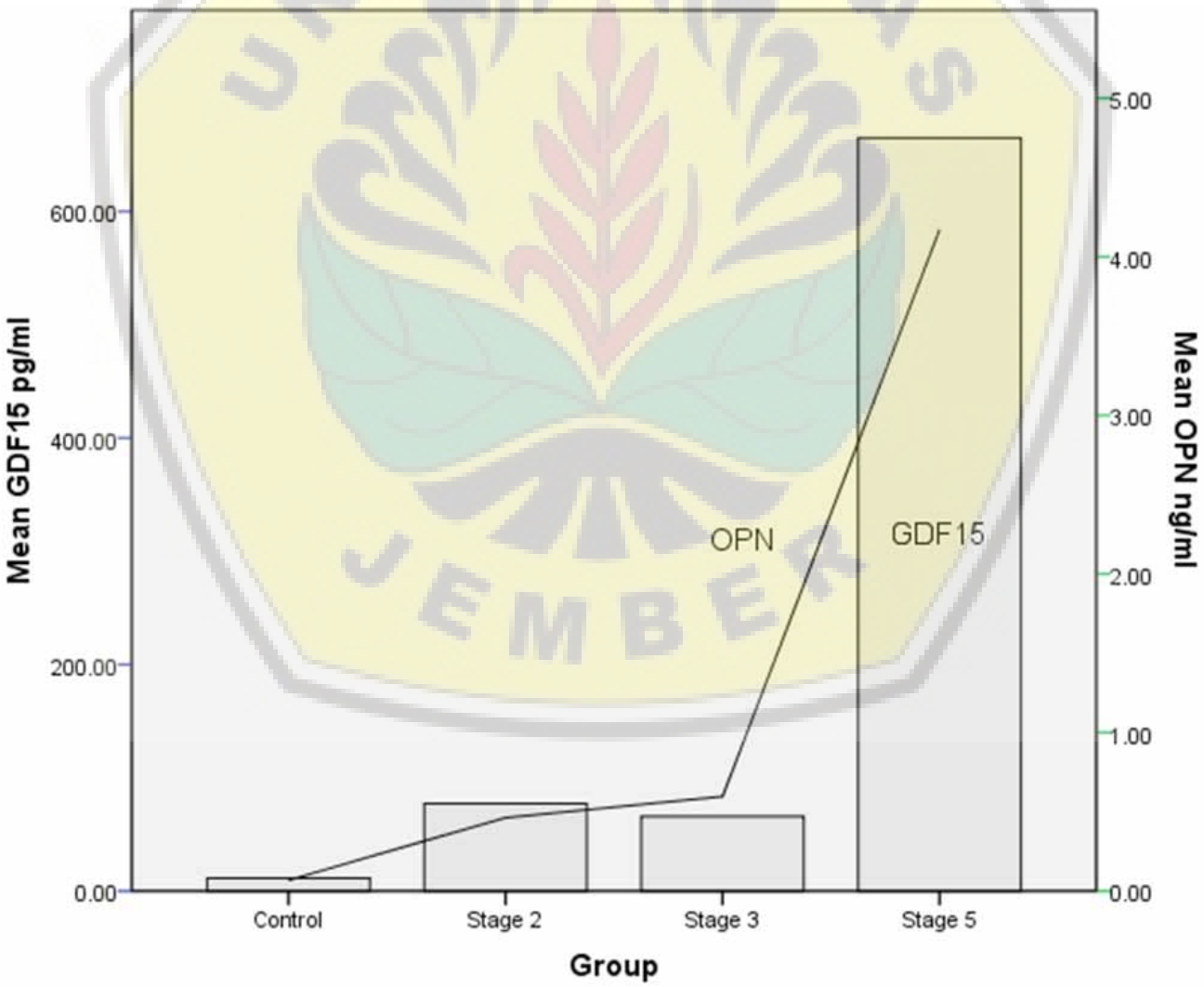

Figure (1): Comparison of Growth Differential Factor 15 and Osteopontin level between control group and each state of the cases group (stage2, stage3, stage5).

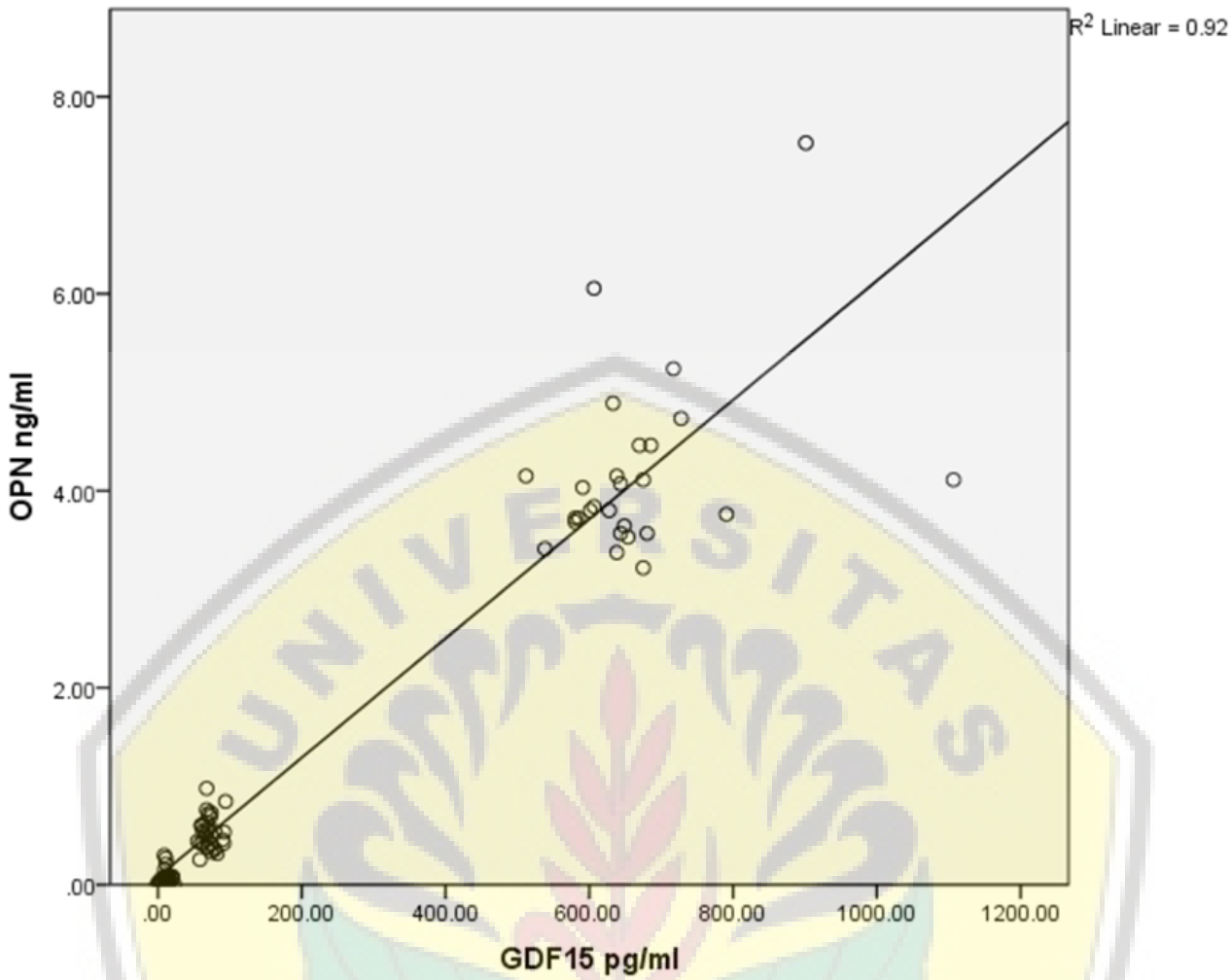

Figure (2): Scatterplot of the Correlation between GDF15 and OPN

Figure 2 showed there was a significant positive correlation between GDF15 and OPN, R =0.959, R^2 = 0.92, n=88, P <0.005.

Discussion

Chronic Kidney Disease is a major clinical problem in Iraq as well as in the world [(11)].In this study the level of OPN and GDF15 were measured in three stages (2, 3, 5) of CKD and compared with those of healthy subjects. OPN and GDF-15 has been implicated in the pathology of several renal conditions. The results obtained in this study from 60 patients compared with 28 healthy individuals revealed that the majority of the patients were males (57%) and about one-third of the female cases were older than 50 years (43%), since estrogen, estradiol and progesterone are factors that inhibit OPN expression [(7)]. Measurement of OPN level in patients with CKD significant higher level only in stage 5 than that of control (P<0.005) a highly significant difference in OPN mRNA in renal damage this finding is in agreement with (Lorenzen et al.,2008) [12] and agreement with (Yan et al., 2010)[13] found that plasma OPN concentration was proportional to the severity of renal function damage, indicating that OPN was an independent risk factor of the severity of renal function damage, but in currently study measurement of GDF15 level in patients with CKD significantly different level in all cases state; stage 5 (P<0.005), stage 3 (P=0.012) and stage2 (P=0.003) than that of control was agreement with (Nair et al., 2017)[14] found Circulating GDF-15 levels have been shown to strongly correlate with increased risk of CKD progression. OPN was strongly correlated with GDF-15(r=0.959 p<0.005) because the both was directly proportional to the damage of the kidneys.

Conclusion

The results of the current study showed a significant increase in the level of OPN in stage 5 as an indication of the renal failure reached the end stage. On the other hand, GDF-15 gradually increases with progression of renal failure stages.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: Self-funding

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Evaluation of the Role of Fibroblast Growth Factors 23(FGF23) as a Marker for Left Ventricular Hypertrophy in Adults with Hypertension

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Abstract

Background: Hypertension (HTN) is among the most common, noncommunicable disease in the world. Approximately 80 million people (32.6%) in the United Statesand one billion worldwide suffer from HTN .Fibroblast growth factor 23 (FGF23) is a phosphaturic hormone produced by osteocytes and osteoblasts that binds to FGF receptors in the presence of the transmembrane protein α Klotho. FGF23 mainly targets the renal proximal tubule to inhibit calcitriol production and the expression of the sodium/phosphate cotransporters NaPi2a and NaPi2c, thus inhibiting renal phosphate reabsorption. FGF23 also acts on the parathyroid glands to inhibit parathyroid hormone synthesis and secretion. FGF23 regulation involves many systemic and local factors, among them calcitriol, phosphate and parathyroid hormone. Increased FGF23 is primarily observed in rare acquired or genetic disorders, but chronic kidney disease is associated with a reactional increase in FGF23 to combat Hyperphosphatemia. However, Higher levels of FGF23 have been associated with worse cardiovascular outcomes. Whether FGF23 is associated with rising blood pressure (BP) and induce left ventricular hypertrophy (LVH) and are associated with an increased risk of mortality some studies have examined whether lipid levels are prospectively associated with the risk of developing hypertension.

Aim: The aim of this study were to evaluate FGF 23 levels as indicator of LVH in hypertensive patients.

Materials and Method: The study is a comparative prospective case-controlled study that was conducted on 90 individuals, comprised of 60 hypertensive patients including thirty patients who had hypertension with Left Ventricular Hypertrophy (LVH) and thirty patients who had Hypertension without LVH and thirty controls. Patients were subjected Ibn Al-Bitar Cardiac Surgery Center from March to Jun 2019.

Results: The results showed there wasa statistically significant differences (P<0.0001) in the serum FGF23 level between hypertension with LVH group (541.515±148.25 Pg/mL) and Hypertension without LVH group (239.27±108.85 Pg/mL).on the other hand there were significant (P<0.0001) increases in FGF 23 levels in both groups compared with control group (38.37±26.44 Pg/mL).

P = 0.436, P = 0.062, P = 0.774 and P = 0.485 for Cholesterol, triglycerides, HDL and LDL respectively, were not significantly different between studied groups.

Conclusion: The FGF23 is higher in hypertension patient with LVH than those withoutLVH and there were increased in FGF23 levelsin both groups compared with control group. Hence, the change in FGF 23 could probably serve as a diagnostic marker in hypertension patients to predict the possibility to develop LVH.

Keywords: *Fibroblast growth factor23, left ventricular hypertrophy, hypertension.*

Introduction

Hypertension (HTN) is among the most common, noncommunicable disease in the world. Approximately 80 million people (32.6%) in the United States [1] and one billion worldwide suffer from HTN[2], Long term HTN leads to hypertensive heart disease and is the result of anatomical and functional changes in the cardiovascular system (which is a cardiovascular sequelae of HTN) and is defined as left ventricular hypertrophy (LVH), left atrial enlargement, left ventricular diastolic dysfunction, functional mitral regurgitation and neurohormonal changes [3]. The hemodynamic overload from HTN causes left ventricular (LV) remodeling, which usually manifests as distinct alterations in LV geometry, such as concentric remodeling or concentric and eccentric LV hypertrophy (LVH).fibroblast growth factor-23(FGF23) is an endocrine hormone released from the bone that acts on the kidney to stimulate phosphaturia and inhibit calcitriol synthesis [4]**.** FGF23 is a 32 kDa glycoprotein and belongs to the superfamily of fibroblast growth factors (FGF)[5]. Recent evidence showed that locally secreted FGF23 may act as a regulator of bone mineralization in osteocytes in an autocrine/paracrine manner[6] and also the local secretion of FGF23 in the heart has putative paracrine functions [7]. FGF23 levels rise in the presence of chronic kidney disease to maintain phosphate levels; however, elevated FGF23 levels are associated with worse cardiovascular outcomes and increased mortality [8].Elevated FGF23 levels have also been associated with increased left ventricular mass and incident heart failure in patients without known chronic kidney disease [9].FGF23 may up regulate the renin–angiotensin–aldosterone system (RAAS) by decreasing calcitriol—a potential negative regulator of the RAAS system [10].In addition, experimental studies suggest that FGF23 may increase renal sodium uptake independent of the RAAS system leading to volume expansion and possible effects on blood pressure (BP)[11].some studies have examined whether lipid levels are prospectively associated with the risk of developing hypertension[12,13].

Patients Materials and Method: Prospective case-controlled study. The protocol of this study was approved by the scientific committee of Tikrit University-College of Medicine and the agreement of the attendance to Ibn Al-Bitar Cardiac Surgery Center to collect the sample from the patients was approved by the Baghdad/Karkh Health Directorate. This study was conducted on ninety individuals including thirty patients who had Left Ventricular Hypertrophy (LVH) and thirty patients who had Hypertension and thirty healthy control subjects. The samples were collected from Ibn Al-Bitar Cardiac Surgery Center from 20th of March, 2019 to 20th of June, 2019. The criteria of exclusion were patients with Impairment in renal function, Diabetes mellitus, Bone disorder, Chronic illness. The age, gender and clinical manifestation of each patient with HT combined with LVH and without LVH, were recorded in a checklist.

Patients data were collected and compared with 30 apparently healthy subjects who participated as control group. The levels of FGF23 was measured by ELISA technique whereas the levels of other parameters (Cholesterol, triglycerides, HDL and LDL) were measured by colorimetric method according to the manufacturer manual.

Blood samples A volume of 5ml of blood sample was taken by vein puncture from each subject enrolled in this study. Blood samples were placed into sterile test tubes, after blood clotting, the samples were centrifuged at 3000 rpm for 15 min and the obtained serum were aspirated using mechanical micropipette and transferred into clean plain tubes with screw which labeled and stored in deep freeze at -20ºCuntil used for the various investigations.

Detection range for **FGF23**15.6 -1000 pg/ml*

Normal Value:Total Cholesterol : <200 mg/dl**, Triglycerides:**35-160mg/dl**, HDL-C:**40-59mg/dl**, LDL-C:**<130mg/dl .

Statistical Analysis: Statistical analyses were performed using SPSS statistical package for Social Sciences (version 21.0 for windows, SPSS, Chicago, IL, USA). Data are presented as mean ± SD, range and median for quantitative variables and number and percentage for qualitative variables.

Comparison between study groups was done using ANOVA (Analysis of Variance) for normally distributed data and using Kruskal-Wallis for non-normally distributed data.. Relation between FGF23 and the other parameters was done using Pearson's correlation. P value of <0.05 was considered statistically significant.

Results

1. **Measurements offibroblast growth factor 23 (FGF23) among three study groups:** Comparison among three study groups regarding serum FGF23 level was performed using Kruskal-Wallis test.

Cases which have included: LVH (HT with LVH), HT and control**.** There was a statistically significant difference in the serum FGF23 level**s** between HT with LVH group (541.515±148.25 Pg/mL) and HT without LVH group (239.27±108.85 Pg/mL) and both groups are different from the control group (38.37±26.44 Pg/mL). Kruskal-Wallis test = 35.32, P = 0.0001. as see in figure (1).

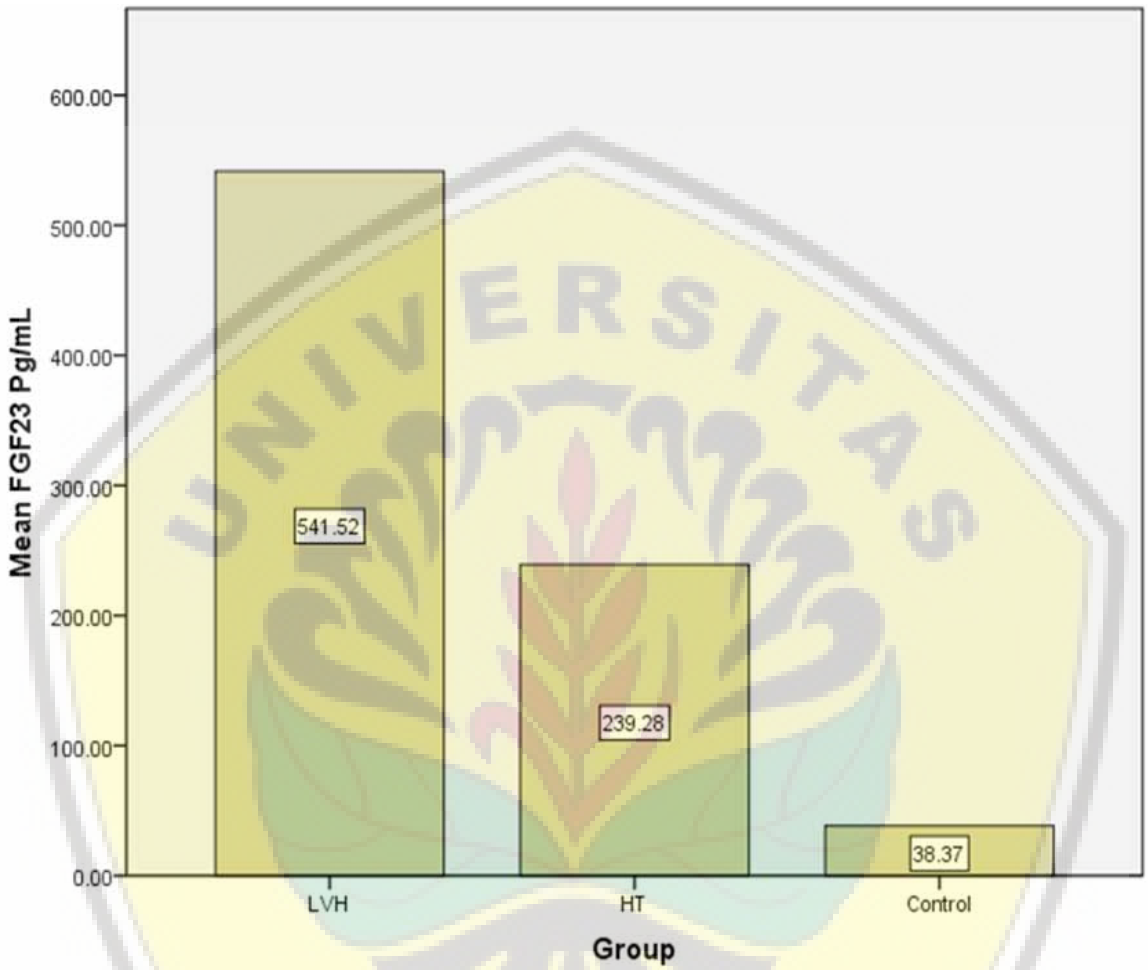

Figure (1): Distribution of FGF23 between groups

2. **Measurements of Lipid profile among three study groups:** Comparison among three study groups regarding serums Cholesterol, TG, HDL and LDL levels was performed using ANOVA (Analysis of Variance). Cases were: LVH**,** HT**.** Cholesterol, triglycerides (TG), HDL and LDL were not significantly different between studied groups. Cholesterol level in LVH group was (5.0300±2.58139mmol/L) and HT group was (5.0537±3.04455 mmol/L) and the control group (4.0920±0.45993 mmol/L) P = 0.436 .

TG level in LVH group was (1.9430 0± 1.49277 mmol/L) and HT group was (1.6540 ± 0.80800 mmol/L) and the control group (1.1193 ± 0.27580 mmol/L) P = 0.062 .

HDL level in LVH group was (1.1533± 0.49670mmol/L) and HT group was (1.1267± 0.21645mmol/L) and the control group was (1.0733± 0.18310mmol/L) P = 0.774 .

LDL level in LVH group was (2.9900± 1.11737mmol/L) and HT group was (2.8400± 1.37705mmol/L) and the control group was (2.5500± 0.55388 mmol/L) P = 0.485. These statistics were as summarized in (Figure 2).

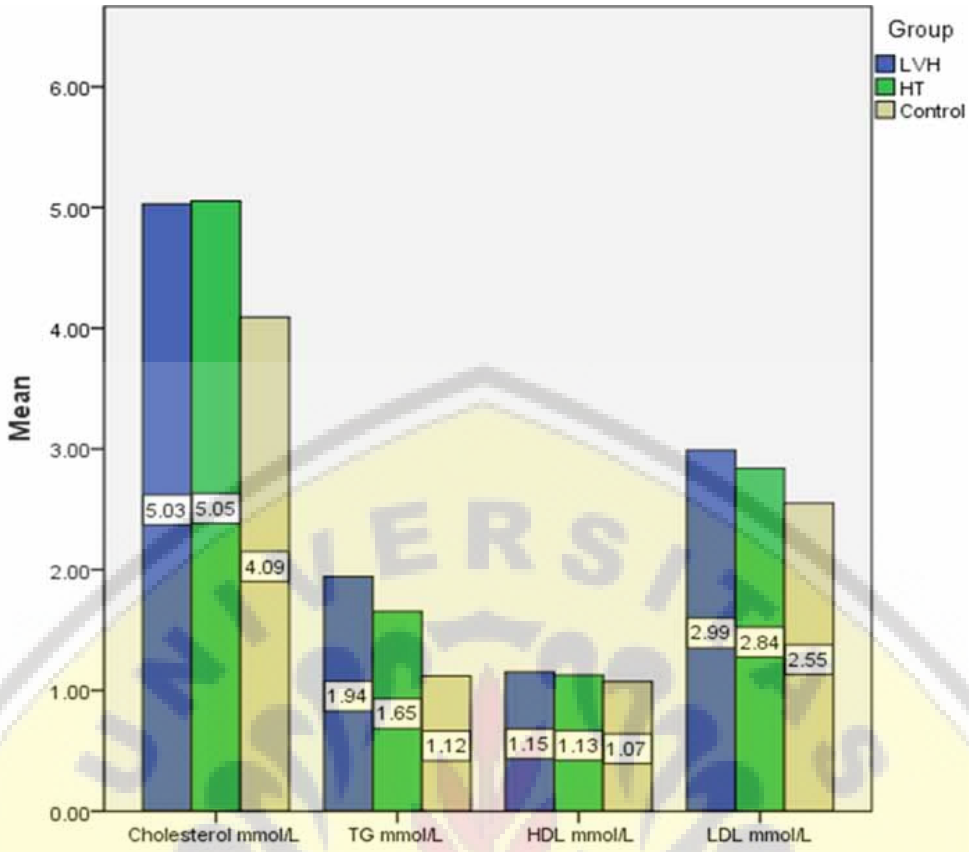

Figure (2): Distribution of Cholesterol, TG, HDL, and LDL between groups

Discussion

This study was found the FGF23 levels was significantly elevated in patients with HT and LVH compared to apparently healthy controls. This study agree with Matsui I *et al*., 2018 and Rodelo-Haad C *et al*., 2019 Whose founds the FGF23 was higher in LVH and HT compared to healthy controls [14,15].Activated NFAT1 plays an important role in the transcriptional regulation of FGF23 through the proximal NFAT-binding site in the FGF23 promoter. Elevated levels of serum FGF23 correlated with ventricular hypertrophy and did not correlate with kidney function[15]. Inflammation is 1 of the key factors causing an up regulation in the transcription of FGF23[16,17]. Nuclear factor-kB, akey factor in the inflammatory signaling pathway, transcriptionally regulates the expression of target genes, including FGF23[18]. Although NFAT was initially identified as a nuclear factor that can bind to the promoter of interleukin-2 in activated T cells, The studies have revealed that NFAT also contributes to innate immune and inflammatory responses [19]. Recent studies suggest that enhanced FGF23 action in Hyp mice increases distal renal tubule reabsorption of sodium, leading to hypertension and LVH, as quantified by total heart weight normalized to body weight[20]. The present study showed the cholesterol levels was not significantly elevated in patients with HT and LVH compared to apparently healthy controls (p value 0.436), triglycerides levels was not significantly elevated in patients with HT and LVH compared to apparently healthy controls (p value 0.062), LDL levels was not significantly elevated in patients with HT and LVH compared to apparently healthy controls (p value 0.485), HDL levels was not significantly elevated in patients with HT and LVH compared to apparently healthy controls (p value 0.774). This present study agree with (Akintunde AA., 2010)[21] He found The mean fasting lipid levels were not statistically different among the hypertensive and normotensive subjects, and agree with, (Kaur M *et al.*, 2000)[22]. And this present study disagree with (Osuji CU *et al.*, 2012)[23] they found that the, serum TC, TG and LDL-L concentrations are significantly higher in hypertensive patients than in normotensive subjects.

Conclusions

The FGF23 is higher in hypertension patient with LVH than those without and The FGF23 could be served as a diagnostic marker in hypertension patients to predict the possibility to develop LVH.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: Self-funding

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Isolation and Identification *Pseudomonas Aeruginosa* from Clinical Samples and Irrigation Water: Susceptibility to Common Antibiotics

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Abstract

Pseudomonas aeruginosa is considered opportunistic organisms Treatment of *P. aeruginosa* infections can be complicated due to its natural resistance to antibiotics. There is a good relation between the ability of bacteria to form biofilm and antibiotic susceptibility. In present study, twelve environmental isolates (PAE1, PAE2, PAE3, PAE4, PAE5, PAE6, PAE7, PAE8, PAE10, PAE11, PAE12 and PAE14) and seven clinical isolates (PAC1, PAC2, PAC5, PAC7, PAC8, PAC9 and PAC10) of *P. aeruginosa* were used in current study. The results showed that the resistant to antibiotic by clinical isolates was higher than environmental isolates. Furthermore, Ticarcillin/Clavulanic Acid (TIC/CLA) antibiotic was high effective against environmental isolates than clinical isolates. Most environmental isolates were resistant to IMI and Amik antibiotics higher than clinical isolates. Colistin showed a lower effect of (MIC) in clinical isolates compared to environmental isolates.

Keywords: *Environmental and clinical isolates of P. aeruginosa, VITEK 2 Densi Check device, Biofilm, Antibiotic susceptibility.*

Introduction

P. aeruginosa is a Gram-negative rod-shaped bacterium causing for many infections immune compromised persons, burned patients and individuals hardship from cystic fibrosis. In addition to known swimming and twitching motilities, *P. aeruginosa* is capable of second kind of migration called swarming. This intricate kind of motility is usually defined as a rapid and consistent translocation of a bacterial inhabitance across a semi-solid surface[(1)].

The bacterial social behavior is the formation of attached communities called biofilms that happen by flagella[(2,3)]. As well playing a role in swarming motility, RLs and HAAs are also involved in many aspects of biofilm development[(4)]. *P. aeruginosa* was known to be major pathogens associated with human infection and that associated with ability of clinical isolates to form biofilms [(5)].

Biofilms have been discovered since 3.2 billion years ago[(6)] and the first to photocopy the biophysics composition in 1683 by A. Leeuwenhoek scraped a layer of deposition from his teeth and examined under a microscope [(7)]. The first use of biofilm was in 1977 by William Costerton who noticed that most of the majority Bacteria on the sedimentary rocks of planktonic bacteria in the alpine lake are described and stored in biofilm [(8)]. In fact, more than 99% of the microorganisms in the ecosystem are found as biofilm on types of surface [(9)].

There are many prospect reasons behind biofilms formation by bacteria.Some of them are protection by avoiding the host immune system and keeping themselves

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from harmful conditions,colonization in region has wealthy in nutrients and sequester it and placement of advantage mutual system and live as community[10].

There are many advantages of bacterial cell biofilm. The main ones are antibiotics resistance in addition to detergent and antiseptic, Avoid immune system response and protection from the conditions of environment[11].

Materials and Method

Samples Collection: Fifty three samples were collected from burns, respiratory tract and ears infections of indoor patients in Hilla Hospital and Al-Hussein Hospital in Karbala. Swabs were taken from the infected areas of the patients and cultured on the nutrient agar. Seventy samples were collected from Shatt al-Hillah and Al-yahudia Rives. The water samples were collected in sterile glass containers until, The water samples were cultured onto nutrient agar for identification of bacteria.

Identification of suspected P. aeruginosa: Suspected isolates cultivated on Cetrimide agar for produce yellow-green to blue-green colonies which fluoresce under UV light[12]. These colonies were cultivated on MacConkey agar[13]. VITEK 2 Densi Check instrument, fluorescence system (bioMe´rieux) (ID-GNB card) includes 43 nonenterobacterial gram-negative taxa was used to confirm the species of bacteria. Testing was performed according to the instructions of the manufacturer. Briefly, strains were cultured on LB agar for 18 to 24 h at 37°C before the isolate was subjected to analysis. A bacterial suspension was adjusted to a McFarland standard of 0.50 to 0.63 in a solution of 0.45% sodium chloride using the VITEK 2 Densi Check instrument (bioMe´rieux). The time between preparation of the solution and filling of the card was always less than one hour. Analysis was done using the identification card for gram-negative bacteria (ID-GNB card) containing 41 fluorescent biochemical tests. Cards are automatically read every 15 min. Data were analyzed using the VITEK 2 software version VT2- R03.1 [14].

Antibiotic Susceptibility: The standard method to test the susceptibility of *P. aeruginosa* to the several antibiotics (Ticarcillin/Clavulanic acid, Piperacillin/ Tazobactam, ceftazidime, cefepime, imipenem, gentamicin, tobramycin, ciprofloxacin, ticarcillin, amikacin)[15]. VITEK 2 Densi Check instrument (bioMe´rieux) was used to check the supportability of clinical and environmental isolated of *P. aeruginosa*.

Statistical Analysis: All data represent mean values and standard error of at least five replicas of independent experiments. The differences between two groups were analyzed by using student's t test. Pearson coefficient test was used to estimate the correlation between biofilm formation and MIC. Origin 8.0 version software[16,17,18].

Results and Discussion

Isolation and Identification of p. aeruginosa: Seventy of environmental specimens were collected from Shatt al-Hillah and Al-yahudia. The samples were collected in clean and sterile glass containers. The suspected *P. aeruginosa* isolates were identified according to color of colony that produced a pigment such as pyocyanin onto cetrimide agar. Fifty-three specimens were collected from burns, respiratory tract and ears of patients visited AL- Hilla Hospital and Al-Hussein Hospital in Karbala. The samples cultured into Muller-Hinton agar and cetrimide agar.From seventy specimens only fourteen (20%) specimens were identified as suspected *P. aeruginosa*. The suspected isolates were diagnosed by VITEK 2 DensiCheck apparatus, the results showed twelve *P. aeruginosa* (17.14%). Whilst from fifty-three environmental samples only ten suspected *P. aeruginosa* isolates were identified (18.86%), then isolates identified in VITEK 2 DensiCheck apparatus (BioMérieux), only seven isolates were identified as *P. aeruginosa* (13.2%) (Table 1).

Several studies used VITEK technique for diagnosis the isolates [19], That is why, it is used to identify clinical and environmental isolates of *P. aeruginosa* involved in current study. In the other studies, the presence of *P. aeruginosa* isolated from the sputum of patients with respiratory tract infection at percentage of 11.1%[20]. While, other studies explain that happing of infection with *P. aeruginosa* in persons hurt with respiratory tract infection was 25% [21].

Table 1. Number and percentage of *P. aeruginosa* that isolated from environmental and clinical samples.

Isolated sample	No. of sample	No. of suspected p. aeruginosa	Percentage of suspected p. aeruginosa	p. aeruginosa VITEK2	Percentage
Environmental	70	14	20 %	12	17.14 %
Clinical	53	10	18.86 %	7	13.2 %

The bacteria cannot invasive the tissue and presence only on the mucosal surface of respiratory tract and this original sin can be specified as colonization [3]. Isolated bacteria from oil polluted soil that collected from different places in Baghdad, Kut and Hilla,locate that thirty five *Pseudomonas* isolates were isolated from seventy five oil contaminated soil [22].

Antibiotic Susceptibility:

Isolates / Antibiotic	PAE1	PAE2	PAE3	PAE4	PAE5	PAE6	PAE7	PAE8	PAE10	PAE11	PAE12	PAE14
TIC	>64(R)	32(S)	32(S)	16(S)	64(S)	32(S)	32(S)	[32*] (*R)	32(S)	32(S)	32(S)	32(S)
TIC/CLA	64(S)	32(S)	32(S)	16(S)	64(S)	32(S)	32(S)	64(S)	32(S)	32(S)	32(S)	64(S)
PIP	>64(R)	≤4(S)	8(S)	≤4(S)	8(S)	8(S)	8(S)	64(I)	16(S)	16(S)	64(I)	16(S)
PIP/TAZ	>64(R)	8(S)	8(S)	≤4(S)	8(S)	8(S)	8(S)	64(I)	8(S)	16(S)	649S)	8(S)
CEF	32(R)	4(S)	4(S)	2(S)	4(S)	4(S)	4(S)	8)(S	4(S)	4(S)	4(S)	4(S)
CEFE	[4*](I*)	4(S)	2(S)	≤1(S)	2(S)	2(S)	2(S)	2(S)	2(S)	2(S)	4(S)	2(S)
IMI	>8(R)	2(S)	2(S)	2(S)	2(S)	1(S)	1(S)	1(S)	1(S)	1(S)	>8(R)	1(S)
MER	>8(R)	1(S)	1(S)	≤0.25(S)	2(S)	≤0.25(S)	≤0.25	0.5(S)	<=0.25(S)	≤0.25(S)	0.5(S)	≤0.25(S)
AMI	>32(R)	4(S)	4(S)	≤2(S)	≤2(S)	≤2(S)	≤2(S)	4(S)	4(S)	4(S)	>32(R)	4(S)
GEN	8(I)	≤1(S)	≤1(S)	4(S)	≤1(S)	≤1(S)	≤1(S)	≤1(S)	≤1(S)	≤1(S)	≤1(S)	≤1(S)
TOB	8(I)	≤1(S)	≤1(S)	≤1(S)	≤1(S)	≤1(S)	≤1(S)	≤1(S)	≤1(S)	≤1(S)	4(S)	≤1(S)
CIP	2(I)	≤0.25(S)	0.5(S)	≤0.25(S)	≤0.25(S)	≤0.25(S)	≤0.25(S)	≤0.25(S)	≤0.25(S)	≤0.25(S)	0.5(S)	≤0.25(S)
COL	>8(R)	≤0.5(S)	≤0.5(S)	≤0.5(S)	≤0.5(S)	≤0.5(S)	≤0.5(S)	≤0.5(S)	≤0.5(S)	≤0.5(S)	>8(R)	>8(R)

VITEK 2 DensiCheck device technology was used to determine the sensitivity and resistance of environmental and clinical isolates to broad range of antibiotics. In present study, PAE1 isolate showed the highest level of MIC for all antibiotics. The results showed that most environmental isolates were sensitive to most antibiotics that used in current study. PAE1 resisted to highest number of antibiotics (8 antibiotics) and susceptible to one antibiotic (TIC/CLA) and it was showed intermediate susceptible to four antibiotics followed by PAE12 was resisted to three antibiotics while other environmental isolates more sensitivity to antibiotics (Table 2).

Table 2. Minimum inhibition concentrations (MIC) of different antibiotics tested against environmental isolates of *P. aeruginosa* (PAE1, PAE2, PAE3, PAE4, PAE5, PAE6, PAE7, PAE8, PAE10, PAE11, PAE12, PAE14) that collected from Shatt al-Hillah and Al-yahudia.S, sensitive to antibiotic; R, resistant to antibiotic; I, intermediate. VITEK 2Densi Checkinstrument (bioMe´rieux(was used to measurethe MIC.

Identically, the sensitivity and resistance in terms of MIC for seven clinical isolates were measured to several antibiotics (13 antibiotics). Table (3) showed that most isolates (clinical isolates) were resistance to high number of antibiotics with high value of MIC .the isolates PAC7, PAC8 sensitive to the highest number of antibiotics and not resistance to any antibiotics used in present study, while PACI, PAC2, PAC5, PAC9 were sensitive to one antibiotics (COL) and resisted to 12 antibiotics from 13

antibiotics that used in current study. The isolate PAC10 appeared resisted to four antibiotics and sensitive to 8 antibiotics and intermediate to 2 antibiotics (CEF and PIP). The present study, showed that the clinical isolates were resistant to high number of antibiotics as compared to environmental isolated and PAC1, PAC2, PAC5, PAC9 were resistant to the highest number of antibiotic and PAE1 was sensitive to highest number of antibiotics (table 2).

Isolates / Antibiotic	PAC1	PAC2	PAC5	PAC7	PAC8	PAC9	PAC10
TIC	>649(R)	>64 (R)	>64(R)	32 (S)	32 (S)	>64(R)	>64 (R)
TIC/CLA	>64 (R)	>64 (R)	>64 (R)	32 (S)	32 (S)	>64(R)	>64 (R)
PIP	>64 (R)	>64 (R)	>64 (R)	≤4 (S)	16 (S)	>64(R)	64 (I)
PIP/TAZ	>64 (R)	>64 (R)	>64 (R)	≤4 (S)	8 (S)	>64(R)	64 (S)
CEF	>32 (R)	>32 (R)	>32(R)	2 (S)	4 (S)	>32(R)	>32 (R)
CEFE	>32 (R)	>32 (R)	>32 (R)	≤1 (S)	2(S)	>32(R)	16(I)
IMI	8 (R)	8 (R)	>8(R)	2 (S)	2(S)	>8(R)	2 (S)
MER	>8 (R)	>8 (R)	>8 (R)	1 (S)	0.5(S)	>8(R)	≤0.25 (S)
AMI	>32 (R)	>32(R)	>32 (R)	≤2 (S)	≤2 (S)	>32(R)	≤2 (S)
GEN	> 8 (R)	>8 (R)	>8 (R)	≤1 (S)	≤1(S)	>8(R)	≤1 (S)
TOB	>8(R)	>8 (R)	>8(R)	≤1 (S)	≤1 (S)	>8(R)	≤1 (S)
CIP	>2 (R)	>2 (R)	>2 (R)	≤ 0.25 (S)	≤0.25 (S)	>2(R)	≤0.25 (S)
COL	≤ 0.5 (S)	≤ 0.5 (S)	≤ 0.5 (S)	≤ 0.5 (S)	≤0.5(S)	≤0.5(S)	≤0.5 (S)

Table 3. Minimum inhibition concentrations (MIC) of different antibiotics against clinical isolates of*P. aeruginosa* (PAC1, PAC2, PAC5, PAC6, PAC7, PAC8, PAC9 and PAC10) that isolated from sputum of patients suffering with respiratory tract infection, burns and wounds infection. S, sensitive to antibiotic; R, resistant to antibiotic; I, intermediate. The antibiotic MIC was measured by VITEK 2Densi Checkinstrument (bioMe´rieux)

The results of current study showed highly difference between clinical and environmental isolates in terms of MIC especially for heaps of antibiotic (TIC/CLA, PIP, PIP/TAZ, CEF, CEFE and AMI). The present study showed thatTIC/CLA was high effective against environmental isolates than clinical isolates. CIP was appeared low effective against environmental isolates than TIC/CLA. Colistin was showed very low effective on clinical isolates (Figure 1).

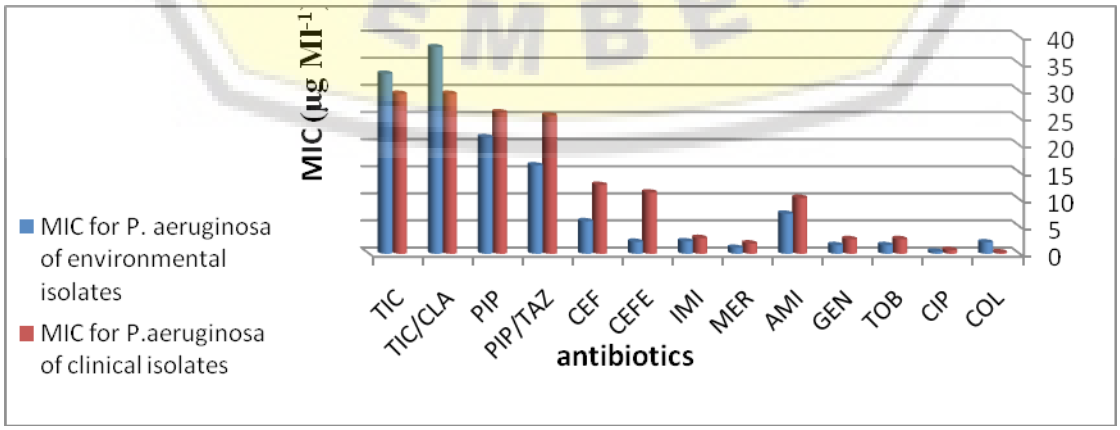

Figure 1. Minimum inhibition Concentration (MIC) of different antibiotics against environmental and clinical isolates of P. aeruginosa.

Bactericidal activity of fluoroquinolones, β-lactams, macrolides and aminoglycoside [23]. In present study all clinical isolates were sensitive to Colstin (COL). utilization of antibiotic with high dose and not under recommendation of doctor leads to more troubles relating with produce of new strains of bacteria that can resist to antibiotics. Modern study explained that the sensitivity of antibiotic related with the pathogenicity of and acuteness of bacteria to source infection [24].

Conclusions

Clinical isolates of *P. aeruginosa* are highly resistant to antibiotics than environmental isolates.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Effect of Non-oxygen Physical Program with Different Work-to-rest Ratio in the Development of Anaerobic Capacity and Muscular Fatigue Index for Junior Futsal Players

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Abstract

The study aimed to identify the effect of anaerobic physical training program with different work-to-rest ratio for the two groups in the development of anaerobic abilities of the muscles of the legs. The researchers used the experimental method to design the pre and post measurement of two experimental groups to suit its relevance and nature of the research. The sample was chosen in a deliberate manner from the futsal players of the youth halls aged (16-17) from the National Center and the number of (45) young people. The experimental group that used the time-to-rest ratio (1: 2) on the experimental group that used the time-to-rest ratio (1: 3) in anaerobic capacities. The researchers also recommended to emphasize the futsal coaches to organize the training load on the development of training programs according to energy production systems.

Keywords: *Non-oxygen, physical program and muscular fatigue.*

Introduction

The sports training has become a process oriented to improve the level of the player through the indicators planned to develop the competencies of the modern requirements of the game of futsal and as a basis for building elements of physical and motor competence that play an important role in fitness and skill that qualifies him to carry out his duties for the performance of motor performance more effectively and positively to the performance required during the game.[1]

The issue of energy production when the athlete of scientific topics that have become of great interest without energy there is no movement and therefore the identification of energy sources and try to employ the optimum employment during performance leads us to progress and achievement or else Energy production is one of the most important topics related to sports activity. This activity is very diverse in terms of intensity and duration. This diversity is also offset by the diversity of energy production systems. [2]

The body gets energy through the food it consumes, this food turns into chemical energy stored in the body but is not used in its primitive form directly as it is used to form a compound is triphosphate adenosine and to rebuild and form this basic energy compound, which takes one of three ways to rebuild it either depend on the phosphate system or lactic acid system or Oxygen system These systems vary depending on their dependence on oxygen during the process of energy production. Here, we can rely mainly on the system of lactic acid to produce energy. The researchers believe that the game of futsal is one of the games characterized by the fact that most of the physical and skill movements performed by the players are movements with maximum or near maximum anaerobic abilities dependent These movements require a different effort in intensity as players jump to different heights and run at short distances over time and perform short-term physical and skill movements.[2]

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Matches are performed under anaerobic conditions, while this energy is compensated in air conditions during rest, but these rest periods may be prolonged or shortened according to the rhythm of the game and in order for the player to succeed in physical performance or skill must have the physical, skills, mental and functional special to perform the required motor duties are characterized by most Skills in the game of futsal anaerobic work, which lasts from (5-15) seconds and repeated during games or training many times in order to enjoy the player from the performance of physical and planning duties efficiently and effectively This requires a high level of physiological efficiency and a great deal of muscle capacity In the game of futsal, the research is gaining importance through the preparation of anaerobic physical training program with different time-to-rest ratio in order to identify the impact of the development of anaerobic energy production on the abilities and fatigue index of the players.[3]

Research Aims:

1. Identify the effect of anaerobic physical training program with different work-to-rest ratio for the two groups in developing anaerobic abilities of the muscles of the legs.
2. Identify the effect of anaerobic physical training program with different time-to-rest ratio in the fatigue index of the two groups.

Research Hypothesis:

1. There are statistically significant differences between the results of pretest and posttest tests for anaerobic physical abilities and in favor of the dimension of the two groups with different time-to-rest ratio (1: 2) and (1: 3).
2. There were significant differences between the results of the pre- and post-tests and the fatigue index for the benefit of the two groups with different time-to-rest ratio (1: 2) and (1: 3).

Research Methodology

The researchers used the experimental method to design the pre and post measurement of two experimental groups to suit its relevance and nature of the research.

The Research Sample: The sample was chosen by deliberate method from the futsal players of the youth halls (17-16) from NBK center. The sample consisted of (30) players representing (80%) of the research community. Using the lottery, this sample was divided into two experimental groups (15) for each group. About their percentages.

Table (1). Shows the specification of the research sample

Variables	Number	Percentage
Research community	45	100%
The research sample	30	%66.66
Exploratory sample	10	%22.22
Excluded	5	%11.11

Table (2). Shows statistical significance and homogeneity of the research sample in the variables (age, height, mass and training age)

Tests	Units	Mean	SD	Skewness
Age	Year	16.600	0.982	5.915
Mass	Kg	63.066	3.073	4.872
Length	Cm	164.600	3.417	2.075
Age of training	Year	1.796	0.409	2.77

From Table (2), it was found that the coefficient of difference is less than (30) and this confirms the homogeneity of the research sample.

Physical Ability Tests[4]: The vertical jump test of stability was measured by the Johnson equation.

Objectives: To measure the muscle capacity of the two men.

Tools Used: Wall-chalk-tape measure.

Method of Performance: The laboratory holds chalk, the shoulder is touching the wall and raise his arm to the maximum extent possible with a note that the feet and heels are touching the ground and put a mark and then the first measurement between the first mark and the ground (M1) and when you give the reference to the examiner, he bends the trunk in front and down with the knees bent To reach the right angle with the weighted arms and then the feet together with the individual knees and extend the trunk up and the arm to the maximum height possible and mark the chalk on the wall and then the second measurement between the second marker and the ground (M2).

Test Conditions:

- Warm-up (5-10) minutes- Jump from steady mode.
- The laboratory is given two attempts.

Registration:

- Calculate the difference between the second and first marks (M1-M2)
- Best distance recording try.

Training Program: Two experimental approaches were designed for anaerobic physical exercises for the two research groups, which differ from one to the other in terms of time-to-rest ratio and were presented to a group of experts in the field of sports training science, training physiology and futsal. Physically, it is determined by the time of exertion and the rate of energy consumption in this activity and it is a basic principle to build a training program, the need to determine the system of energy production used in order to distribute the physical loads in the light.

Table (3). Shows the time-based training methodology for the boy

	Training time	The number of iterations in the module	The number of groups in the training unit	The number of iterations in the training group	Work to rest ratio	Rest type
Energy system ATP_PC	10seconds	50	10	5	1:3	Negative
	15seconds	45	5	9		
	20seconds	40	4	10		
	25seconds	32	4	8		

Table (4). Show the guide to Adopting the Training Program with Different Time-to-Rest Ratio (1: 3) and (1: 2)

Exercises	Time	Total repetition	Partial repetition	Rest	Number of groups	Total work time	Total rest time	Total a second	Rest between groups	Total exercise for each minute
1	10	50	6	30	1	60	150	210	3Min.	6.5
2	10	50	6	30	1	60	150	210	3Min.	6.5
3	15	45	6	45	1	90	225	315	3Min.	8.25
4	15	45	6	45	1	90	225	315	3Min.	8.25
5	20	40	5	60	1	100	240	325	3Min.	8.41
6	20	40	5	60	1	100	240	325	3Min.	8.41
7	25	32	4	75	1	100	225	390	3Min.	9.5
8	25	32	4	75	1	100	225	390	3Min.	9.5
9	20	40	5	60	1	100	240	325	3Min.	8.41
10	20	40	5	60	1	100	240	325	3Min.	8.41
11	20	40	5	60	1	100	240	325	3Min.	8.41
12	20	40	5	60	1	100	240	325	3Min.	8.41

Field Research Procedures:

Pre-test: 5-6/1/2019 on the members of the research sample before the implementation of the two programs in order to see their level in the variables under study. After the completion of the implementation of the two programs, the tests were conducted on 5-6/4/2019 to find out their level in the variables under study.

Results

Table (5). Shows the significance of the differences between pre and post measurement in the variables and anaerobic physical abilities and fatigue index of the experimental group used time to rest ratio (1: 2).

Variables	Units	Pretest		Posttest		(t) value	Probability value	Statistical significance
		Mean	SD	Mean	SD			
Short anaerobic ability of the leg muscles through the Sargent test	Watts	3068.60	420.49	3522.21	427.48	5.72	0.00	Sig.
Short anaerobic ability of the leg muscles through the Sargent test	Watts	885.99	265.17	1115.74	190.79	6.44	0.00	Sig.
Short anaerobic ability of the leg muscles through the Sargent test	Kg.M.Min.	1645.09	207.05	2042.29	467.17	3.45	0.04	Sig.
Short anaerobic ability of the leg muscles through the Sargent test	Watts	269.03	34.04	331.65	31.54	5.50	0.00	Sig.
Muscle fatigue index through anaerobic stress test (RAST)	Watts/Sec.	13.83	2.29	10.75	1.18	7.90	0.00	Sig.

Table (6). Shows the significance of the differences between the pre and post measurement in the variables anaerobic physical abilities and the fatigue index of the experimental group used time to rest ratio (1: 3)

Variables	Units	Pretest		Posttest		(t) value	Probability value	Statistical significance
		Mean	SD	Mean	SD			
Short anaerobic ability of the leg muscles through the Sargent test	Watts	2990.48	456.92	3155.08	311.15	5.39	0.00	Sig.
Short anaerobic ability of the leg muscles through the Sargent test	Watts	830.40	234.69	941.01	190.79	5.15	0.00	Sig.
Short anaerobic ability of the leg muscles through the Sargent test	Kg.M.Min.	1599.36	250.09	1775.83	150.13	3.47	0.00	Sig.
Short anaerobic ability of the leg muscles through the Sargent test	Watts	269.03	34.04	296.51	46.28	2.18	0.04	Sig.
Muscle fatigue index through anaerobic stress test (RAST)	Watts/Sec.	13.62	1.96	11.67	0.68	4.66	0.00	Sig.

Results

Differences between the pre and posttests of the variables under study: From the results obtained from tables (5 and 6) we see that there has been clear progress in the two research groups that used different time-to-rest ratios in anaerobic physical exercises in the training program,[5] as the tables mentioned showed significant differences between the pre- and post-test and after-benefit the training methodology,[6] which achieves the hypotheses of the research which stipulated that there are significant differences with regard to the variables under study between the pre and post tests and in favor of the post test of the two research groups.[7] Time to rest, which took (8) weeks and (3) training units per week in which the pressure on the power system (ATP-CP),[8] a guide to build a time-based training program, which was used times (25-20). The anaerobic exercise leads to adaptations and physiological changes and increases energy sources by ATPs (10-15 seconds) ATP-CP and CP in muscle and increase the energy houses and mitochondria found within muscle cells.[9]

The researchers attribute this to the reduction of

rest periods between repetitions, which led to increased exercise intensity as a result of the implementation of anaerobic physical exercises in the training program gradually from week to week, which led to adaptation to reach a better level of the ratio (1: 3) It is due to the development Anaerobic physical abilities and increased body resistance to work against factors that delay the appearance of fatigue by using energy sources through the regular exchange between fatigue and recovery.[8] Training in anaerobic energy production time affects the level of activity of some enzymes known as anaerobic enzymes,[10] which regulate anaerobic energy representation, the researchers attributed this to the increased strength of the breathing muscles, which reduces the resistance of the flow of air in the air passages and increases the amount of air entering the lungs and thus improves the process of gas exchange,[11] resulting in the efficiency of the respiratory system increases the volume of oxygen that is pumped into the blood stream, which leads to increase the effectiveness of muscle strength The heart resulting in efficient circulation and carry more oxygen thus increasing the volume of oxygen consumed at rest.[12]

Conclusions

1. Anaerobic physical exercises with different time-to-rest ratio have made significant progress in anaerobic abilities.
2. The experimental group that used the time-to-rest ratio (1: 2) was superior to the experimental group that used the time-to-rest ratio (1: 3) in anaerobic capacities.

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Comparison of Clients' Satisfaction in Family Health Adapted Centres and Primary Health Care Centres in Baghdad 2018

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Abstract

Background: Patient satisfaction is a key criterion for evaluating the quality of health-care services. Family health strategy is now being used in a number of primary health care centers as a new model to enhance the quality of provided health care services.

Aim of Study: To evaluate and detect differences in the quality of services provided by family health adapted centers and primary health care centers.

Method: A comparative cross-sectional study was conducted to measure clients' satisfaction in two family health adapted centers and two traditional primary health care centers. Data was collected from 240 participants through direct interview using a SERVQUAL based questionnaire.

Results: Total satisfaction score was significantly higher in family health adapted centers (79.18±5.054) compared to that in primary health care centers (50.76±11.801). The means of all the studied dimensions in family health adapted centers were also significantly higher than that in primary health care centers.

Conclusion: Overall Patients' satisfaction in family health adapted centres was higher than in traditional primary health care centres in all the studied dimensions, reflecting that the quality of care is better in family health adapted centers.

Keywords: *Patient satisfaction, family medicine, family health strategy.*

Introduction

Health is designated as a fundamental human right by almost all countries and its development is considered as one of the most important government responsibilities. [(1)]According to the World Health Organization (WHO) guidelines, all countries need to establish continuous monitoring and evaluation programs.[(2)] Patient satisfaction is a key criterion for evaluating the quality of health-care services.[(3)] It can be defined as the level of congruence between patients' expectations and their perceptions for the care received.[(4)] Patient satisfaction has emerged as an increasingly important health outcome and is currently used for the following purposes: (i) to compare different health-care programs or systems; (ii) to evaluate the quality of care; (iii) to identify which aspects of a service need to be changed to improve patient satisfaction; and (iv) to assist organizations in identifying consumers likely to dis-enroll.[(5)]Feedback from patients is vital if deficiencies are to be identified and improvements to be achieved.[(6)] Patient satisfaction is one of the most widely used outcome indicators of the quality of health care. As a result, patient satisfaction is an active area of research that is increasingly being used to guide health care, because it encompasses patients' needs.[(7)]

Years after the Alma Ata Declaration, policy-makers come to believe more and more that it is essential to support the revitalization of PHC.[(8)] This valuable point has led health system policy-makers across the world to seek an effective model for providing PHC.[(8)]for this reason family medicine (FM) emerged as a transition from medically focused to client-centered and family-centered models.[(9)] Family Medicine is defined as a specialty of medicine that provides comprehensive care

to individuals and families by integrating biomedical, behavioural and social sciences.[10] In contrast to an aggressive assault on the disease, family physicians championed longitudinal health care, which allowed both patient and physician to understand the natural history of illness and to share decisions over time.[11] In 1994, the Family Health Strategy (FHS) was put in practice.[12] The FHS has evolved into a robust approach to provide primary care for defined populations by deploying interdisciplinary health care teams.[13] The nucleus of each FHS team includes a family medicine physician, a nurse, a nurse assistant and four to six full-time community health agents. Family health teams are organized geographically, covering populations of up to 1000 households each, with no overlap or gap between catchment areas. Each FHS team member has defined roles and responsibilities and national guidelines help structure FHS responses to most health problems.[13]

In Baghdad the FHS started in 2013 in Bab AL-Muadam and AL- Mansour health care centers. However, to our knowledge there is no research conducted to evaluate the quality of health services provided by these centers or compare them to other traditional centers.

This study utilized patient satisfaction as a benchmark to assess the difference in the quality of health services provided in family health adapted centers (FHAC) and primary health care centers (PHCC).

Methodology

Acomparative cross-sectional study with analytic element was conducted in two family health adapted centers (Bab Al-Muadam/Al-Resafa and Al-Mansour/Al-Karkh) that were randomly selected out of twenty family health adapted centers in Baghdad. Their comparison group was selected from the nearest catchment area to minimize differences in the socio-economic status of the participants as a result; two PHCCs were chosen (Al-Sheikh Umar/Al-Resafa and Al-Washash/Al-Karkh). The data was conducted for a period of three months, starting from 1st of May till the end of July/2018.

The included study participants were restricted to those who were ≥18 years old and who had at least two visit to the included centers, Any patient who worked in the selected health care institutions was excluded. The clients were taken from the waiting area of the selected centres and any patient who met the selection criteria and was ready to participate was included in the study. This resulted in a convenient sample size of 240 participants (60 from Bab Al-Muadam, 60 from Al-Mansour, 60 from Al-Sheikh Omar and 60 from Al-Washash). The data was collected by the researcher through a direct interview with the patients using a pre-designed and validated clients' satisfaction questionnaire based on SERVQUAL model (service quality by Parasuraman 1988).[14]The questionnaire was modified to better fit the quality of health services.[15] The questionnaire consisted of two parts, the first part was about specific characteristics of the patients which include (age, gender, marital status, occupation and level of education) and the second part was about the quality of the services provided by the institute. This part covered six dimensions (tangibility, reliability, responsiveness, assurance, empathy and accessibility & affordability).

Satisfaction scores were calculated using a Likert-type scale. The scores were given 3= highly satisfied, 2= satisfied, 1=uncertain and zero for dissatisfied. The data were summarized, presented and analyzed using SPSS version 22. Frequency and percentages were used to represent categorical data, while the mean and standard deviation used to represent numerical data. Independent student t-testused for the analysis. In all statistical analysis, level of significance (p value) was set at ≤ 0.05 and the results presented as tables.

Results

The study included 240 respondents, 120 (50%) from FHACs and 120 (50%) from PHCCs. Their mean age was (37.76±9.08 years) and the majority of them (61.7%) were below the age of 40 years. of the study sample, (88.3%) were females and (87.5%) were married. Only (19.6%) of clients were employed, while (80.4%) were un-employed. Regarding the level of education 36.7% of the studied sample was an intermediate and secondary. (Table 1).

Table 1: Distribution of studied cases according to their basic characteristics

Variables		No.	%
Age (mean±SD)=37.76±9.08 years			
Age group	<40 yrs.	148	61.7%
	≥40 yrs.	92	38.3%
Total		**240**	**100%**
Gender	Male	28	11.7%
	Female	212	88.3%
Total		**240**	**100%**

Variables		No.	%
Marital status	single	22	9.2%
	married	210	87.5%
	Divorced or widowed	8	3.3%
Total		**240**	**100%**
Occupation	employee	47	19.6%
	un employed	193	80.4%
Total		**240**	**100%**
Educational level	primary and less	84	35.0%
	intermediate & secondary	88	36.7%
	college	68	28.3%
Total		**240**	**100%**

A significant difference was found between the mean of total satisfaction score and the type of PHCCs, It was higher in the FHACs (79.18±5.054) compared to that in PHCCs (50.76±11.801). The means of all the studied dimensions were significantly higher in the FHACs compared to that in PHCCs. The means of tangibility, reliability, responsiveness, assurance, empathy and accessibility & affordability in FHACs were 17.73, 11.81, 14.61, 14.77, 11.64 and 8.62 respectively. While in the PHCCs were 12.69, 7.85, 8.44, 8.75, 6.52 and 6.53 respectively. The gaps between FHAC and PHCC satisfaction means in descending order were 6.17, 6.02, 5.12, 5.04, 3.96 and 2.09 for responsiveness, assurance, empathy, tangibility, reliability and accessibility & affordability. (Table 2).

Table 2: Shows the significance of differences between means according to the studied dimensions

Dimension	Health care center	N	Mean	S.D	P value
Total score	FHAC	120	79.18	5.054	0.001
	PHCC	120	50.76	11.801	
Tangibility score	FHAC	120	17.73	0.877	0.001
	PHCC	120	12.69	3.974	
Reliability score	FHAC	120	11.81	0.781	0.001
	PHCC	120	7.85	3.511	
Responsiveness score	FHAC	120	14.61	2.047	0.001
	PHCC	120	8.44	3.103	
Assurance score	FHAC	120	14.77	1.075	0.001
	PHCC	120	8.75	2.023	
Empathy score	FHAC	120	11.64	1.527	0.001
	PHCC	120	6.52	1.806	
Accessibility & affordability score	FHAC	120	8.62	0.909	0.001
	PHCC	120	6.53	1.815	

Discussion

Patients' satisfaction has long been considered as an important component when measuring health outcome and quality of care in both developed and developing countries and constitutes a significant indicator of the health care quality.[16]

The significantly higher total satisfaction score in FHACs was in accordance with a study conducted in Brazil, 2012 in which they found that those who enrolled in FHS were more satisfied compared to those using the traditional primary care centers.[17]

The current study revealed that clients of FHACs were significantly more satisfied than those in PHCCs regarding tangibility. This is most probably attributed

to the nature of tangibility questions (updated facilities, clean environment with good directional signs) and the fact that FHACs were more recently established in comparison with PHCCs. Tangibility has been noted as one of the most important factors that can affect patients' satisfaction when dealing with quality of services.[18] Regarding reliability, it was found that FHACs were more reliable than the PHCCs. This may be due to the fact that more competent health practitioners and more competent staff were hired in FHACs compared to the other PHCCs. In the family health centres, only specialized physicians in the field of FM can be found while uncertified general practitioners can be found in the PHCCs. Moreover, the number of patients attending the FHACs is less than that those who attend the PHCCs, thus the doctors spend more time with each patient and hence, provide better quality of care. In 2018, the annual average number of patients attended Al-Washash centre was about two times the number attended Al-Mansour centre (2113 vs 952). Regarding the consultation time spent by the doctor with the patient it was found to be also important, a short time spent with the attendants could reflect an inadequate care and a care that is provided in a hurry with little clinical assessment and health education lead to poor satisfaction.[19]

The mean score for responsiveness was significantly higher in FHACs than in PHCCs. This means that FHACs provide services more promptly than the PHCCs. This may be attributed to the fact that the number of clients in FHACs is less in comparison with PHCCs. Therefore patients do not have to wait in long queues in order to see a health practitioner. A study conducted in Bostwana found that, the participants' greatest displeasure was with the time spent in the PHCC, as 63.9% of them were displeased with this aspect.[20]Waiting time is a source of dissatisfaction for patients and remains a challenge to the quality of care and services in clinics.[21] A previous study from Aldana et al. identified that long waiting time and insufficient consultation time as factors contributing to patient dissatisfaction.[22]

This study found that FHACs scored significantly higher than the traditional PHCCs with regard to assurance. This can be explained by the fact that doctor-patient relationship in the family centers is better in comparison with PHCCs. Al-Jumaily and Al-Lami stated that communication skills and doctor-patient relationship had a great effect on attendants' satisfaction. Reception and welcoming of the doctor make the first bridge for communication with the consumer and bring relief and trust.[19] A study conducted in Netherland also reported that higher satisfaction scores were related to higher scores on the doctor-patient relationship.[23] In addition, family doctors were more aware about their patients' conditions than the physiciansin PHCCs. This can be attributed to the fact that the patients' records in the FHACs are available, so the doctors would be able to review their clinical history and treat them more efficiently. Explaining the medical condition to the patient and treatment outcome are also important factors of assurance. Due to the small number of patients being seen in FHAC, doctors are able to spend more time with their patients and explain their medical conditions more thoroughly and thus enhance their satisfaction and assurance.

Family adapted centers were able to empathize more with the clients compared to PHCC. As each family is assigned to a specific family doctor in the FHAC, this has led to the development of a better doctor-patient relationship with the clients at a personal level and further understanding of their specific needs.In a study of patient satisfaction with health care service delivery, it was reported that to deliver better health service, primary health care physicians must establish relationships with their patients.[20] Empathy enhances the provider–patient relationship and therapeutic efficacy, decreases patient anxiety, improves patient enablement and has shown clear links to patient health outcome.

The accessibility & affordability to the family centers were more significant than that in PHCC, this may be due to that family centers were newly existed and built to be easily accessed by the clients. A study conducted by Bamidele AR et al. reported that ease of access to the facility was of importance to 91.4% of the participants.[20]As for affordability, despite the fact that the prices in both types of PHCCs are the same and fixed by the Ministry of Health, the satisfaction level on the service's prices was better in family health adapted centers. This may be attributed to the fact that the quality of care provided in the FHAC is much better than that provided in the PHCCs, thus the patients feel that paying for such good-quality services is worthy.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Clinical and Bacteriological Study in Puerperal Sepsis

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Abstract

Background: Motherhood is a distinct bio-psychosocial process that transforms and broadens the role of a woman into that of a mother. Puerperal pyrexia and sepsis are among the leading causes of preventable maternal morbidity and mortality not only in developing countries but also in developed ones, as well, therefore, the aims of current study were to find out common organisms causing puerperal sepsis and to identify their antibiotics sensitivity patterns.

Method: This cross-sectional study was carried out during the period from June 2018 to December 2018. The clinically suspected cases of puerperal sepsis were included in this study. Endocervical swab or secretion and blood from each case were collected following standard procedure for microscopic examination and isolation of bacteria with antimicrobial susceptibility testing. The isolates were identified on the basis of colony morphology, colony Gram staining and appropriate biochemical tests. The identification of isolates was done, per standard biochemical testing and antibiotic sensitivity testing, as per CLSI guidelines.

Result: Out of (65) women recruited in present study, the majority of them 52(80%) were between 20 and 29 years of age. Majority of them were uniparous. In addition, 45(69.2%)of the cases showed bacterial growth, while the rest of samples were sterile. Gram-negative organisms were isolated in 31(68.9%)of the cases cases,while Gram-positive organisms where isolated in 14(31.1%)of the cases. *Klebsiellaaerogene* was the most frequent isolate in 12(26.7%) cases followed by *Staphylococcus. aureus*in 9(20%) cases then *Pseudomonas aeruginosa*in 8(17.8%) cases, *Proteus*in 7(15.5%) cases, *E. coli*in 4(8.9%) cases, *Streptococcus agalactiae*in 3(6.7%) cases and *Streptococcus pyogenes* in 2(4.4%) cases. In the present study, out of (65) cases studied, bacteremia was present in 45(86.5%) cases. Present study showed a predominance of Gram-negative bacilli (71.11%), whereas (28.88%)of isolates were Gram-positive cocci.

Conclusion: In view of the changing spectrum of the causative agents of puerperal sepsis and their antibiotics sensitivity patterns from time to time and from one hospital to another a positive blood culture and antibiotic susceptibility testing of the isolates are the best guide in choosing the appropriate antimicrobial therapy in treating puerperal sepsis.

Keywords: *Puerperal sepsis, antibiotic sensitivity pattern, blood culture, gram-positive, bacteremia.*

Introduction

Motherhood is a distinct bio-psychosocial process that transforms and broadens the role of a woman into that of a mother. Childbirth is a life-changing event as wonderful and joyful experience as it is for many. It can also be a difficult period, bringing with it new problems which have the potential to be life-threatening. Puerperal pyrexia and sepsis are among the leading causes of preventable maternal morbidity and mortality not only in developing countries but also in developed ones, as well[1].WHO has defined puerperal sepsis as "a genitaltract infection occurring between rupture of membranes and the 42nd day postpartum, coinciding with fever and pelvic pain, abnormal vaginal discharge, abnormal odour or discharge, or a delay in reduction of uterine size must also be present." Puerperal sepsis occurs in 1-8% of all deliveries. Fifteen percent of maternal death was attributed to puerperal sepsis in India and (16.4%) worldwide. Maternal mortality ratio is a sensitive indicator of health status of women[2].

In addition, (35%) of maternal morbidity was due to puerperal sepsis in India. Puerperal sepsis contributes to a lot of maternal morbidity, more so in rural women. This incidence is (5-10) times higher when a woman is delivered by cesareans section. Study of common organisms causing puerperal sepsis and their antibiotic sensitivity pattern will help to start prompt antibiotics treatment until culture report comes. The organisms which cause it include *S. aureus*, *S. Pyogenes* and Coliform bacteria[3]. There are very few studies particularly on bacterial etiology of puerperal sepsis. It is known that bacterial pattern with their antimicrobial susceptibility is a dynamic and changing phenomenon and surveillance of this event is needed in every healthcare setting. Puerperal sepsis is a systemic inflammatory response to infection in genital organs, which is manifested by fever, tachycardia, local vaginal discharge, tachypnoea and hypothermia. Puerperal sepsis could be attributed to no or improper use of aseptic technique during delivery or in immunocompromised mothers[4]. Predisposing factors leading to puerperal sepsis include primiparity, prolonged labour, anaemia and multiple vaginal examinations during labour and post-partum period. Besides, endometritis, wound infection, mastitis, urinary tract infection and septic thrombophlebitis are chief causes of puerperal sepsis[5].

Therefore, current study was aimed to find out common organisms causing puerperal sepsis and their antibiotics sensitivity patterns.

Materials and Method

This cross-sectional study was carried out for a period of six months; from June (2018) to December (2018). The clinically suspected cases of puerperal sepsis were included in this study. Patients with similar sign and symptoms but diagnosed as having other diseases e.g. UTI, cervical polyp, ulcerated uterine prolapse and vaginitis and also patients with history of taking prior antibiotics treatment within seven days were excluded from the study. Verbal consent was taken from every patient before sample collection and the purpose of the procedure was explained clearly. Endocervical swab or secretion and blood were collected from each patients following standard procedure for microscopic examination and isolation of bacteria with their antimicrobial susceptibility. Specimens were collected carefully to avoid normal resident flora. One aliquot of collected specimen was immediately inoculated in blood agar media at bedside for anaerobic culture. The rest of the specimen was transferred to the Department of Microbiology for further investigations. Wet film and smear were prepared from each cervical sample. Prepared Smear was stained by Gram staining[6]. Wet film and the stained smears were searched for observing morphology of relevant organisms and number of pus cells. Cervical swab/secretion was inoculated into two plates of blood agar, one MacConKeys agar, one Nutrient agar and One Mannitol saltagar media. One Blood agar, MacConKeys agar, Nutrient agar and Mannitol salt agar media were incubated at 37ºC for 24 hours aerobically. Another Blood agar plate was incubated anaerobically at 37°C for 48hrs[7]. Fromeach patient, a 10-mlsample of blood was collected in Brain Heart Infusion Agar-Brain Heart Infusion Broth (BHIA-BHIB). Blood culture bottles were observed daily for signs of growth like turbidity, colonies over solid slant portion, sub cultured onto solid media (like blood agar and MacConkeys agar) and evaluated after (24) hours, (48) hours and a maximum of upto seven days before declaring it as a negative culture. Blood culture bottles were incubated at (37°C) aerobically within an hour after collection of blood at bedside. Blood culture bottles were examined macroscopically for growth in the morning and afternoon on the 1st day of incubation and in the morning of each day thereafter. Culture that appeared as per hazy appearance of the broth was picked up and Gram stain was done[8]. Subcultures were done on Blood agar, Nutrient agar and MacConkey agar media and incubated at (37ºC) for (48) hours aerobically. Bottles that appeared macroscopically negative were examined with Gramstain on the 1st, 4th and 7th days of incubation and blind subcultures were done on the 1st and 4th days on a Blood agar. Subcultured plates were held for two days before they were discarded as negative. The Blood culture bottles were kept on incubation for one week and were discarded when there was no growth[9]. Isolation of bacteria from the collected specimens was done by inoculatingthe samples into Nutrient agar, Blood agar, MacConkey agar, Trypticase soya broth and Thioglycollate broth media within the earliest possible time (less than one hour) after collection. Inoculated Petri dishes were then incubated at (37ºC) for (24–48) hours aerobically[7]. The isolates were identified on the basis of colony morphology from colony Gram-staining and appropriate biochemical tests. Identification of isolates per standard biochemical testing and antibiotic sensitivity testing was done as per CLSI guidelines[10].

Results and Discussion

Post-partum morbidity continues to be a major health issue which needs to be investigated critically not only for curative but also for preventive and promotive health objectives. It is believed that in developing countries almost all women (70%) have some form of antenatal care, but only (30%) receive postpartum care. A big proportion of Iraqi women are still having delivery at home with or without any prenatal and intra-natal care. They are malnourished, anemic and remain prone to postpartum complications. Out of (65) women recruited in present study, 6(9.3%) were teenagers, 23(35.5%) were between 20 and 29 years of age and 36(55.4%) were between 30 and 39 years. The majority of them came from lower socioeconomic classes (Table 1). A totalof 65 women, 31(47.7%) had delivered at privatehospital, 21(32.3%) at other hospitals and 13(20%) had home delivery (Table 2). It is important to understand the bacteriology of puerperal sepsis. Enhanced detection of blood stream infections needs to be a national priority. Blood culture is the essential investigation for the management of sepsis. In the present study, out of (65) cases studied, bacteremia was present in 45(69.2%) cases. Present study showed predominance of Gram-negative bacilli31(68.9%) with 14(31.1%) isolates being Gram-positive cocci. *Klebsiellaaerogene* was the most frequent isolate 12(26.7%) followed by *Staphylococcus aureus*9(20%), *Pseudomonas aeruginosa* 8(17.8%), *Proteus* 7(15.5%), *E. coli* 4(8.9%), *Streptococcus agalactiae* 3(6.7%) and *Streptococcus pyogenes* 2(4.4%).

Similar findings were reported by another study which showed isolation of Gram negative organism (60%) and Gram positive cocci (40%) from cases of puerperal sepsis[11]. Distribution of bacteria as the cause of puerperal sepsis observed in the present study was in contrast to other studies which showed predominance of Gram-positive cocci (78%) with (8%)of isolates were Gram-negative bacteria[12]. *Klebsiella* and *S. aureus* were the major isolates in current study. Other studies from India reported that*E. coli* as the predominant pathogens followed by *S. aureus* and *Klebsiella*[13], whereas [14]reported *E. coli* as the predominant pathogen in puerperal sepsis[15]. Other organisms isolated in our study were *Pseudomonas aeruginosa*, *Proteus*, *E. coli*, *Streptococcus pyogenes* and *Streptococcus agalactiae*in descending order of frequency. Another study found that *E. coli* as the predominant bacteria (50%) followed by *Staphylococcus* species (30%) and *Streptococcus* species (20%)[16]. Distribution of *E. coli*, *Staphylococcus* species and *Streptococcus* species in another study done in USA was reported to be (36%), (28%) and (21%), respectively,[17]. Moreover, [18] reported that the most common bacteria were *Staph. epidermidis*, *E. coli*, *Enterococci* and *streptococci*. The frequency of puerperal infection due to Group A beta hemolytic Streptococci have decreased greatly in the21stcentury and now they rarely cause maternal death. In the 18th and 19th centuries puerperal infection was a serious life-threatening condition[19]. In the present study, antimicrobial susceptibility of different bacterial isolates revealed that *K. aerogenes* was resistant to Ampicillin (91.7%) and Norfloxacin (75%). On the other hand, *P.aeruginosa* showed resistance to Ciprofloxacin (50%). The majority of isolates of *Proteus* were resistant to Ampicillin (75%) and Norfloxacin (75%). *E. coli* showed resistance to Ampicillin (75%). However, *S. aureus* showed resistance to Gentamicin (88.9%), Ampicillin (55.6%). *Moreover, S. Pyogenes* was (100%)resistant to Ampicillin and Amikacin. Others reported that majority of different Gram-positive cocci showed sensitivity to Cephalosporins. Another study from Nepal also observed that (100%) strains of Gram-positive cocciwere sensitive to Cephalexin[20]. Finding of the two studies mentioned above were well consistent with results of the present study. In a study by [21], *E. coli* and other Gram-negative bacteria showed (100%) sensitivity to Gentamicin which was not similar to our study. Sensitivity to Ciprofloxacin among different bacteria found in the present study was similar to that reported by [22].

Table (1) Distribution of patients according to age

Age (Years)	Number of cases	Percentage
<19	6	9.3
20-30	23	35.4
31-40	36	55.2
Total	**65**	**100**

Table 2 Place and type of delivery of cases

Place	Type of delivery	Number of cases	Percentage
Privet hospital	Normal delivery	16	47.7
	Caesarean section	15	
Other Hospitals	Normal delivery	11	32.3
	Caesarean section	10	
Home delivery	Normal delivery	13	20
Total		**65**	**100**

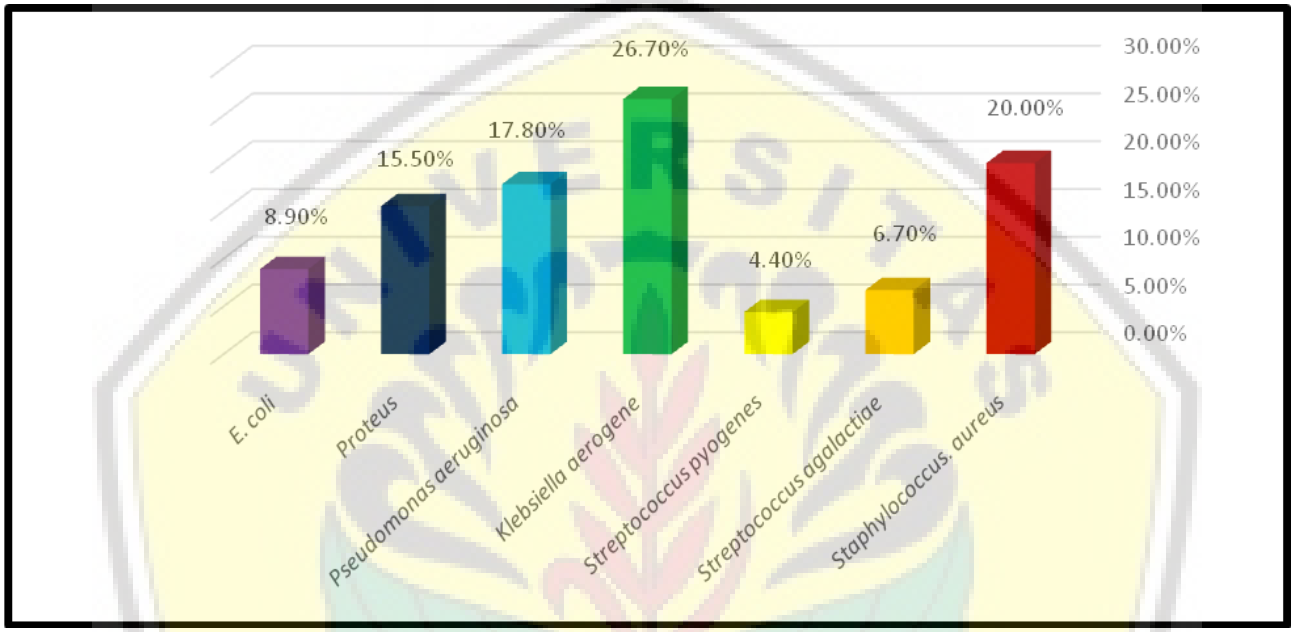

Figure (1): Gram-positive and Gram-negative bacterial isolates from patients suffering from puerperal sepsis.

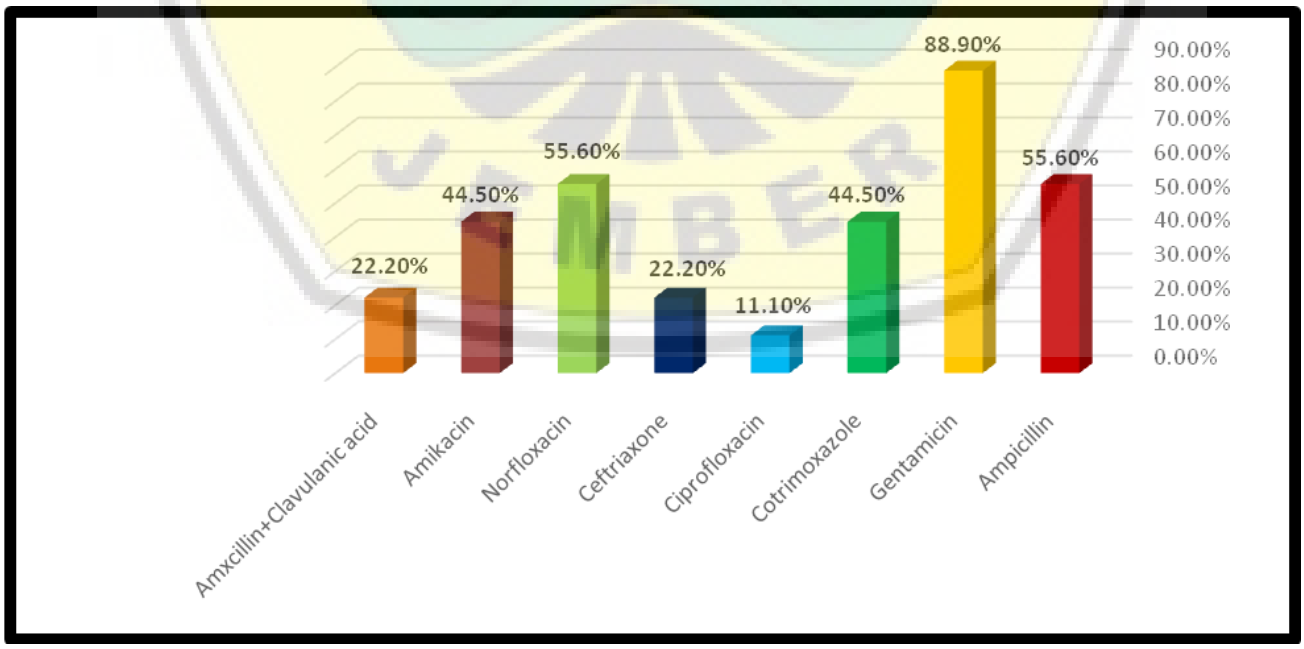

Figure (2): Antimicrobial resistance for S. aureus.

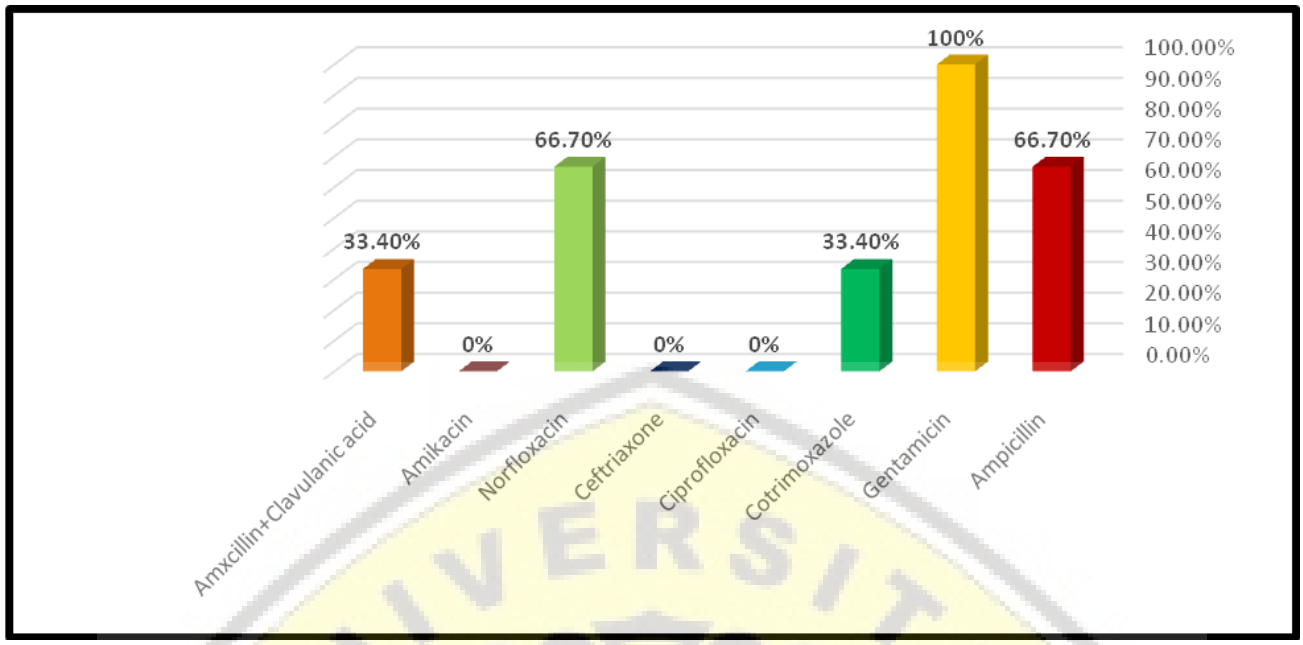

Figure (3): Antimicrobial resistance for S. agalactiae.

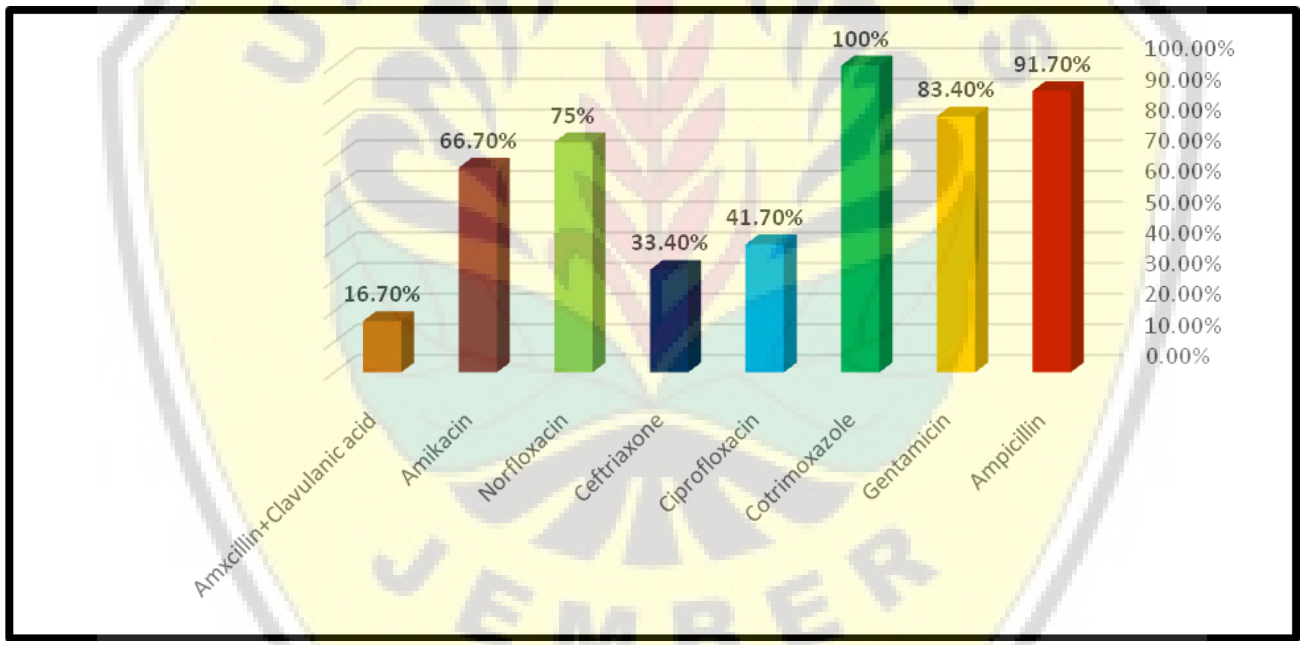

Figure (4): Antimicrobial resistance for K. aerogene.

Conclusion

In view of the changing spectrum of the causative agents of puerperal sepsis and their antibiotics sensitivity patterns from time to time and from one hospital to another, a positive blood culture and the antibiotic susceptibility testing of the isolates are the best guide in choosing the appropriate antimicrobial therapy in treating puerperal sepsis.

Ethical Clearance: The research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: Self-funding.

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The Relationship between the Exercise of Electronic Games and Social Intelligence among Middle School Students

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Abstract

The current research aims at finding out the relationship between playing electronic games and social intelligence among middle school students. The sample of the study consisted of (334) middle school students in six schools and was chosen randomly. To achieve the objectives of the study, the researcher prepared a questionnaire for the exercise of electronic games on the students of the intermediate stage consisting of (30). The results of the study indicate that there is a risk of the exercise of these electronic games in terms of impact on students and caused them social isolation, less interactive and integrated with their peers. According to these results, researchers should undertake more research and studies on students in schools.

Keywords: *Electronic games, social intelligence and middle school students.*

Introduction

Because of the technological development in which the world is living, as well as the development in the fields of computers and the Internet, personal computers and games devices such as PlayStation, Xbox, Galaxy IPod, iPad and BlackBerry have become available in the lives of young people and adults are not free of any of these devices and spend time Long games in the exercise of these games and all kinds and forms of free and complete, these games to enrich the people and satisfy their desires and tendencies, they became immersed in the world of electronic games, which made them busy only in how to access the electronic games The most popular in the world, which is shown on the television "video games" or on the computer screen, "computer games," which also play on the control panels allocated to them or in their own games rooms, so that the games provide the person fun by challenging the use of The hand with eye "kinetic visual synergy" or limit to mental potential.[1]

Studies have pointed out that electronic games are practiced by boys and girls, but many studies have shown that there is a difference in the amount of time spent and their preferences for the quality of these games.[2] American children spend more time playing electronic games than they do in school.[3] A study on the views of parents and children about electronic games and this study showed that the views of the parents confirmed their concern for the scenes of violence and sexual images and the impact of their practice of the negative impact on the performance of their duties. Without control of any kind by the parents, the minority owns the devices play at home, which can be monitored by parents, either the majority are playing these games in the halls allocated for this and Internet cafes without any control, Adams also noted that children and young people between the ages of 8 and 18 years old spend an ounce Counts most in the practice of electronic games more than any other activity except sleeping and this in turn leads to reduced physical activity and leads them to obesity.[4]

Education is witnessing a great interest in the world and continuous development for the better to keep pace with the characteristics of the scientific and technical era and the requirements of the twenty-first century.[5]

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Education has a great role in building human society through the formation of the individual as an integrated form and make it more mature and developed.[6]

Human is a social being not only self-sufficient, but uses the other and the characteristics of human life in social manifestations and areas[7], Social relationships and consolidation is an important characteristic for every human being. He cannot live isolated from others, but lives in a society that interacts with his or her members. He interacts with and empathizes with them. Social intelligence is the mutual influence of individuals. Belonging to it and its effectiveness in it [8]. The brain is the material machine of thought and intelligence. The ability of man to perceive and to express, to understand meanings and to respond to instructions is created. Man is only a notebook. Thus, the discovery of the electrical scale of the brain has led to some understanding of how the brain works. It is the center of consciousness of the body, which is the voice of the human self and its environment. It describes, distinguishes, compares, reflects and dreams and these mental abilities are often The brain's brain function, if every new experience and experience passes through the individual really changes from the chemical composition of the brain to the brain and that the brain's exciting reception of any kind is activated by the communication process between the neurons. The more exciting the new challenge is, the more active cells are activated and vice versa, [9] As in Figure (1).

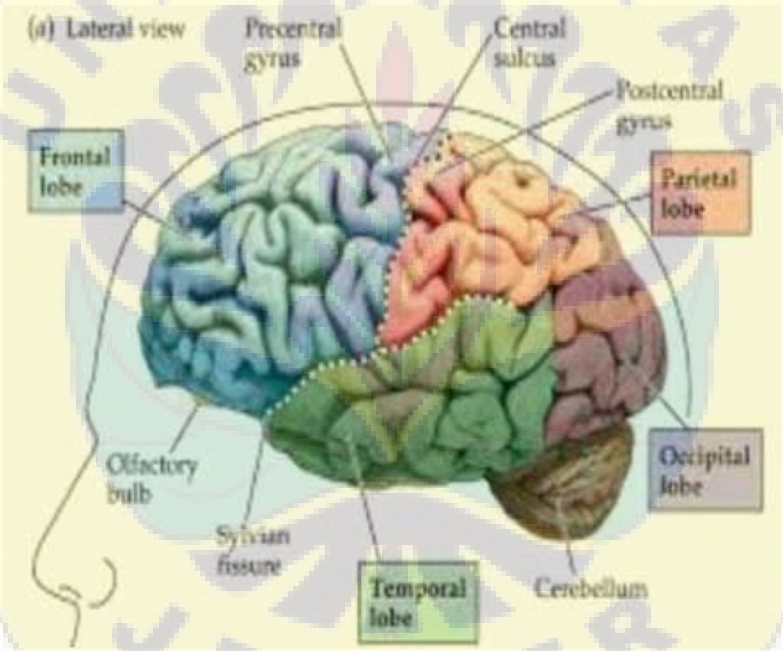

Figure 1: Demonstration of human brain lobes

The brain includes four lobes of the brain:

1. The front lobe, which is the center of executive control and includes 50% of the size of each hemisphere, controls the movement through the top of the two halves.
2. The temporal lobe/center of talk on the left side.
3. The lobe of the cage/specialized in visual processing.
4. Parietal lobe/Special attention to stimuli and sensory integration and guidance.[10]

Research Problem: People in our societies are living in a revolutionary technological revolution. Electronic devices, gaming devices, tablets and smart phones have become more and more present in their lives and have spread so fast that as much as the individual enjoys playing these games as much as he hides himself from the surrounding world, Subject and conduct many studies on them.

The proliferation of electronic games and the increase in the number of hours spent by individuals

play a significant role in the psychological and social effects they cause. In this context, many studies to the seriousness of electronic games on the health, social and cultural aspects and some recommended the need for new studies to follow the growing impact on individuals and even children.

Research Importance: There are many studies that dealt with the category of children in Iraq, but there is no study on the youth category in Iraq, which is the subject of the current study. The importance of this study stems from the modernity of its subject. It aims at educating individuals about the danger of the exercise of these games and the social isolation that causes them and the health and social effects.

This category was chosen because it is the basis of society and it builds the society and raises the need to educate the youth at this stage. And help them to build their personality as the researcher hopes that this study will enrich the Arab library with the information and benefit that can be achieved by applying it to a sample of students (males) to make them aware that they do not addicted or increase their practice of these games, Within the limits of the researcher's knowledge) a topic that has not been raised before in Iraq. It follows the importance of this study to shed light on the youth, because it is the basis of society and we must contribute to building the personality of young people, especially in the light of the technological development and the great technological revolution that they are going through[10]. This study provided an opportunity to educate individuals, especially students who play electronic games, because of the negative impact on their social interaction with the world around the study will also be used as a reliable reference to educate students from the exercise of these games. The results that will be reached in the current study in the field of education can be used by researchers, educators and psychologists in schools. This study is a starting point for further studies that address the student class, as it aims to educate students of addiction to the exercise of these games.

The aim of this research is to find out the relationship between playing electronic games and social intelligence.

Materials and Method

This research is an analytical descriptive research based on collecting the largest number of information about the phenomenon to diagnose it and shed light on its various aspects in an attempt to understand and analyze it in order to reach the principles and laws that control the social phenomena and human behaviors.

The research community included middle school students (intermediate and middle school) for six public day schools affiliated to the General Directorate of Education in Babil Governorate for the academic year 2018 2019. The research sample chose one department from each stage.

Search Tools:

First: Identification of the exercise of electronic games: The researcher prepared a questionnaire on the practice of electronic games after reviewing the literature related to electronic games in order to obtain data on the degree of practice of the sample of the electronic games. The questionnaire included data on the exercise of electronic games. The questionnaire consisted of 30 words, A group of experts in the field of education and psychology to express their opinions in terms of clarity in terms of whether or not and suitability to the nature and sample of the study. After obtaining the views of the arbitrators, the researcher reviewed the questionnaire and make a number of amendments and additions proposed.[12]

A questionnaire was presented in its preliminary form, consisting of (30) paragraphs, on ten of the specialized arbitrators of the professors in the universities who have a doctorate in psychological and educational guidance, educational psychology, in order to judge the adequacy of the paragraphs to the dimensions to which they belong, as well as the linguistic integrity and clarity. The wording of the paragraphs has been based on the proportion of 80% of the agreement of the arbitrators. The arbitrators pointed to the amendment of some paragraphs and the final form of the questionnaire has become (30) paragraphs.[13]

Second: The measure of social intelligence: After reviewing the literature related to social intelligence, the researcher designed this tool, taking advantage of what was mentioned in some previous studies and the scale of (40) are answered by the triple key (apply, do not apply, apply to some extent) and the researcher presented the scale on A group of arbitrators with experience and experience in the field of education and psychology. The researcher asked the arbitrators to express their views in the paragraphs of the measure in terms of clarity of the paragraphs or not and their relevance to the nature of the study. After obtaining the opinions of the arbitrators,

the researcher reviewed the tool after its arbitration and make amendments to it.

Indicators of Construction Honesty: In order to extract the indicators of the validity of the construction of the scale, the correlation coefficients of the vertebrae were extracted with the total score in an exploratory sample from outside the sample of the study consisting of (38) students, where the paragraphs of the scale are analyzed and the correlation coefficient of each paragraph is calculated. For each paragraph in the form of correlation coefficient between each paragraph and the total score on the one hand and between each paragraph and its correlation to the dimension to which it belongs and between each dimension and the total score on the other hand and the correlation coefficients of paragraphs with the tool as a whole ranged between (0.28) Dimension (0.68).

Results and Discussion

The results showed that the use of female students in electronic games was high, with an arithmetic average of 63,87 and a tabular value of (3.09), which is greater than the table value at a level of 0.05 (1.96) (782) and the (t) value (1.56), which is less than the value of the scale (0,05) of (1.96). The correlation coefficient between the games and social intelligence (0.73-). This shows that electronic games have an adverse effect on social intelligence. The result of this study is that the students do not enjoy social intelligence. This is due to the fact that these electronic games affect their social interaction. The low level of female students in schools can be seen in electronic games which are classified as games that lead to interaction with the device only. Individuals with parents or friends.

The results showed that there were no statistically significant differences among the sample members who played electronic games and who did not practice on the linguistic intelligence scale, while there were statistically significant differences among the sample members who play electronic games and Those who do not practice on the social intelligence scale for the benefit of those practicing. The results also showed that there were no statistically significant differences in relation to the gender variable between the average scores of the respondents who play electronic games on the linguistic intelligence scale. The results showed that there were no statistically significant differences in relation to the city variable between the average scores of the sample members who play electronic games on both the linguistic intelligence scale and the IQ scale. Social.[11-13]

Conclusions

1. Members of the research sample play using advanced electronic devices, allowing them to open new applications and encourage them to play a lot.
2. There is an impact on the social intelligence of middle school students as a result of the exercise of electronic games and for a long time that affects their social intelligence.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: Self-funding

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Cardiovascular Response to Exercise in Obese and Hypertensive Patient: Case Control Study

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Abstract

The problem of overweight and obesity is one of the major health problems seen in daily clinical practice worldwide and it represents a real challenge to both public and individual wellbeing (1-3). In addition, hypertension is a risk factor for major cardiovascular and stroke events. The value of regular exercise for managing obesity and hypertension has been documented in literatures based on long-term follow up outcomes however short term complications have received little attention.

The aim is to evaluate hemodynamic response to exercise in sample of hypertensive and hypertensive and obese patients.

Patients with essential hypertension who regularly visits the medical unit in Al-Diwaniyah teaching hospital were selected and randomly allocated into two groups, hypertensive obese and hypertensive non obese patients. The group of third group of obese non-hypertensive patients was also selected randomly from the pool of patients vesting the medical units for acute self-limiting viral illnesses. Control group of apparently healthy subjects included doctors and health workers in the hospital.

Mean systolic blood pressure of hypertensive and hypertensive obese patients was significantly higher than that of both control and obese groups ($P< 0.05$). Mean diastolic blood pressure of hypertensive and hypertensive obese patients was significantly higher than that of both control and obese groups ($P< 0.05$). Mean heart rate of hypertensive and hypertensive obese patients was significantly higher than that of both control and obese groups ($P< 0.05$). There was also significant variation in hemodynamic response following maximum exercise and 10 minutes after rest among groups.

There was significant variation in hemodynamic response following maximum exercise and 10 minutes after rest among groups.

Keywords: *Exercise, hypertension, obese.*

Introduction

The problem of overweight and obesity is one of the major health problems seen in daily clinical practice worldwide and it represents a real challenge to both public and individual wellbeing[1]. Several major health problems are significantly linked to overweight and obesity such as ischemic heart disease, diabetes mellitus and a number of malignant neoplastic disorders[2]. of the main factors that predict morbidity and mortality accompanying obesity are inadequate cardiorespiratory function, poor muscle strength and malfunctioning autonomic nervous system[3]. In comparison with normal subjects, obese patients have been shown by several studies to have lower heart rate variability and reduced baroreflex sensitivity [4].

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On the other hand, exercise is one of the best practiced ways to treat obesity and its related complications. Reduction of weight is the main outcome aimed by obese persons practicing it; however, a number of health-related improvements have been registered with practicing exercise even in the absence of significant weight reduction [5]. of these observed benefits, improvement in cardiorespiratory fitness and muscle strength are the mainly highlighted outcomes in published literatures[1,6].

Essential hypertension is one of the most common cardiovascular disorders and a major modifiable risk factor for ischemic heart disease and cerebrovascular accidents worldwide[7]. A number of randomized controlled trials have been carried out to investigate the role of regular exercise in hypertensive patients [8]. Moreover, a number of meta-analysis studies have investigated the outcome of these randomized controlled trials to make the picture clearer[9]. These meta-analyses came up with a conclusion that aerobic exercise training reduces blood pressure by 5 to 7 mmHg and that dynamic resistance exercise reduces blood pressure by 2 to 3 mmHg among hypertensive patients [10]. However, the exact response of hypertensive patients in the presence of obesity is not well established in available literatures, therefore, the present study was conducted aiming at comparing response of patients with obesity and or hypertension to standard graded exercise test in terms of heart rate, systolic blood pressure and diastolic blood pressure changes.

Materials and Method

Subjects and study design: Patients with essential hypertension who regularly visits the medical unit in Al-Diwaniyah teaching hospital were selected and randomly allocated into two groups, hypertensive obese and hypertensive non-obese patients. The first patient was randomly selected according to a random number generated by computer and the rest of patients were selected as every other 10. The group of third group of obese non-hypertensive patients was also selected randomly from the pool of patients vesting the medical units for acute self-limiting viral illnesses. Control group of apparently healthy subjects included doctors and health workers in the hospital. Finally we were able to categorize our sample into the following groups: healthy control subjects (n = 35), hypertensive patients (n = 25), obese patients (n = 27) and hypertensive and obese patients (n = 21). The study was done at Al-Diwaniyha teaching hospital, Al-Diwaniyah province, Iraq. The study extended from October 2018 through January 2019. The study was case control study.

Exercise Test: Treadmill was used to accomplish the practical work of this study. The test was carried out at room temperature (20 to 25°C). ECG monitoring was carried out to record heart rate whereas an arm-cuff sphygmomanometry was used to determine systolic and diastolic blood pressure. The test included the following phases: baseline readings of heart rate and systolic and diastolic blood pressure, maximum exercise readings and then reading were repeated 10 minutes after the rest.

Ethical Consideration: The study was approved by institutional ethical approval committee and a verbal consent was taken from all subjects following full and detailed explanation of the aim and the procedures of the current study.

Statistical Analysis: Statistical evaluation and analysis of obtained data was carried out using SPSS version 23 and Microsoft office Excel 2010. Nominal data were expressed as number and percentage, whereas, numeric variables were expressed as mean and standard deviation (SD). One way analysis of variance and post hoc LSD tests were performed to study mean difference among groups. The level of significance was set at $P \leq 0.05$.

Results

Demographic characteristics of control and study groups are shown in table 1. Mean age of obese and hypertensive and obese patients was significantly higher ($P< 0.05$) than the mean age of both control group and hypertensive groups. There was no significant difference in mean age between control and hypertensive groups ($P> 0.05$); there was also no significant difference in mean age between obese group and obese and hypertensive group ($P> 0.05$). Mean BMI of obese and hypertensive and obese patients was significantly higher ($P< 0.05$) than the mean BMI of both control group and hypertensive groups. There was no significant difference in mean BMI between control and hypertensive groups ($P> 0.05$); there was also no significant difference in mean BMI between obese group and obese and hypertensive group ($P> 0.05$). Mean body fat% of obese and hypertensive and obese patients was significantly higher ($P< 0.05$) than the mean body fat% of both control group and hypertensive groups. There was no significant difference in mean body fat% between control

and hypertensive groups (P> 0.05); there was also no significant difference in mean body fat% between obese group and obese and hypertensive group (P> 0.05). Mean Waist circumference of obese and hypertensive and obese patients was significantly higher (P< 0.05) than the mean Waist circumference of both control group and hypertensive groups. There was no significant difference in mean Waist circumference between control and hypertensive groups (P> 0.05); there was also no significant difference in mean Waist circumference between obese group and obese and hypertensive group (P> 0.05).

Table 2 shows comparison of mean systolic blood pressure, diastolic blood pressure and heart rate among control and study groups, at maximum exercise. Mean systolic blood pressure was significantly highest in hypertensive obese patients followed by both obese and hypertensive patients and lastly by control subjects. Mean diastolic blood pressure was significantly highest in hypertensive obese patients followed by both obese and hypertensive patients and lastly by control subjects. Mean heart rate was significantly lowest in all study groups in comparison with control group (P<0.05); however, there was no significant difference in mean heart rate among study groups themselves (P> 0.05), table 2.

Table 3 shows comparison of mean systolic blood pressure, diastolic blood pressure and heart rate among control and study groups, 10 minutes after rest. Mean systolic blood pressure was significantly highest in hypertensive obese patients followed by both obese and hypertensive patients and lastly by control subjects. Mean diastolic blood pressure was significantly highest in hypertensive obese patients followed by both obese and hypertensive patients and lastly by control subjects. Mean heart rate was significantly lowest in all study groups in comparison with control group (P<0.05); however, there was no significant difference in mean heart rate among study groups themselves (P> 0.05), table 3.

Table 1: Demographic characteristics and baseline measurement of study groups

Characteristic	Control (n= 35)	Hypertensive (n=25)	Obese (n=27)	Hypertensive & Obese (n=21)
Age (years)	22.01± 3.23 B	22.21 ± 5.02 B	29.21± 4.93 A	28.29± 5.21 A
BMI (kg/m2)	23.04 ± 1.61 B	24.42 ± 2.23 B	35.29 ± 3.70 A	35.43 ± 3.41 A
Body fat percentage (%)	19.2 ± 4.0 B	22.2 ± 4.1 B	34.3 ± 6.7 A	37.2 ± 5.3 A
Waist circumference (cm)	84.71 ± 6.13 B	86.20 ± 6.6 B	113.12 ± 9.03 A	111.20 ± 8.02 A
SBP baseline (mm Hg)	124.01 ± 15.21 B	143.09 ± 11.21 A	129.23 ± 8.19 B	146.71 ± 12.24 A
DBP baseline (mm Hg)	74.31 ± 8.09 B	82.23 ± 11.10 A	78.13 ± 13.31 B	86 ± 8 A
Heart rate baseline (Beat/min)	71.20 ± 15.03 B	76.04 ± 10.91 A	71.25 ± 12.54 B	79.34 ± 12.51 A

n: number of cases; BMI: body mass index; SBP: systolic blood pressure; DBP: diastolic blood pressure; Capital letters were used to explain the results of post hoc LSD multiple comparison test so that similar letters indicate no significant difference at $P \leq 0.05$, whereas different letters indicate significant difference at $P \leq 0.05$; letter (A) being the highest value

Table 2: Heart rate and blood pressure measurement at maximum exercise

Characteristic	Control (n= 35)	Hypertensive (n=25)	Obese (n=27)	Hypertensive & Obese (n=21)
SBP (mm Hg)	166.04 ± 26.23 C	176.19± 23.01 B	174.02 ± 24.18 B	182.24± 22.03 A
DBP (mm Hg)	76.39 ± 10.28 C	85.21± 14.12 A	81.24 ±16.21 B	88.13 ± 10.09 A
Heart rate (beat/min)	162.12 ± 20.19 A	156.21± 18.05 B	154.04 ± 20.09 B	154.05 ± 12.31 B

n: number of cases; SBP: systolic blood pressure; DBP: diastolic blood pressure; Capital letters were used to explain the results of post hoc LSD multiple comparison test so that similar letters indicate no significant difference at $P \leq 0.05$, whereas different letters indicate significant difference at $P \leq 0.05$; letter (A) being the highest value

Table 3: Heart rate and blood pressure measurement at 10 minutes after rest

Characteristic	Control (n= 35)	Hypertensive (n=25)	Obese (n=27)	Hypertensive & Obese (n=21)
SBP (mm Hg)	166.04 ± 26.23 C	176.19± 23.01 B	174.02 ± 24.18 B	182.24± 22.03 A
DBP (mm Hg)	76.39 ± 10.28 C	85.21± 14.12 A	81.24 ±16.21 B	88.13 ± 10.09 A
Heart rate (beat/min)	162.12 ± 20.19 A	156.21± 18.05 B	154.04 ± 20.09 B	154.05 ± 12.31 B

n: number of cases; SBP: systolic blood pressure; DBP: diastolic blood pressure; Capital letters were used to explain the results of post hoc LSD multiple comparison test so that similar letters indicate no significant difference at $P \leq 0.05$, whereas different letters indicate significant difference at $P \leq 0.05$; letter (A) being the highest value

Discussion

The present study showed that mean baseline systolic blood pressure of hypertensive and hypertensive obese patients was significantly higher than control group and within the hypertensive range (> 140 mm Hg) indicating poor control of blood pressure of those patients despite being managed for hypertension for years. On the other hand, mean diastolic blood pressure of hypertensive and hypertensive obese patients was also significantly higher than that of control group; however, the mean diastolic blood pressure was within normal acceptable range (< 90 mm Hg). In addition, baseline mean heart rate was within normal acceptable limit (60 – 100 beat/minute) for all groups despite the presence of some significant difference among groups.

The inadequately controlled blood pressure in hypertensive patients enrolled in the present study may be explained by inadequate compliance to drug therapy or inadequate dietary salt restriction or to a lesser extent attributable to sympathetic overflow in such medical environment. Indeed strict blood pressure control is mandatory for such patients in order to avoid life threatening cardiovascular and cerebrovascular events.

In maximum exercise, mean systolic and diastolic blood pressure of hypertensive patients reached the highest levels in comparison with control group and obese patients; obese patients also experienced higher than normal mean systolic and diastolic blood pressure but the level was less than hypertensive patients. Regarding heart rate, the mean level was lower in both hypertensive and obese patients than in control group, being lowest in hypertensive groups. However, after 10 minutes, it was observed that hypertensive and obese patients failed to returned to baseline readings. This was also the case for control group; however, the blood pressure readings were higher in hypertensive and obese patients than in control group whereas mean heart rate was lower in patients than in control group.

Regular aerobic exercise has been shown to reduce both systolic and diastolic blood pressure in patients

with hypertension [11] and is generally recommended by international guidelines [12]. Nevertheless, guidelines mention nothing about the recommendations concerning exercise for patients with resistant hypertension and hypertensive obese patients. Continuous physical activity is accompanied byless risk for mortality and cardiovascular complications in hypertensive patients who are known to be resistant to usual management guidelines [13].However; evidence for the advantages of regular physical activity is still lacking for resistant hypertension, a number of studies have been carried out with promising results. An aerobic exercise program of 8–12-weeks (29), which consisted of treadmill walking based on an interval-training pattern, 3 times/week, reduced 24-hour systolic blood pressure by 5.4±12.2 mmHg and 24-hour diastolic blood pressure by 2.8±5.9 mmHg. Moreover, daytime systolic and diastolic blood pressurehas been reduced by 5.9±11.6 mmHg and 3.3±6.5 mmHg and nighttime systolic and diastolic blood pressure has been reduced by 3.8±17.1 mmHg and 1.9±8.2 mmHg, respectively [14]. This decline in blood pressure was also seen in subsequent researches with exercise training based on heated water [15].

Conclusion

There was significant variation in hemodynamic response following maximum exercise and 10 minutes after rest among groups.

Despite these recommendations about the benefit of exercise, we observed in the current study, transient development of blood pressure peaks that may be complicated by life threatening events such as aortic dissection and thromboembolic phenomena. Therefore, we recommend that exercise in obese and hypertensive patients should start gradually with continuous ambulatory monitoring to avoid unnecessary shooting of blood pressure levels.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Effect of Effective Learning Style Using Extensive Visual Exercises in Developing Visual Skills and Learning the Spike Volleyball Skill of Students

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Abstract

The aim of the research was to prepare the wide-ranging exercises in the context of effective learning to develop visual skills and learn the spike volleyball of students, to recognize the effect of ESOP. Effective learning through extensive visual exercises in developing visual skills and learning spike volleyball for students, researchers used the experimental approach with the design of the two equal groups The research community represents the students of the second stage in the Faculty of Physical Education and Sports Science - University of Babylon, for the academic year (2018-2019) of (122) students. (16) Students were divided into two groups of control and experimental, each group of (8) students, thus the percentage (13%). The researchers conducted the tribal tests on 11/11/2018 On the hall of the Faculty of Physical Education and Sports Sciences at the University of Babylon and the start of the educationl programs on 14/11/2018 and ended on 19/12/2018 and included educational units interspersed with the exercises of wide consideration of the skill studied and the researchers carried out post tests for the research sample on 25/12/2018 On the Hall of the Faculty of Physical Education and Sports Sciences - University of Babylon. The most important conclusions were that extensive exercises had a positive impact on the development of visual skills and the learning of volleyball. The effective learning method had a positive impact on the development of visual skills and the learning of volleyball-spike. The group also helped to provide the largest number of different motor models of the skill studied by applying them to the extensive exercises associated with skill, which led to the ease of learning and the performance of spike.

Keywords: *Visual exercises, visual skills and spike.*

Introduction

The educational process is one of the areas that have received the development and scientific progress of its great role that can play in the building of the learner and solve problems, as well as it positively affect the ability to learn and acquire different motor skills on the basis of advanced practical basis and measured this progress knowledge of the strategies and method of modern learning and the use of appropriate exercises and always seeks the existing educational process to search continuously and continuously about the best and most important strategies and method of modern education in order to achieve learning and progress and exercises are one of the method that help to build the personality of the deceased Science and that gives him opportunities to express himself and his abilities and creativity, as well as it is a rich area of activities that satisfy the need of the learner urgent movement and the nature of the performance skill in various sports, including volleyball is linked to a set of differences and characteristics between learners, The more the teacher learns about these differences, the easier it is to develop visual skills and learn motor skills.[1]

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And that the broad consideration of the student of the stadium is an important element that should be possessed by learners, especially players spike because of the speed and accuracy of performance in modern volleyball so learners have to have a wide field of view of the field of play through the development of visual skills, which gives a greater opportunity to learn for skill and successful behavior Through the accuracy of the strike and reduce the error, which serves the implementation of skills in the form of optimal and fast, which required teachers or trainers to focus on and develop.[2]

The importance of research is through the use of modern strategies, including method and exercises for broad consideration appropriate for the development of visual skills and learning the spike of the volleyball of students and knowledge of the impact of these method and exercises in the skills explored, through the observation of researchers in the lack of use of strategies and modern method and special exercises for those skills and the importance of In the development of which increases the ability of students to learn the skill studied as required with the economy effort and time spent.

Research Methodology:

The researchers used the experimental approach to design experimental and control experimental and control groups to suit the nature of the research problem and its objectives.

Community and sample search: The research community represents the students of the second stage in the College of Physical Education and Sports Sciences - University of Babylon, for the academic year (2018-2019) of (122) students. The pilot sample consisted of (10) students and outside the main research sample. This sample is specific to the visual skills tests and the spike of the volleyball. The main sample was randomly selected by lottery method by (16) students and was divided into two control and experimental groups, Group (8) students and this is the percentage (13%).

Table (1). Shows the equality of the two sets of search

Variables	Units	Mann Whitneyvalues	Level of significance	Type of significance
Skill to realize the field of vision	Grade	18	0.45	Non sig.
Skill grasp the depth of vision	Grade	23	0.90	Non sig.
Spike front skill	Grade	21	0.71	Non sig.

Tests used in research:

First: Test the accuracy of the skill of spike facing within the realization of the field and depth of vision:

Due to the absence of a standardized test that measures the accuracy of the spike in recognition of the scope and depth of vision. To achieve the first objective of the research, the researchers constructed a test. The researchers followed the following scientific steps:

Determination of the objective of the test: The researchers set the goal of the construction of the test as the objective of the test to assess the accuracy of spike facing within the realization of the field and depth of vision.

Determination of test specifications: After the researchers were informed of the relevant scientific references and sources, the researchers defined the test specification and verified the validity of the test. The researchers considered the preparation of a questionnaire for the test and was presented to a group of experts and specialists of (7) volleyball experts and kinetic learning, testing and measurement. After collecting the questionnaires, the researchers used a good match test (Chi square) to analyze the opinions of the experts statistically and to indicate their agreement regarding the validity of the test as shown in Table (2).

Table (2). Shows the values of (Chi square) calculated for agreement of experts and specialists about the validity of the test the spike front within the field of perception and depth of field of vision accuracy.

Name of test	Proper	Inappropriate	Value of (Chi square) calculated	Percentage of agreement	Type of significance
Test hit the spike front within the field of perception and depth of field of vision accuracy	7	0	7	100%	Sig.
At the degree of freedom (1) and the level of significance (0.05)					

The accuracy test is described as the spike in the field and the depth of vision:[3]

Name of test: Test the accuracy of the spike facing within the realization of the field and depth of vision.

The purpose of the test: Measuring the accuracy of the spike facing within the realization of the field and depth of vision.

Used tools: Volleyball legal court with accessories, volleyball number (3), stopwatch, semi-misleading false glasses number (8) and data dump form.

Performance method: The laboratory is wearing the shaded glasses in the standby mode (3-4 meters) of the network in one of the centers (2, 3, 4). When asked to start performance, the laboratory performs the skill to try to drop the ball in the inner triangle set on the opposite pitch.

Performance conditions: Each laboratory (5) successive attempts and must be a good preparation in each attempt and calculated grades according to the place of the fall of the ball and as follows:

- In the area (A) (3) degrees.
- In the region (B) (1) one degree.
- In the region (C) (5) degrees.
- Outside these areas (zero) of grades.

Registration: The laboratory counts the grades obtained in the five attempts, noting that the total score of the test is (25) degrees for each center.

Test the technical performance of the skill of spike:[4]

The purpose of the test: To evaluate the technical performance of the skill of the spike through its virtual form and its three parts (preparatory, final and final).

Instruments used: Legal volleyball court, plane legal balls number (3) and evaluation form.

Performance specifications: The student performs the lab spike of the center (4) so that the teacher to prepare the ball from the center (3) and the student is doing the skill of spike trying to drop the ball within the corresponding field.

Performance conditions: Each student (3) consecutive attempts. - The student will receive the laboratory (0) in case of contact with the net ball and fall in the stadium (the student's laboratory) or in the case of spike in the manner not agreed upon.

Vision field perception test:[5]

Objective of the test: (1) and plotted (8) angles from the middle of the circle each angle (45) 0 represents 8 directions as shown in the picture (1).

Test depth perception: Objective of the test: measuring the player's ability to estimate distances between two bodies at different distances between them

Test time: (60) seconds per laboratory.

Tools used: Krejiniski is a wooden box without cover and without front side placed on a table, measuring 100 cm length, 40 cm width, height 15 cm.

- Contains two sticks to estimate the distances each square 2 cm x 2 cm height of 10 cm.
- A black star is placed on the front side of the box to change the attempts.
- On the table.
- Sets the height of the chair so that the device is at the player's level of view.
- Close the black curtain until the player sees the sticks.

- Move the second stick of the movement for a distance of 10 cm and then 20 cm and 30 cm.
- Each time you open the curtain and ask the player to determine the distance between the two sticks.
- Calculation of scores: Calculates the amount of error in each attempt and records.

The main experiment to test the accuracy of the spike in the realization of the field and depth of vision: The main experiment was implemented through the application of the test on the building sample of (100) students on Monday (5/11/2017) in the closed hall of the Faculty of Physical Education and Sports Sciences at the University of Babylon and the re-test took place on Monday (19/11/2018)). In the same place and under the same circumstances, the statistical analysis was carried out to test visual cognitive speed in order to determine the ability of the test and to extract the indicators of honesty, stability and the level of difficulty of the test.

Educational Programs: The researchers applied the educational programs (educational units) based on effective learning, which includes extensive visual exercises that develop visual skills (understanding the field of vision and perception of depth of vision) and learning spike against the experimental group, while the control group applied the normal educational programs and two units per week For the period of (8) units and the time of the educational unit 90 d and the division of the time of the educational unit to the preparatory section (18 d) and the main section (60d) and the final section (12d), as the application of educational units on the experimental group on 14/11/2018 And ended on 19/12/2018 and included tamar broad consideration of effective and appropriate skills and the subject of research using different tools and means for each variable exercise performances skills have been studied in which the type, where the share of exercise skills studied in the experimental group is (48) minutes from the main section of the educational unit.

Posttests: The post-tests (technical tests) were applied to the research sample on 25/12/2018 on the playgrounds of the Faculty of Physical Education and Sports Sciences - Babylon University at (1) pm.

Results

Table (3). Shows the t-test of the interrelated samples to determine whether the differences are significant between the results of the pre- and post-test tests to test the field of view of the experimental and control groups

Groups	Pretest		Posttest		(t) calculated	Type of significance
	Mean	SD	Mean	SD		
Experimental	5.36	0.68	8.09	0.51	15.62	Sig.
Control	5.02	0.73	6.51	0.59	10.24	Sig.
At the level of significance (0.05) and the degree of freedom (9)						

Table (4). Shows the t-test of the interrelated samples to determine whether the differences are significant between the results of the pre-test and the post-test tests of the field of vision and the experimental and control groups

Groups	Pretest		Posttest		(t) calculated	Type of significance
	Mean	SD	Mean	SD		
Experimental	10.5	1.58	17.6	0.98	27.11	Sig.
Control	10.2	1.13	14.1	0.87	11.20	Sig.
At the level of significance (0.05) and the degree of freedom (9)						

Table (5). Shows the t-test of the interrelated samples to determine whether the differences are significant between the results of the pre- and post-test tests to test the technical performance of the spike skill of the experimental and control groups

Groups	Pretest		Posttest		(t) calculated	Type of significance
	Mean	SD	Mean	SD		
Experimental	5.13	0.79	8.12	0.47	16.51	Sig.
Control	5.06	0.67	6.59	0.55	10.24	Sig.
At the level of significance (0.05) and the degree of freedom (9)						

Discussion

The success of the educational process requires the use of effective and appropriate method and exercises and the availability of the means, tools and devices for the implementation of the unit drawn. The wide-ranging exercises play an important role in enabling the teacher to implement the educational plan and students in the speed of mastery of the skill and researchers believe that the gradual use of those exercises It is easy to the hardest thing with the increase of repetitions is necessary to contribute to the progress of the level of students and their interaction and their rush to learning and therefore the educational unit has achieved its goal in achieving development and learning.[6]

The effective learning strategy has contributed to the development of visual skills (awareness of the field of vision - understanding of the depth of vision) and the learning of spike volleyball by providing sufficient space to correct the technical performance of students and avoid mistakes, Because these exercises,[7] tools and effective means provide the stability of the place and time of performance of the skill of spike by allowing the student to adjust the steps and the distance of performance and the place of jumping and landing and thus the student will learn to performance because his thinking will be on the Only disease without thinking about time to hit the ball or place of fall or throw is correct and that place fall from a height or throw different to the other, which will negatively affect the performance of the student.[8]

The extensive training exercises contributed to learning the technical performance of the spike skill because it helps the student to adjust the steps and the distance of performance and time of performance and thus provided stability of the movement by fixing the place of jumping and spike to provide a constant environment for the performance of the skill, the effective use of the educational unit achieved the goal of its use in education, as it made clear progress in learning the spike skill in terms of technical performance.[9]

Conclusions

1. The extensive training exercises in the development of visual skills and the learning of volleyball-volleyball students
2. The effective learning strategy has a positive impact on the development of visual skills and learning spike volleyball.
3. The wide-ranging exercises helped the members of the experimental group to provide the largest number of different motor models of the skill studied, which led to the ease of learning and the performance of s spike.
4. The application of extensive viewing exercises with effective teaching tools and tools has helped to develop visual skills and learn the spike of students' volleyball.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Long Term Oral Contraceptive Administration is Associated with Low Serum Levels of Nitric Oxide, Vitamin C and Vitamin E

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Abstract

Background: Oral contraceptives are now commonly used by women worldwide as a method for preventing pregnancy. In addition, it was proposed that women taking these drugs require supplementary vitamin E. The aim of this study was to identify changes in serum levels of nitric oxide, vitamin C and vitamin Einwomen taking oral contraceptives for more than three years.

Method: The study included (60) women using these tablets and (58) healthy women used as control group. Levels of nitric oxide, vitamin C, vitamin E were estimated in all women participants. In order to estimate the effect of age on levels of nitric oxide, vitamin C and vitamin E, women were divided into two groups: thirteen women aged (18-35) years and thirteen of women aged (36-45) year, remarked to it with symbols (A and B). These groups were compared with two groups of nonuser's women: twenty-nine of women aged (18-35) years and twenty-nine of women aged (36-45) year, remarked to it with symbols (AC and BC).

Results: There was a significant decrease in levels of nitric oxide, vitamin C and vitamin E) ($P \leq 0.05$) in all women who were taking oral contraceptives when compared with control women. In addition, the results illustrated significant elevation in nitric oxide,vitamin C and (vitamin Elevels ($P \leq 0.05$) in the two groups of user's women when compared with the control groups. Also, it showed none significant elevation in nitric oxide in group (B) in comparison with group (A) ($P \leq 0.05$), while no significant differences were seen in vitamin C and vitamin E levels ($P \leq 0.05$) between groups (A) and (B) and control groups.

Conclusion: The results of this study indicated that the use of combined oral contraceptives resulted in low levels of nitric oxide, vitamin C and vitamin E.

Keywords: *Oral contraceptives, nitric oxide, vitamin C, vitamin E.*

Introduction

Oral contraceptives (OCs) are now commonly used by millions of women worldwide as a method for preventing pregnancy[(1)]. The use of present contraceptives has contributed substantially to the reduction of maternal and infant morbidity and mortality and to the ability of women to contribute to society[(2)]. There are three types of oral contraceptive pills: combined estrogen-progesterone, progesterone only and the continuous or extended-use pills. The most commonly prescribed pill is the combined hormonal pill with estrogen and progesterone. Progesterone is the hormone that prevents pregnancy, while the estrogen component will control menstrual bleeding. Birth control pills are primarily used to prevent pregnancy[(3)]. Some serious side effects have been reported in women taking them. Studies have indicated a relationship between

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oral contraceptives use and cardiovascular disease [4]. Oral contraceptive steroids are one of the factors that enhance oxidative stress and lead to the formation of free radicals. Oxidative stress (OS) constitutes a disturbance caused by an imbalance between the generation of free radicals and antioxidant system, which causes damage to biomolecules. This, in turn, may lead to the occurrence of many chronic degenerative diseases[5]. Reactive oxygen species (ROS) or 'free radicals' are highly reactive oxygen-derived molecules characterized by having unpaired electrons in their outer valence orbital. They include oxygen-centered radicals (hydroxyl radical, nitric oxide radicals and superoxide anion radical[6]. NO• is generated in biological tissues by specific NO synthase that metabolizes arginine to citrulline via five-electron oxidative reaction. At a physiological pH of 7.2, the sodium nitroprusside compound is decomposed into aqueous solution and generates NO•. Stable products (nitrate and nitrite) are produced when NO• reacts with oxygen under aerobic conditions, which can be determined by using the Griess reagent [7]. The antioxidant activity of estrogen has been attributed to prevention of expression and function of $NADP^+$/NADPH oxidase, an increase in expression and activation level of endothelial isoform of nitric oxide synthase (eNOS) and stimulation of the expression and activation of manganese superoxide dismutase[8]. Exogenous estrogen administration restores endothelial function by enhancing nitric oxide synthesis through genomic and non-genomic mechanisms and by reducing oxidative stress and nitric oxide breakdown[9]. Antioxidants are free radical scavengers which help in delaying or prevention oxidation by trapping free radicals. The normal vital concentration of free radicals or reactive oxygen species (ROS) in living organisms is maintained by antioxidants[10]. Well-documented dietary antioxidants include ascorbic acid (vitamin C), α-tocopherol (vitamin E), polyphenols and carotenoids[11]. In line with preclinical findings, Briggs and Briggs[12] showed that combined-type OCs decreased plasma tocopherol in healthy Caucasian women and, therefore, proposed that women taking these drugs require supplementary vitamin E. In line with this hypothesis, it has been stated that vitamin C levels in platelets and leukocytes are lowered by use of OCs, specifically those containing estrogen, which is thought to increase the rate of metabolism of vitamin C. Other authors reported that with adequate dietary intake of ascorbic acid, there is no threat on ascorbic acid status as a result of using OCs[12].

Subjects and Method

The study was carried out on 60 women taking oral contraceptives and fifty-eight healthy age-matched women (control group). Users of oral contraceptives had attended the family planning clinic at Maternity and Pediatric Hospital in Nassyrieh, Iraq. The age of users and controls ranged from (18-35) year. According to age, women used combined oral contraceptives were divided into two subgroups;Group A included thirteen women aged (18-35) year and group B included thirteen women aged (36-45) year. Also, the women who were not using combined oral contraceptives were divided into two subgroups similar to the users in the age Group AC included twenty-nine women and Group AB included twenty-nine women.

Blood samples were obtained from user women and control group by venipuncture. Samples were allowed to clot at 37°C and then centrifuged at 3000xg for 10min. Sera were removed and stored at (-20°C) for later measurement of biochemical parameters, unless used immediately.

Determination of Serum Nitric Oxide Levels: The method described by[13] has been used to estimate the concentration of nitric oxides (NO). The principle of this method included measurement of nitrite oxide (NO-2), which is the most stable oxide of nitrogen oxides and the addition of zinc sulphate to serum sample which works on the deposition of proteins first and reduction of nitrate oxide (NO-3) to nitrite oxide (NO-2). Nitrite oxide, in acidic medium, turns into nitrous acid (HNO2) which nitratesthe sulfanyl amide to give the dizonium salt sulfanyl amide diazonium. The latter, in turn, condenses with the alpha-naphthylethylene diamine dihydrochloride complex whose absorption is measured at wavelength 540nm.

Determination of serum vitamin C concentrations: This method was based on the principle that ascorbic acid is oxidized by copper to form dehydroascorbic acid and diketogulonic acid. These products are treated with 2,4-dinitrophenyl hydrazine (DNPH) to form the derivative bis-2,4-dinitrophenyl hydrazone. This compound in strong sulfuric acid undergoes rearrangement to form a colored product which is measured at 520nm. The reaction was run in the presence of thiourea to provide a mildly reducing medium, which helps prevent interference from non-ascorbic acid chromogens[14].

Determination of serum vitamin Econcentration: In this method determination of tocopherol in serum was done by colorimetric method. Serum vitamin E was measured by the method of Baker on the basis of reduction of ferric ions to ferrous ions by vitamin E and the formation of complex with 2-2` dipyridyl and it was measured at 520nm[15,16].

Result and Discussion

Table (1) showed a significant decrease in the concentration of serum nitric oxide (NO) in the age groups (A) and (B) in comparison with their control groups (AC) and (BC) ($P \leq 0.05$). In addition, we found non-significant differences in the concentration of serum NO in group (B) in comparison with group (A). Also, there were non-significant differences between control groups (AC) and (BC).

The study indicated that the use of oral contraceptive pills resulted in low levels of nitric oxide. These results were different from those reported in a previous study [17]who found that taking low-dose oral contraceptives in healthy women did not causeany differences in levels of amino acid and nitric oxide, however, the results of this study were consistent with another previous study[18]. Estrogen can increase the bioavailability of nitric oxide (NO) in the endothelium, possibly by preventing the initiation of atherosclerosis [19]. The predominant isoform of NOS in the endometrium is eNOS and this is predominantly localized in the epithelial cell layer. Estrogen through both genomic and non-genomic mechanisms up-regulates eNOS and iNOS and phosphorylatese NOS in primary endometrial epithelial cells [20]. The inclusion of progestin in postmenopausal HRT appears to blunt the effects of estrogen on endothelial NO production [21]. It was found that the addition of medroxy progesterone acetate reduces the effect of estrogen on endothelium dependent relaxation[22]. OCT can increase oxidative stress, possibly leading to vascular complications[19]. Furthermore, progesterone may reduce ROS formation and cause vascular relaxation in a tissue-specific fashion[23]. However, progesterone antagonizes the vasoprotective effects of estrogen on anti-oxidant enzyme expression and function and enhances NADPH oxidase activity and the production of ROS[24]. The behavior of molecules related to oxidative stress can differ according to types and doses of estrogen, progestogen or the particular compounds of estrogen and progestogen. Estrogens are generally known to have various vascular actions by increasing the bioavailability of NO via activation of NO synthase[25].

Data in Table (2) showed a significant decrease in serum Vitamin C levels in groups (A) and (B) in comparison with control groups (AC) and (BC), respectively ($P \leq 0.05$) and there were no significant differences in serum vitamin C between groups (A) and (B) ($P \leq 0.05$). There were no significant differences between control groups (AC) and (BC). The results of this study were consistent with those reported by[26] who found that the key nutrients affected by oral contraceptives were folic acid, vitamins (B2, B6 and B12) and vitamins (C, A and E) as well as some minerals. Combined Oral Contraceptives also resulted in biochemical changes such as altered nutritional status with regard to several vitamins such as vitamin C [27]. Meanwhile, some of these micronutrients are cofactors and/or coenzymes of other enzymes and are involved in important metabolic pathways [28].

The decrease in the levels of vitamin C in postmenopausal females might be due to its increased consumption to counteract the increased oxidative stress and to inhibit membrane lipid peroxidation. Also, may be because vitamin C can restore the antioxidant properties of oxidized vitamin E, suggesting that a main function of vitamin C is to recycle vitamin E radical [29].

Data in Table (3) showed a significant decrease in serum Vitamin E levels in groups (A) and (B) in comparison with control groups (AC) and (BC), respectively ($P \leq 0.05$). Also, there were non-significant differences in serum vitamin E between groups (A) and (B) ($P \leq 0.05$). There were non-significant differences between control groups (AC) and (BC). Several review studies have shown that vitamin E and vitamin C were lower in OC users in comparison with non-users[30].

Table (1): Serum Nitric Oxide (NO) levels in oral contraceptive users and their controls according to their age groups

Age Group/yr	Users		Controls		*P*-value
	Subgroup (No.)	NO (µmol/mL) Mean±SD	Subgroup (No.)	NO (µmol/mL) Mean±SD	
18-35	A (30)	9.28±1.10*a	AC (29)	12.29±1.09**a	0.000
36-45	B (30)	8.90±1.21*a	BC (29)	12.30±0.95**a	0.000
P-value	0.17		0.97		

(*): was considered significantly different in comparison with control.(a): were considered significantly different among groups of users.

Table (2) Serum Vitamin C levels in oral contraceptive users and their controls according to their age groups

Age Group/yr	Users		Non users		*P*-value
	Subgroup (No.)	Vitamin C(mg\dl) Mean±SD	Subgroup (No.)	Vitamin C(mg\dl) Mean± SD	
18-35	A (30)	0.20±0.08*a	AC (29)	0.45±0.07**a	0.000
36-45	B (30)	0.19±0.08*a	BC (29)	0.49±0.13**a	0.000
P-value	0.685		0.122		

(*): was considered significantly different in comparison with control.(a): were considered significantly different among groups of users.

Table (3) Serum Vitamin E levels in oral contraceptive users and their controls according to their age groups

Age Groups/yr	Users		Controls		*P*-value
	Subgroup (No.)	Vitamin E(mg\dl) Mean±SD	Subgroup (No.)	VitaminE(mg\dl) Mean±SD	
18-35	A (30)	8.07±1.27*a	AC (29)	12.52±1.90**a	0.000
36-45	B (30)	7.28±1.98*a	BC (29)	12.28±2.58**a	0.000
P-value	0.128		0.647		

(*): was considered significantly different in comparison with control.(a): were considered significantly different among groups of users.

Conclusion

The results of this study indicated that the use of combined oral contraceptives resulted in low levels of nitric oxide, vitamin C and vitamin E.

Ethical Clearance: The research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

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Interleukin-4 (rs2243250) Polymorphism Confer the Susceptibility in Migraine Patients

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Abstract

Background: The pathogenesis of migraine is still unclear, but much evidence suggests a role of inflammation in pain generation.

Aim: This study was conducted to understand if there is a probable role of IL-4 and its polymorphism, as anti-inflammatory cytokine, in migraine headaches.

Method: Evaluated and investigated the single nucleotide polymorphisms of IL-4 (rs2243250) gene in 119 subjects. Sixty were Migraine patients while others were apparently healthy individuals used as a controls.

Results: The frequencies of genotype CC was significantly more frequent in study group than in control groups, 70.0% versus 15.3%,variant allele A was more frequent in study than in control group, 78.3% versus 33.1%.

Conclusion: Allele C of IL-4 was significantly higher frequent in patients group compared to control group, C allele had etiologic effect.

Keywords: *Migraine, IL-4 (rs2243250), Allele, Genotype, RFLP-PCR.*

Introduction

Migraine is a common disorder characterized by recurrent disabling attacks of headache associated withnausea, vomiting, hypersensitivity to light, sound and smell (migraine without aura), and, in athird of patients, neurological aura symptoms (migraine with aura)[(1)]. The interaction between immune cells is regulated by several mediators, including interleukins and cytokines, which play an essential role in pathobiological processes such as, inflammation, immunity and pain[(2)].

The 2010 Global Burden of Disease Study (GBD2010), ranked the migraine as the third most prevalent disorder in the world and ranked third-highest cause of disability in men and women under the age of 50 worldwide[(3)]. The onset of migraine is more prevalent in adolescence, particularly at the age of 16–28 years, a period associated with the largest concentrations of IgE, the well-known antibodies that mediate allergic responses in the body[(4)]. Adult females were more effected by migraine, this skewed sex ratio is mostly due to hormonal variation during menstruation and pregnancy and to genetic predisposition[(5)].

For more than a century, scientists have investigated the pathophysiology of migraine and presented various reports ranging from the vascular theory to cortical spread depression theory. Unfortunately, none of the

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mechanisms have sufficiently explained the primary origin of migraine pain or migraine aura[6]. the vascular theory and the neuronal theory, explaining the etiology of migraine headache were proposed. The vascular theory was introduced by Thomas Willis where he recognized that "all pain is an action violated" and argued the pain from headache is caused by vasodilatation of the cerebral and meningeal arteries.[7], The alternative and widely accepted theory suggests that cortical spreading depression (CSD), a wave a neuronal hyperactivity followed by an area of cortical depression, accounts for the aura and that the headache depends on activation of the trigeminovascular pain pathway[8]. One of the most important aspects of the pathophysiology of migraine is the inherited nature of the disorder. Transmission of migraine from parents to children has been reported as early as the seventeenth century and numerous published studies have reported a positive family history[9]. Cytokines, small protein molecules secreted in response to immune stimuli, are involved in signaling that activates CNS glial cells and this activation is part of a poorly understood interaction between immune challenge and host that can lead to the development or facilitation of pathologic pain[10]. Polymorphisms that have functional significance have been described for some cytokines genes. These may cause inter-individual variations in the levels of cytokine production. As cytokines are considered to be pain mediators in neurovascular inflammation, these polymorphisms may have an effect on the generation of migraine pain[11].

As migraine is a multifactorial disease with various environmental and genetic etiologies, attempted to evaluated the role of some cytokines genes polymorphisms such as TNF-α−308 G/A (rs1800629), IL-1α+4845 G/T (rs17561), IL-1β+3953 C/T (rs1143634) and interleukin-1 receptor antagonist variable number tandem repeat (IL-1RA VNTR) genes in pathogenesis of Mo was done. In previous studies a relation has been found among TNF-α, IL-1α polymorphisms and Mo. But such a relationship does not exist in migraine with aura patients.[12]

Interleukin-4 (IL-4), an anti-inflammatory cytokine, plays an important role in modulating pain threshold and has an essential role in stimulation of pain receptors in the trigeminal nerve fibers[13]. The human IL-4 gene is located on chromosome 5q31 and consists of 25 kb. So far, numerous allelic variant polymorphisms have been found in IL-4 gene, that the important ones are including -590C/T (rs2243250), -33C/T (rs2070874), +3437C/G (rs2227282) and 2979G/T (rs2227284)[14]. This study was conducted to understand if there is a probable role of IL-4 and its polymorphism, as anti-inflammatory cytokine, in migraine headaches.

Materials and Method

Patients: The present study was conducted on 60 migraine patients (16 males and 44 females), diagnosed by neurologist selected from those who visited the neurology department in Al-Diwaniya Teaching Hospital from January to March 2019.Patients were interviewed directly by using an anonymous questionnaire form which covered age, sex, family history and others. Another group consist of 59 apparently healthy individuals (17 males and 42 females), without any history of systemic disease were clinically considered as healthy also included in the study as a control group. **Informed consent was obtained from all study subjects after explanation of the nature and possible consequences of the study.**قف اظا

Genotyping: The genotypes of the IL-4(rs2243250) gene were determined by Restriction Fragment Length Polymorphism (RFLP)-PCR, Table (1). The PCR products were amplified using a Maxime PCR PreMix (iNtRON), then the PCR products were visualized in an ethidium bromide-stained 2% agarose gel using a UV Transilluminator.

Statistical Analysis: Chi-square test assumption was assessed for both the patient and control groups by comparing the observed numbers of each genotype. Data were presented, summarized and analyzed using two software programs. These were the Statistical Package for Social Science (SPSS) version 23 and Microsoft Office Excel 2016.Logistic regression analysis was used to estimate the odds ratios (OR) and 95% confidence intervals (CI) for the association between the genotypes, alleles or haplotypes and the risk of ALL. The results are presented as the mean values ± 1 standard deviation (SD) and a P value of ≤0.05 was considered to indicate statistical significance.

Results and Discussion

Demographic and clinical parameters:

Distribution of IL-4 (rs2243250) Genotypes CC, TT and CT in Control and Study Groups: Distribution of IL-4 (rs2243250) polymorphism was detected by RFLP-PCR technique, at this locus there're three genotype CC, TT and CT figure (1).

The current study revealed thatThe Frequency distribution of patients and control subjects according to IL-4 genotypes is demonstrated in table (4). Homozygous CC genotype was significantly more frequent in patients' group than in control group, 42 (70.0%) versus 9 (15.3%), respectively (P < 0.001). The risk offered by CC genotype was 16.92 in terms of odds ratio (95% confidence interval of 5.84 - 49.00) and the etiologic fraction (EF) was 0.77. Heterozygous genotype CT was less frequent in patient's groups in comparison with control group, 10 (16.7%) versus 21 (35.5%), respectively; however, the difference was statistically insignificant (P = 0.311)

Frequency distribution of patients and control subjects according to IL-4 alleles shown in table (5). Allele C was significantly higher frequent in patients group compared to control group, 94 (78.3%) versus 39 (33.1%), respectively; whereas allele T was significantly less frequent in patients group compared to control group, 26(21.7%) versus 79(66.9%), respectively (P < 0.001), The risk subjected by allele C was 7.32 in terms of odds ratio (95% confidence interval of 4.10 - 13.07) and the etiologic fraction was 0.61. On the other hand, allele T may be considered as a protective and the odds ratio was 0.14 (95% confidence interval of 0.08 - 0.24) and the preventive fraction was 0.61.

There is little data providing evidence that enhance the understanding of how migraine may relate to, an anti-inflammatory cytokine and IL-4 gene variation. Previous reports are relatively conflicting with this recent leading study (but in different population and disease) which revealed that the IL-4 rs2243250 SNP in the genotype TC and also rs2227284 SNP in the genotypes TG and TT play a protective role. These polymorphisms could resulting to changing in Th2 release IL-4, or affecting IL-4 affinity to their cell targets and consequently unbalance between Th1/Th2 cytokines may possibly influence the spreading of pain producing processes in migraine. IL-4 appears to be a prospective target for future development of migraine-specific preventive therapies. The current study strengthen by the result conducted by Nourollahetal., (2017) who studied the relation between IL-4 rs2243250 (C/T) gene polymorphism and migraine and found that the allele frequency were 67% for C and 33% for T in healthy control versus 80.5% for C and 19.5% for T in migraineurs, respectively and implicated that the IL-4 rs2243250 (TC) and rs2227284 (TG and TT) SNPs have a protective role in susceptibility to migraine disease in Iranian patients. But no significant associations between IL-4 SNP rs2070874 (TC, TT and CC genotypes) and migraine were found.

Table 1: Primers sequence with orientation and the PCR product size.

Primers	Sequence (5'-3')		Amplicon
IL-4 gene polymorphism (rs2243250)	F	TAAACTTGGGAGAACATGGT	195bp
	R	TGGGGAAAGATAGAGTAAT	

Table (2): The Patient-Control Difference in mean age.

Age (Years)	Control Group n = 60	Study Group n = 60	P*
Mean ±SD	32.71 ±12.43	31.20 ±12.50	0.510 † NS
Range	11 -60	13 -60	

SD: standard deviation; *n*: number of cases; *: Chi-square test; NS: not significant at P > 0.05

Table (3): Comparison of Gender Frequency Distribution between Control and Patient Groups.

Gender	Control Group n = 60	Study Group n = 60	P *
Male, n (%)	17 (28.8%)	16 (26.7%)	0.794 ¥ NS
Female, n (%)	42 (71.2%)	44 (73.3%)	
Male: Female	1:2.75	----	----

n: number of cases; *: Chi-square test; NS: not significant at P ≤ 0.05

Table (4): Frequency distribution of patients with Migraine and control subjects according to IL-4 genotypes

IL-4 genotype	Patients Group n = 60		Control Group n = 59		P †	OR	95% CI	EF	PF
	n	%	n	%					
CC	42	70.0	9	15.3	<0.001 HS	16.92	5.84-49.00	0.77	---
CT	10	16.7	21	35.5	0.311 NS	1.73	0.58-5.11	0.14	---
TT	8	13.3	29	49.2	Reference				

n: number of cases; †: Chi-square test; EF: etiologic fraction; PF: preventive fraction; OR: Odds ratio; HS: highly significant at $P \leq 0.01$; NS: not significant at $P > 0.05$.

Table (5): Frequency distribution of patients with Migraine and control subjects according to IL-4 alleles

	Patients Group n = 120		Control Group n = 118		P †	OR	95% CI	EF	PF
IL-4 Allele	n	%	n	%					
C	94	78.3	39	33.1	<0.001 HS	7.32	4.10-13.07	0.61	---
T	26	21.7	79	66.9		0.14	0.08-0.24	---	0.61

n: number of cases; †: Chi-square test; EF: etiologic fraction; PF: preventive fraction; OR: Odds ratio; HS: highly significant at $P \leq 0.01$

Figure (1): Agarose gel electrophoresis image that show the RFLP-PCR product analysis of IL-4 gene polymorphism (rs2243250) (T/C) by using AvaII restriction enzyme in 2% agarose. Where M: marker (1500-50bp), lane (TT) wild type homozygote that showed undigested by restriction enzyme as 195bp. Lane (T/C) heterozygote, the product digested by restriction enzyme into 195bp, 177bp and invisible 18bp. Lane (CC) mutant type homozygote, the product digested by restriction enzyme into 177bp and invisible 18bp bands

Conclusion

Allele C of IL-4 rs2243250 was significantly higher frequent in patients group compared to control group. C allele had etiologic effect whereas allele T was significantly less frequent in patients group compared to control group. T allele consider a protective factor.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

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The Effect of Combined Preventive Exercises Using (Plyometric-Agility) Method in Improving the Anaerobic and Rapid Ability of the Muscles of the Legs for Female Students

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Abstract

Physical fitness is one of the lessons of students in the first year of study in the departments and faculties of physical education and sports sciences in Iraq, so it is necessary to use new method to improve their capabilities, including these exercises method (Plyometric-Fitness), a composite method that combines during the performance Short anaerobic power and explosive and rapid strength of the muscles of the legs.

The researchers used these exercises within the lesson after dividing the students into two groups. The first experimental group was the best in the results as it used in addition to the method (Plyometric-Agility) preventive tools that helped to feel the student safe and fear of injury when performing, followed by the total Control. The researchers used the exercises in a number of educational units according to the curriculum.

Keywords: *Fitness, Fitness, Fitness, Anaerobic Ability, Preventive Tools and Composite Exercises.*

Introduction

Physical fitness has become a necessity and a basic need for all members of society, being an expression of health and activity, a different meaning of lack of movement and inactivity, which in turn leads to the loss of aesthetic and agility of the body and make it vulnerable to many diseases. Physical fitness studied one of the classes in the departments and faculties of physical education and includes a set of exercises to develop the elements of physical fitness and health (strength, speed, fitness and cardiorespiratory fitness, endurance, flexibility... etc.) these elements have a functional and mechanical as well as psychological.[1]

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In this lesson, students suffer from a large number of vocabulary and lack of time in addition to the inability of students to integrate exercises and therefore not taking the time to improve, so the researchers sought to address this problem using a new method that includes composite exercises between the physical and motor side (Plyometric and fitness) with the use of preventive method Which protects the student from injury that may occur, in the sense that exercises (Plyometric - Agility) works to strengthen the muscles targeted during the exercise and that these method work to protect the joints from injury.[2]

It is one of the most effective and effective training method used to develop muscle capacity and improve the speed of the muscles of the legs and arms in particular. Only one as well as to improve the force characteristic speed or speed is the ability of the nervous system in the muscular system to overcome the resistors and is characterized by high speed and output the maximum possible speed The agility of the motor capacity is the ability of the individual to change the positions of the body or trends on The ground or in the air accurately and

smoothly and the timing is correct, or is the ability of the individual to change direction quickly and well timing and functional variables affecting the performance in the exercises Plyometric and agility Short-term anaerobic ability It affects the ability of muscles to perform strongly and quickly.[3]

Practical Part:

Field Research Procedures: The experimental method was used in the research, which is a deliberate and controlled change to the specific conditions of an event. The research community was determined by the first grade students in the Department of Physical Education and Sports Sciences at the College of Education for Girls\University of Kufa for the academic year 2018 - the number of (51) students were selected (24) A sample of the study was divided into two groups (experimental and control) in each group 12 students by simple random method (lottery) and thus the sample represented (47.059)% and thus the sample was representative of the research community, which is the basis of research, the researchers provided some tools and devices, including balance To measure height and body mass of Chinese-made, Bonding tapes, colored markers, metallic tape, Japanese-made Sony video camera with camera stand (200 images/sec), electronic timing clocks (2) for documenting tests and procedures, medical balls weighing 1-3 kg, number 10, terraces With heights of 20-40 cm number 6.

Tests Used in the Research:

Vertical jump test of stability (Sargent):[4]

Test Objective: To measure short anaerobic power.

Tools Used: A piece of chalk, a wall or a board with measurements in cm

Method of Performance: The laboratory stands holding a piece of chalk next to the wall or painting so that the eagles on the ground and then raise his arm holding the chalk full along to put a mark on the painting with chalk. After that, the laboratory will swing the arms down and back, bending the trunk forward and down and bending the knees to the upright position. On the board or wall at the highest point it reaches and measurement to the nearest (cm).

Method of Recording: The distance difference between the two marks - before the performance and after the performance is calculated in terms of function, which represents the student's short anaerobic power.[5]

Short anaerobic capacity = 2.21 * body weight *Ö Jumping distance in meters.

Test run by jumping to a distance of 30 meters (calculate the number of steps):[6]

Test Objective: To measure the force characteristic of the muscles of the legs.

Tools: Stopwatch, 50 square meters, registration form.

Method of Performance: The laboratory stands on a certain line and then begins to perform successive jumps between the right and left man and on the combs with a focus on the extension of the back leg and bend the front of the knee and the arms movement is consistent and alternate with the legs

Recording Method: The number of steps in which the legs touch the ground is recorded for 30 meters.

Pretests:

The pre-test of the research sample was conducted on Sunday 25/11/2019.

Field Applications:

The researchers prepared physical exercises in the manner (Plyometric - Agility) method (high intensity interval training) as well as the use of preventive means, where the researchers used a set of preventive means to help students in the performance of some exercises characterized by high strength and high pressure on the joint and these method are represented A group of ligament for four joints in the body, including (elbow joint - ankle joint - knee joint - ankle joint) where these means are used for the purpose of protecting the joint from injury as well as increased sense of safety, where the experimental group used preventive means during the application The control group applied the curriculum adopted by the teacher. Where the use of the curriculum over the course of (8 weeks) by three training modules per week was used these method in the application of exercises for the purpose of achieving research objectives. The exercises were applied from Sunday (2/12/2018) to Thursday (24/1/2019) days (Sunday - Tuesday - Thursday) and the performance of the exercise (25-30 minutes) and the sample carried out exercises prepared by researchers in the main section.[7]

Posttests: The post-test of the research sample on Sunday 27/1/2019.

Statistical Means: SPSS specialist program was used.

Results

At the end of the application of the exercises were statistically deal with the results of the tests before and after the experimental group and the control group to know the difference between the two tests for the same group where the mean and standard deviation and the value (t-test) calculated are the statistical processes used, where there was a significant difference and favor The researchers also examined the results of the two groups' post-test tests to determine the significant difference in favor of either group.

Table (1). Shows the mean, the standard deviations, the calculated (t) value and the significant differences of the pre- and post-test results of the experimental group

Tests	Units	Pretest		Posttest		(t) Value	Moral value	Significance of differences
		Mean	SD	Mean	SD			
Sargent test	Watts	576.57	166.06	717.11	80.38	-3.04	0.000	Sig.
The characteristic power of the legs	Number	18.33	2.15	16.17	0.937	4.91	0.000	Sig.

Table (2). Shows the mean, the standard deviations, the calculated value (t) and the significance of the differences of the pre- and post-test results of the control group

Tests	Units	Pretest		Pretest		(t) Value	Moral value	Significance of differences
		Mean	SD	Mean	SD			
Sargent test	Watts	489.96	47.86	523.76	41.60	-2.93	0.000	Sig.
The characteristic power of the legs	Number	18.75	0.75	17.58	0.792	10.38	0.000	Sig.

Table (3). Shows the mean, the standard deviations, the calculated (t) value and the significant differences for the results of the post-test of the experimental and control groups

Tests	Units	Experimental group		Control group		(t) Value	Moral value	Significance of differences
		Mean	SD	Mean	SD			
Sargent test	Watts	717.11	80.38	523.76	41.60	4.04	0.000	Sig.
The characteristic power of the legs	Number	16.17	0.937	17.58	0.792	4.91	0.000	Sig.

Discussions

The two tables (2.1) show that there are differences in the arithmetic mean, standard deviations and the value of (T-test) calculated in the research tests for the two groups before and after the value of (Sig) less than (0.05), there are significant differences between the tests for the benefit of the posttest as well In Table (3) the differences of the experimental group when compared with the control in the post-test and the researchers attribute this difference in the improvement of the experimental group to the exercises used in the method (Plyometric-Agility),[8] which helped exercise to strengthen the muscles of the legs, which helped to jump more strongly as well as a distance The second test in the number of x Watt less, which indicates the improvement of the rapid strength of the muscles of the legs and high flow and less effort and less time,[9] which worked on the fitness exercises associated with the exercises Plyometric was the performance of the experimental group of exercises composite where performs Plyometric movements and

then in the same exercise perform the movements of agility, which supports what he said The development of rapid strength increases the ability of the nervous system to implement movements quickly at the effective extension of joints jumper after effective flexion movements preceding the movement of progress, as the exercises used to help improve the explosive strength of the muscles of the legs through The rapid contraction of the muscles and the simultaneous regulation of the muscular work,[10] which made the force on the ground to rise up and achieve distances beyond the results of the pretest test in addition to preventive means (ligaments on the joints) in increasing the motivation for performance and a sense of security and safety for performance, especially as the movements Plyometric and agility characterized by high intensity Speed in performance and continuous change in performance.[11]

Conclusions

1. Preventive exercises using (Plyometric - Agility) of the experimental group and the use of a group of ligaments (splicing) positive effect in the protection of joints from injury and determine the ranges of movement and thus improved performance in the test of measuring short-term anaerobic capacity of the muscles of the legs represented by the test of the vertical jump (Sargent) As well as agility.
2. Complex exercises in the style (Plyometric - Agility) helped to reduce the time and effort for the sample through the use of exercises to improve more than one physical variable at the same time.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Psychological Integration and its Relationship to the Psychological Rigidity of Volleyball Players from the Sitting Position

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Abstract

The research contained two axes is to identify the level of psychological integration and psychological rigidity and the relationship between the volleyball players from the sitting position, where the built psychological scale and the preparation of the scale of psychological rigidity and the use of descriptive method of relationships to suit the nature of the research. The research sample included (75) players and showed a significant correlation between them by the use of statistical means.

Keywords: *Psychological integration and psychological rigidity.*

Introduction

Our modern world has witnessed a scientific and information revolution that exceeded its previous revolutions throughout the ages. This requires a strong scientific basis, as it needs an innovative creative person with a visionary to benefit from modern technology to keep pace with the requirements of modern times in order to qualify players in order to contribute to this rapid development. Which is sweeping the world.

Psychological integration is an important and fundamental concepts related to the personality and mental health of the individual and its adaptive relationship with the environment and social environment, where individuals differ in terms of their physical and mental abilities and personal abilities in various fields, as well as the psychological integration of the individual's ability to change his behavior and habits when faced with a new situation or problem It is a positive psychological development refers to psychological maturity and helps the learner to overcome negative habits, it represents a basic criterion for mental health It represents the access point of the formation of the learner personality and face direct obstacles and problems and facilitates the performance of skills during learning or training and competition.[1]

Psychological rigidity emerges as a vital and important factor of the personalities of the players, which has a crucial role in improving the psychological and physical performance and face the various psychological pressures experienced by the volleyball player in training, competition and public life, whenever the players are able to face the stress and painful events with strength and hardness has an impact Negative accuracy on skill performance. One of the important pillars that keep the player strong in the face of difficult circumstances is the possession of psychological rigidity, which enables him to face stressful situations and adapt properly and that players who possess psychological strength are strong and interact with their coach more than others and able to achieve their goals as psychological rigidity is a key part of personal balance and stability.[2]

The game of volleyball from the sitting position is one of the games that follow the scientific planning strictly in order to upgrade the level and capabilities of its players, where the game of volleyball from sitting position requires speed in performance, in addition

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to need accuracy during the implementation, as it is a double-edged game That is, it develops the concentration of the player and develops his scientific abilities at the same time; therefore, volleyball has entered in the sports forums and seriously, where it has become one of the games that take up a lot of space in the Olympics, sports competitions and volleyball from the seating position of one of the sensitive and important games where it is interested in a significant The segments of society are the disabled, as this disability does not constitute an obstacle for them in their lives where they have become recognized clubs and committees and federations and become involved in various sports Olympics and their disability is no longer a problem,[3] because the society has changed them because they did not dissuade them disability Apple on the contrary Researchers worked to select this category and study their condition and measure psychological variables. Hence the role of measurements and tests as an important tool of evaluation tools in the field of sports, which focuses on the training process and assess the level of performance and detect errors in competition and work on objectively developed to develop accurate performance skill for volleyball players from a seating position.[4]

Research Objectives:

1. Identify the degree of psychological integration and psychological hardness of volleyball players from the sitting position.
2. Identify the relationship between psychological integration and psychological rigidity of volleyball players from the sitting position.

Field Research Procedures: The researchers used the descriptive approach in the two survey method and comparative studies due to its relevance and nature of the research. The researchers selected the research sample randomly (75) players and a percentage (75%).

Psychological Integration Scale: The researchers built the psychological integration scale according to the scientific steps used in the construction of the measurements.

Table (1). Show areas, number of paragraphs and sequence of psychological integration scale

S	Domain Name	Sequence of Paragraphs	Number of Paragraphs
1	Social	1,2,3,4,5,6	6
2	Profile	7,8,9,10,11,12,13,14,15	9
3	Family	16,17,18,19,20,21,22,23,24	9
4	Cognitive	25,26,27,28	4
5	Economic	29,30	2
6	Religious	31,32,33,34,35,36,37	7
7	Health	38,39,40,41,42,43,44	7
Total			**44**

Alternatives were used to answer the paragraphs of the scale and reached four alternatives for each paragraph and table (2) shows that.

Table (2). Alternatives to answer and the key to the correction of the paragraphs of the measure of psychological integration

Alternatives	Always	Frequently	Sometimes	Rarely
Key correction	4	3	2	1

Psychic Hardness Scale: The psychological hardness scale prepared was prepared, the number of paragraphs (14) distributed over the four areas (cognitive assessment, psychological commitment, challenge). As shown in Table (3).

Table (3). Show Fields, Number, Paragraphs and Sequence of Psychometrics

S	Domain name	Sequence of paragraphs	Number of paragraphs
1	Cognitive assessment	1,2,3,4,5	5
2	Psychological commitment	6,7,8,9	4
3	The challenge	10,11,12,13,14	5
Total			**14**

Alternatives were used to answer the paragraphs of the scale and reached three alternatives for each paragraph and table (4) shows that.

Table (4). Show Alternatives of Answer and Correction Key for Psychiatric Hardness Scales

Alternatives	Always	Sometimes	Never
Key correction	3	2	1

Scouting Pilot Study: The researchers conducted an exploratory experiment on a sample of (10) players from the club of Babylon and Najaf, on Sunday 4/11/2018 and asked them to read the instructions and phrases and inquire about any ambiguity.[5]

Apply the two scales to the main sample: The two scales were applied to the main sample of (75) players, on Friday (23/11/2018), on the Golden Medal Hall in Baghdad during the participation of the subcommittees (research sample) in the Iraqi league volleyball league championship.

Statistical method used in the research: The researchers used the Statistical Portfolio of Social Sciences (SPSS) to process the data.

Results

Table (5). Shows the statistical description of the results of the psychological integration and psychological hardness measures

The scale	Mean	SD	Hypothetical mean	(t) value	Significance level	Statistical significance
Psychological integration	152.933	16.394	120	7.780	0.000	Sig.
Psychological rigidity	36.266	2.814	28	11.374	0.000	Sig.

Table (5) and Figure (1) show the statistical description of the results of the research sample in the measures of psychological integration and psychological hardness, where the value of the mean in the scale of psychological integration (152.933) and a standard deviation (16.394), while the value of the hypothetical mean of the scale was (120), This means that there are statistically significant differences between the arithmetic mean of psychological integration, which is greater than the hypothetical average of 120, which indicates that the sample has a high level of psychological integration.[6]

This result can be explained by the fact that the research sample has a high level of psychological integration and this represents harmony and self-integration and positive adaptation of the sample. Psychological integration is a positive psychological development that indicates psychological maturity helps the individual to overcome negative habits, as individuals who have a high psychological integrity have confidence in The same and the ability to take responsibility and awareness of attitudes and interpreted positively and individuals who have a integration less vulnerable to frustration and be able to meet their needs and desires and more in line with others and face life and have the ability to change and flexibility in behavior and modify it when faced with new situations and problems.[7] The

mean value of the arithmetic mean was 36.266 and the standard deviation was (2.814). The hypothetical mean value was (28), which indicates that the sample has a high level of psychological integration.

This result can be explained by the fact that the research sample has a high level of psychological rigidity and this indicates that the majority of the research sample are in good psychological condition and have a high and almost stable control power. Guide their behavior to always be the best and perform the best they have and work to complete the duties assigned to them successfully, strength, solidity and commitment by showing the greatest amount of activity and perseverance and willingness to excel.[8]

Table (6). Shows the correlation coefficient of the research sample

Variables	Correlation coefficient	Significance level	Statistical significance
Psychological integration with psychological rigidity	663. 0	0.000	Sig.

Table (6) shows that there is a close correlation between the psychological integration and the psychological rigidity of the volleyball players from the sitting position, as psychological integration clearly affects a positive in the practice of sports, self-confidence and self-esteem and courage and face the environmental conditions and awareness of the nature of his existing abilities enable them to Perform a high level of performance in the required sports activities, that the psychological integration helps the owner to be successful in his work, whatever the type of this work, although the level of performance requires the elements of the availability of fitness elements, but this does not reduce the importance of psychological integration in Time level of performance in all sports activities, whether individual or collective.[9]

Harder players are more resilient, more accomplished, more disciplined, more capable, more independent and able to make decisions, face crises and take personal responsibility for what happens to them in the interpretation and appreciation of stressful events. However, an athlete with psychological stiffness can go beyond physical pain and at the same time retain Strength and technique to the crucial moments of both training and competition. Lang emphasizes that each individual shows some levels of hardness and the high or low depends on the position and time that the individual is going through. Thus, hardness is an educated ability that can change depending on the situation to which the individual is exposed. Has a personal trait.[10]

Conclusions

1. Volleyball players enjoy a high level of psychological integration and psychological rigidity.
2. The results showed a significant correlation between psychological integration and psychological rigidity in volleyball players from the sitting position.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

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The Impact of Power Reserve Exercises in the Negative Range on the Development of Maximum Strength and Achievement of the Quartet with Special Needs

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Abstract

The great power is one of the most important types of force, which is still the prevailing idea that it does not appear only under the presence of a particular emergency such as panic and fear and other things that pass on the human, but this is a fact tainted by some doubt, especially as scientific development in various fields of science, especially sports He did not leave an order to pass randomly, but some field ideas attempted to raise suspicion through experimentation and research into the reasons behind the results, including the problem of research that the superpower did not take the bulk of the research commensurate with its importance, it is not required to have an emergency to appear, but there Training Method The researchers, in coordination with the instructor, decided to give exercises to the lifters to reserve the force to remove the force stored in the quadrants, as well as to focus on exercises for the use of negative contraction. Negative according to force precautions to develop maximum strength and achievement, while the imposition of research there are significant differences of exercise in the method of negative range in accordance with force precautions to develop maximum strength and achievement for lifters with special needs and identified the research community Among the applicants in the governorate of Baghdad for the disabled and after the identification of the tests, the researcher conducted the pre-tests of power reserves in the negative range of the experimental research group in the Union Paralympic Hall in banks. The main experiment, which lasted for 6 weeks, was started. This section included a presentation of the results of the research and the variables that were analyzed and discussed, in a scientific manner supported by sources. Reserves in accordance with the negative force to the extent positively in the maximum power and achievement were the recommendations of the research: the need to use the units in specific periods of special preparation for the activities of the force.

Keywords: *Reserve exercises,negative range and special needs.*

Introduction

The training process in sports is one of the processes that require the following scientific method to prepare the athletes and that the success of the training process depends on the ability of trainers and take into account the individual characteristics of athletes and choose the best training method and the best stages of time division of sports preparation as it is very important when preparing training curricula Method, means and method appropriate for each stage of training as well as the choice of exercises that must be appropriate to the ability and capacity of the athlete. Specialists and researchers tried to care for the disabled by preparing integrated training programs for this purpose in order to serve this segment, which is part of the community,[1] which must be paid special attention and this is confirmed, The development that we observe today in all areas of life reflected on the sports field as well as simpler What is evidenced by this is the development of sports

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achievement which is increasing day by day. We do not observe a championship at the global level or the local level, which is devoid of breaking numbers, especially in the artistic performance. Among them was a segment called specialists (private individuals). Olympic For people with disabilities in (1948 A.D) and was named Olympic Parallels, it was put a lot of programs and the fact that training curricula have a positive impact to lift their morale,[2] Perhaps (the superpower) is one of the types of force that left open debate is still the subject of discussion between the concerned as the wheel of human sports progress does not believe in doubt as much as trying to touch the actual reality within the field, but because of the link of the great power to the problems of interpretation must be highlighted all the hidden and method Field method to be shown in a field applicable and codified away from randomness and emergency conditions, which was believed to be under the weight of alert and the result of panic and fear and hypnosis and electrical stimulation and the like.[3]

Research Objectives:

1. Prepare negative range exercises in accordance with force precautions to develop maximum strength and achievement for people with special needs.
2. Recognize the impact of negative range exercises in accordance with strength reserves exercises in the maximum strength and achievement for people with special needs.

Hypothesis: There are significant differences for special exercises according to force precautions to develop maximum strength and achievement for people with special needs.

Research methodology and field procedures

Research Methodology:

The researcher used the experimental approach in one group method and the experimental approach represents the most honest approach to solve many scientific problems in a practical and theoretical way.[4]

Community and Research Sample: The research community is the advanced players of the physical strength of people with special needs and the number (15) quarters and the researcher chose a research sample randomly consisting of (10) lifters represented the following weight groups (49 kg - 54 kg - 59 kg - 65 kg - 72 kg - 80 kg), which represents 66% of Research community as shown in the following table.

Table (1). Shows the distribution of community members and the sample of the research

Community	Number	Percentage
Search community for advanced players	15	100%
The research sample	10	66%
Pilot sample	3	20%

Homogeneity of the research sample: The homogeneity of the sample in extraneous and research variables was verified using the law of the second torsion coefficient (Pearson) as shown in.

Table (2). Shows the homogeneity of the sample

Variables	Units	Statistics			
		Median	Mean	SD	Skewness
Mass	Kg	71.5	78.4	22.969	0.901
Length	cm	148.5	149.5	8.14	0.368
Age of training	Month	24	21.66	8.9	- 0.788
Age	Year	18	17.5	2.415	- 0.621
Achievement	Kg	116	104.7	47.25	- 0.717
Curl Larry	Kg	40	36.5	12.703	- 0.826
In front of Bryce	Kg	44.5	41	11.25	- 0.933

Define search variables:

Tests used in the research:

Achievement Test[5]: Purpose of the test: Measure the maximum strength of the muscles of the arms using (1RM) and using the exercise of force rises through the movement of full flexion of the arms to the chest with a stop (2 seconds) and then the full extension of the arms.

Used Equipment:

- Iron bar weighing (20) kg Alico type of Swedish origin.
- Iron tablets of different weights (0.5 kg up to 25 kg) Alico type of Swedish origin.
- A special stadium for the physical strength of the disabled in accordance with international standards.

Registration: The maximum weight of three attempts is legally recorded for the purpose of extracting the target difference coefficient and the highest one-time achievement according to the 1RM system.

Curry Larry Test: Purpose of the test: Measuring the maximum strength of the muscles of the front arms (baseball).

Used Equipment:

- Iron bar weighing 20 kg.
- Legal weights.

Registration:

- The laboratory performs three attempts with the maximum weight it can carry.
- The maximum weight of the laboratory shall be counted among the three attempts measured in kg.

Front pressure sitting bar[6]: Purpose of the test: to measure the maximum strength of the shoulder muscles.

Hardware and Tools:

- Regular iron bar weighing (20) kg.
- Iron weights of different weights.
- Wooden platform for performance.

Registration:

- The laboratory performs three attempts with the maximum weight it can carry.
- The maximum weight the laboratory raises is calculated among the three attempts measured in kg.

Field procedures used in the research:[7]

Pretests: Conducted on 20/6/2019 at 3:30 pm.

The sequence of tests was as follows:

1. Curl test Larry, where the player is given three attempts and calculate the best attempt
2. Test the front pressure sitting in the bar where the player is given three attempts and calculate the best attempt
3. Achievement test using the lifting force according to the international system three lifting and choose the best lift.

Main Experience: The training program was applied to the members of the research sample on Wednesday 21/6/2019, at three o'clock in the afternoon as follows:

1. The training curriculum lasted for 6 weeks and the training units ranged between (60-70) minutes with (2) two training units per week.
2. The researcher to conduct tests (1RM) after the end of every two weeks (15) days to find out the development in the maximum power level and then rationing of pregnancy according to the system (1RM) for the development.
3. The number of training units during the trial period is (12) training units.
4. The training program started on 12/6/2019 on Saturday and ended on 4/8/2019
5. The researcher adopted the method of repetitive training to suit the specificity of the game of physical strengths and was rationed training load according to the system (1RM).
6. The main experiment was applied and the exercises were given in agreement with the trainer.
7. Exercises were given in the special preparation period
8. The training program was varied and continued even with public holidays, which is adopted by the Central Unions of the Iraqi National Paralympic Committee to ensure continuity of training, which is one of the characteristics of regular training for the purpose of achieving.

Posttests: After completing the training program, the researcher conducted the post-tests of the research sample of the experimental group on 6/8/2019 and on the national team hall in Baghdad.

Results

Table (3). Shows the mean and standard deviations of the tests (achievement, Curl Larry, In front of Bryce)

Tests	Units	Pretest		Posttest	
		Mean	SD	Mean	SD
Achievement	Kg	104.7	47.255	116.2	46.713
Curl Larry	Kg	36.5	12.703	43	14.375
In front of Bryce	Kg	41	11.254	47.5	12.747

Table (4). Shows the groups of the teams and the standard deviations of the teams for the tests (achievement, Curl Larry, In front of Bryce) and shows the value of (t) calculated and tabular as well as the significance of the difference

Tests	Units	Mean	SD	(t) value		Significance of differences
				Calculated	Tabulated	
Achievement	Kg	11.5	9.49	3.829	2.262	Sig.
Curl Larry	Kg	6.5	2.415	8.505	2.262	Sig.
In front of Bryce	Kg	7.5	3.535	6.704	2.262	Sig.

All the previous variables have a significant difference between the pretest and posttests under the level of significance (0.05) and the degree of freedom (10 - 1 = 9) and in favor of the highest post-mean.

Discussions

Discussion of the results of pre and posttests of physical variables: By showing the results of Table (4) showed the superiority of the post-test on the pre in each of the test (achievement, Curl Larry, In front of Bryce) for the research group and researchers attribute the superiority of the results after the pre force in the use of exercises in the negative range of movement performed by the group The research, which was performed in a sufficient period due to the specificity of these exercises carried out commensurate with the type of performance practiced by the research sample to raise (Bing Press) as well as the levels of stress that exceed the maximum in this type of training formation of weight lifting exercises in which the orientation of the type at the expense of quantum In other words, increase the effect Effective in weight training exercises.[8]

This is consistent with the researchers used in the repetitions of Passive range exercises, which ranged from (3-4) repetitions, this requires us to use stressed At the same time, the intense use of this amount works within the first phospholipid energy system, which depends entirely on the excitability of the fast-rising white muscle fibers of higher efficiency and muscle groups differently from what is used in conventional exercises as well as these muscles.[9] It is mainly targeted by excitement of the nervous system higher than the maximum due to the number of repetitions and intensity targeted in exercises with a negative range of movement, as these exercises worked to stimulate the muscle fibers more and the reason is due to the beginning of its work under the roof of a higher intensity of tension The main objective of the training is to start the threshold of the motor units to reach a higher stress in the exercise to ensure that the muscle in the normal maximum exercises in all conditions does not reach the highest contraction, which confirms that there are physical efforts stored which is called (reserves of power) the player does not Used even in the highest training conditions,[10] but appear under specific circumstances and this is confirmed Although the muscle reaches its maximum contraction, the nervous system does not recruit all muscle fibers in the maximum contraction (100%) and thus can be reached by the effect of training Highest stress to units

"High mobility threshold, so high stress must be used to mobilize motor units through few repetitions to avoid fatigue and injury.[11]

This explains the use of exercises with a negative range of motion to employ a state of raising the ceiling of the intensity of training from the first set of repetitions performed by the player in order to mobilize the highest moving units with the highest difference threshold in muscle work, which works to employ a work of added energy more than the previous one to the player This energy is represented by increasing the maximum voltage of the first system of phosphate energy by increasing the effectiveness of the white fibers and their ability to mobilize more ATPase enzymes present on myosin heads, which increase the contractility as well as employ the ability of strings and This is positively reflected in the development of maximal achievement with intensity ratios ranging between (10-20%) above the maximum achievement in the type of exercise.[12] This is confirmed by some data from Russian researchers quoted by them which confirms that it is possible Development of the added energy of the maximum of (2 - 3.5) times more than normal, as the possibility of provoking work to stimulate the muscle fibers and increase their systolic efficiency and all soft tissues, as well as when working simultaneously, whether in weight lifting and throwing or compromises and on the other side of the good performance Which depends on what special exercises develop The energy, these additives can be used and increase in working conditions when implementing greater hold high art performance and can be reached (35-40%) of the potential energy and this energy will greatly affect accomplishment.[13] The weight lifting privacy service comes through increasing the abilities of a higher level of race and this makes coaches put their players under a higher atmosphere of competition (such as passive training) that imposes on players a higher amount of stress than usual. That relying on the basic procedures in the development of muscle strength, the need to subject the muscles to a degree of endurance beyond the muscular capabilities of them. The development of maximum strength through extra weight is a modern and serious way to train maximum strength for athletes with higher levels, the researchers said the field situation of the need to change the method, means, tools and method of training.[14]

Conclusions

1. The training units in accordance with the power reserves in the negative range positively affected the maximum strength of the muscles of the arms, shoulders and chest.
2. Not to exaggerate in giving the amount of high stress and sufficiency ranges effective stress within this method, which is (130%) and below and in specific periods of preparation and with the help of colleagues.
3. Conducting similar studies and researches for different activities.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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First Record of Cryptococcus Gattii (VGI) that Causes Vulvovaginitis in Iraq

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Abstract

Background and Purpose: *Cryptococcus. gattii* is a non-*Cryptococcus neoformans* species isolated from certain plants and some animals.

Case Report: This report describes a case of a 35-year-old Iraqi female with pruritus and vaginal irritation. Conventional tests and molecular analysis of the samples of vaginal discharge were performed. The mentioned analyses revealed *Cryptococcus gattii* as the causative agent of vaginal infection. The sensitivity tests revealed that this species is susceptible to clotrimazole and nystatin.

Conclusion: *C. gattii* was found to have the ability to cause vulvovaginitis. This is the first report of successful detection and treatment of vulvovaginal infection with *C. gattii*.

Keywords: *Cryptococcus gattii, Vulvovaginitis, 18 S r DNA gene.*

Introduction

Cryptococcosis is characterized by a chronic course and is usually caused by the ubiquitous yeast *Cryptococcus neoformans*, predominantly by its variety *C. neoformans* var. *grubii* and in endemic areas by *Cryptococcus gattii*. Other *Cryptococcus* species are rarely reported to cause infections and most of them are known to be low or non-pathogenic[(1)].

*C. gattii*can clearly be distinguished from other *Cryptococcus* spp. by ribosomal DNA sequence analysis[(2,3)].

The major reservoir for *Cryptococcus gattii* are eucalyptus trees and decaying hollows in living trees[(4)]. Eucalypts are in fact only one of more than 50 different species of tree that can provide an ecological niche for *C. gattii*[(5,6)].

Beside the environmental source, C. gattii can be isolated from the animals, sheeps often develop infection of the nasal cavity or CNS, while horses and goats present primarily with lung disease[(7,8,9)].

Dogs typically present with clinical signs involving more than one organ[(10)]. Case reports and moderate to large case series of C. gattii in cats [(11,12)].

C. gattii was traditionally a tropical and subtropicalorganism[(13)].

In humans C. gattii causes predominantly meningoencephalitis and other CNS and pulmonary diseases and is associated with substantial morbidity, especially in immunocompromised people[(14,15)].

Since the identification of *C. gattii* infection inimmunocompetent individuals on Vancouver Island, Canada, in 1999, the organisms have been found in many areas of Vancouver Island and the Pacific Northwest[(16)]

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and very recently a singlecase was identified in the southeastern United States[17].

In most of these reports, the identification of *C. gattii* was confirmed by molecular method.

Herein, we present a case of vulvovaginitis due to *C. gattii* in a 35-year-old Iraqi woman and discuss the biology of this agent. To the best of our knowledge, this is the first report on *C. gattii* vaginal infection.

Case Report:

Case History: A 35-year-old married female patient presented to one of the out-patient clinics of Hilla city, Babylon, Iraq, due to severe itching and vaginal irritation. Vaginal examination revealed thick, curdle-like, white-colored discharge, edema and intense pruritus of the vulva. The vagina and labia were erythematous. She was using a depo provera injection as a contraceptive method.

Diagnosis: Due to the suspected diagnosis of vulvovaginal candidiasis, fresh samples of vaginal discharge were sent for mycological examination to the microbiology lab., Department of pathological analysis technique, Babylon technical institute, Al Furat al Awsat technical University, Babylon, Iraq. The samples were taken from vulvovaginal region by a sterile transport medium swabs. Two specimens were obtained under sterile conditions, one for microscopic examination and the other for fungal culture. A slide was prepared for Methylene blue staining. The vaginal swab was inoculated on Sabouraud Dextrose Agar (SDA; Merck, Germany)[18] and incubated at 37°C for 24 h. The produced cream-colored colonies were slightly mucoid, smooth, highly glossy and slim in texture that were indistinguishable from *Candida* spp. colony.

Microscopic examination of the culture after 48 h showed round to oval yeast, single or pairs of cells without true hyphae or pseudohyphae and with a capsule in Indian ink, see figure (1).

Figure 1: Cryptococcus gattii under microscope show capsules stained with Indian ink.

Genomic DNA was extracted from culture using glass bead method[19]. Then, the 18 S r DNA gene of isolates was amplified by the universal fungal primers, PFPRIM-F3 (5′-GACTCAACACGGGGAAACT -3′) and PFPRIM-R4 (5′-ATTCCTCGTTGAAGAGCA-3′)[20]. The PCR product was applied for the accurate identification of isolate (Promega, USA)[21,22]. For confirmation of species identity, the obtained sequences were compared with similar sequences in the open access NCBI database (http://blast.ncbi.nlmnih.gov/Blast.cgi).

Antifungal Susceptibility:

Inoculation of Test Plates:

1. Prepare the inoculum by making a direct broth or saline suspension of isolated colonies selected from an 18- to 24-hour agar plate .
2. Dip a sterile cotton swab into the suspension. Rotate the swab several times and press firmly on the inside wall of the tube above the fluid level. This removes excess fluid from the swab.
3. Inoculate the dried surface of the agar plate by streaking the swab over the entire sterile agar surface. Repeat this procedure by streaking two more times, rotating the plate approximately 60° each time to ensure an even distribution of inoculum. As a final step, swab the rim of the agar.
4. Leave the lid ajar for three to five minutes, but no more than 15 minutes, to allow for any excess surface moisture to be absorbed before applying the drug-impregnated disks [23].

Preparing the disks impregnated with antifungal drugs

Clotrimazole: We had used clotrimazole drug solution manufactured by (Coral Laboratories/India) with a concentration (10mg/30 ml) and by conversion the units from (mg) to (Mg) the concentration is equal to (10000 Mg/30 ml).

After that we was apply ten–fold dilution by adding (1ml) (1000Ml) from the drug solution to (9 ml) of ethanol, the resulting concentration is (50 Mg/10 ml) in the vial.

The next step was adding (5 Ml) from the vial to the disks and for 5 times (25 Ml for each disk), the resulting concentration in each disk is (250 Mg/25 Ml) because (50 Mg * 5 times = 250 Mg) [24].

Nystatin:

- We had used nystatin drug solution manufactured by Egyptian International Pharmaceutical Industries company/Egypt. Each (1ml) of nystatin contains 100000 International Unit (IU) and each (1Ml contains 100 IU).
- By using electronic international unit converter we had found that each (1 IU equal to 0.0002 mg). Then each (1 Ml) contains (0.02 mg) of nystatin.
- After conversion units from mg to Mg then each (1Ml contain 20 Mg) of nystatin.
- By applying ten – fold dilution by adding (1ml) (1000 Ml) of the solution to (9 ml) of methanol, the resulting solution is (2 Mg in each 1 Ml) and (10 Mg in each 5 Ml) of the solution.
- The next step is adding (5 Ml) from the vial to the disks and for (5) times (25 Ml for each disk).
- The resulting concentration in each disk is (50 Mg/25 Ml) because (10 Mg * 5 times = 50 Mg) [24].

Placing the Disks:

1. Using sterile forceps or disk dispenser, place antifungal disk on the surface of the inoculated and dried plate.
2. Immediately press it down lightly with the instrument to ensure complete contact between the disk and the agar surface. Do not move a disk once it has come into contact with the agar surface since some diffusion of the drug occurs instantaneously.
3. Position disks such that the minimum center - center distance is 24 mm and no closer than 10 to 15 mm from the edge of the petri dish. A maximum of six disks may be placed in a 9-cm petri dish and 12 disks on a 150 mm plate. Reduce the number of disks applied per plate if overlapping zones of inhibition are encountered[23].

Reading Plates and Interpreting Results

After 16 to 18 hours of incubation examine each plate. If the plate was satisfactorily streaked and the inoculum was correct, the resulting zones of inhibition will be uniformly circular and there will be a confluent lawn of growth.

If individual colonies are apparent, the inoculum would be too light and the test must be repeated. Measure the diameters of the zones of complete inhibition (as judged by the unaided eye), including the diameter of the disk. Measure the zones to the nearest whole millimeter, using sliding calipers or a ruler, which is held on the back of the inverted Petri plate. Hold the Petri plate a few inches above a black, nonreflecting background illuminated with reflected light.

The zone margin should be considered the area showing no obvious, visible growth that can be detected with the unaided eye. Ignore faint growth of tiny colonies

that can be detected only with a magnifying lens at the edge of the zone of inhibited growth [24].

Discussion

The present report describes an uncommon case of vulvovaginitis caused by vaginal infection with *Cryptococcus gattii*. Cryptococcosis was first reported in koalas in 1960[25] and is almost always due to *C. gattii*[26].

The first clinical case of cryptococcosis in which the name *C. gattii* mentioned was reported in 1970. It involved a 7-years old boy with leukemia from the Congo (formerly Zaire) who presented with meningitis[27].

Generally, the identification of yeasts is limited in histological preparation. Candida spp. often show budding yeasts, pseudohyphae and true hyphae in tissue. *C. gattii* can be identified based on its capsule[28], see figure (1).

A reliable method is required for the final identification of yeasts followed by mycological studies and confirmation by PCR and sequencing, especially for unusual pathogens.

To the best of our knowledge, the case described here is the first report of vulvovaginitis due to *C. gattii*.

Although Cryptococcus spp. rarely cause vulvovaginitis, there have been some articles on this issue (Table 1).

Table 1. Overview of seven reported articles of vulvovaginitis due to Cryptococcus species (1985- 2019)

No.	Age/ Year	Location	NO. Total/ case samples	Agent	Clinical presentation	Examination	Treatment	Case characteristics	Ref.
1	35/2019	Iraq	Case report	Cryptococcus gattii	Severe itching and vaginal irritation	Culture and sequencing	Clotri./Nyst.	NI	Current case
2	NI/1985	USA	805/1	Cryptococcus ungulaticus	Vulvovaginal complaints	Culture	NI	NI	(29)
3	60/1987	USA	Case report	Cryptococcus neoformance	Cutaneous lesion	Culture and biopsy	NI	Renal transplant recipient	(30)
4	72/1993	NI	Case report	Cryptococcus spp.	Colon cancer	Culture	FLC	Colon cancer	(31)
5	20/2005	Malaysia	Case report	Cryptococcus neoformance	Vulvovaginal complaints	Biopsy	Oral FLC	NI	(32)
6	NI/2009	Saudi Arabia	1000/1	Cryptococcus neoformance	NI	Culture and API20C kit	NI	NI	(33)
7	23/2018	Iran	Case report	Cryptococcus magnus	Severe itching and vaginal irritation	Culture and sequencing	KCZ	Immunocompetent	(34)

NI =Not indicated; spp.,و species; FLU, fluconazole;KCZ, ketoconazole; Clotri., Clotrimazole; Nyst., Nystatin.

Conclusion

C. gattii was found to have the ability to cause vulvovaginitis. This report could be of clinical significance and helpful for the management of similarcases. The case presented here is the first report of successful detection of vulvovaginal infection with *C. gattii*.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Evaluation of the Performance Level of the Defensive Skills of the Professional Players and their Relation to the Matches Result in the Handball Iraqi League

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Abstract

It is said that Handball is considered as one of the most interesting team games for both practitioners and spectators. Handball is widespread in many countries of the world, this is so, because it is characterized by the beauty of its technical defensive performance, in addition to the strength and speed of the performance level of players and teams too. There are plans to be conducted by the players collectively, i.e. as a team and plans to be conducted by the player himself individually. This requires that the player should have physical and skilful capacities that qualify him to deal with the situations requirements needed in the competition. The competitive activity often requires the player confront the opponent using different varieties of defensive skills. This, eventually, leads to reinforce the teams results, thus it is interesting for the coaches and players in training sessions. Since the professional player added incorporeal value and strength to the performance levels of teams and the performance of the defensive skills of the professional players were not stable in influencing on the level of the and hence on the matches result in Iraqi Handball Premier League; therefore, the current study is conducted in order to :

- Evaluating the performance level of the defensive skills of the professional player
- Recognizing the relation between the performance level of defensive skills of the professional player and the results of the matches in the Iraqi Handball Premier League.

The community of the study is represented in the Iraqi Handball Premier League Clubs that contain professional players: (Al'-Jiesh, Al-Karkh, Naft- Al-Janoob, Al-Shorta and Karbalaa). The sample of the study was the professional players from these five clubs; each professional player was noticed in eight matches.

The study came up with the following results, The skill of offending the offender achieved, high and positive, correlation factor with the result of the matches; it was (0.727) and fault percentage (0.000) . While in the skill of covering, the results showed that there is strong and positive relation between covering skill and the results of matches, the correlation factor was (0.586) and the fault percentage was (0.000). The skill of passing and receiving correlation factor was (0.508) and the fault percentage was (0.001). On the other hand, the blocking the fake skill has a correlation factor (0.542) and fault percentage of (0.000). This certifies that there is a positive incorporeal relation between the two variables. While the skill of blocking the shoot and distracting the ball has a correlation factor of (0.689) and a fault percentage of (0.000); which reflects good correlation factor.

Keywords: *Defensive skills, professional players and Iraqi Handball Premier League.*

Introduction

Handball is considered as one of the most interesting team games for both practitioners and spectators. Handball is widespread in many countries of the world, this is so, because it is characterized by the beauty of its technical individual and collective performance in strength and speed of the performance of the players and the teams. Thus, it is impossible to reach the desired

performance without the role of the defensive skilful performance. For this reason, it has attracted the attention of the coaches and players in training sessions. What is more, the skilful defensive performance in handball has a great and significant role in distracting the players of the opponent team, through the ability of the offending team players to conduct their defensive duties perfectly. The better performance the offenders do the easier control over the game they reach . The professional player is that player who dedicated his public and personal life to the hard work of continuous training .He also undergoes implementing stiff system for his everyday life, which is possessed by the training and competing rules .[1]Thus, the professional player added incorporeal value and strength to the performance levels of teams in the Iraqi Handball Premier League; to the extent that it became the topic of the media and those who are concerned. This is so, because of the great amounts of money paid by the clubs to their professional players. A reason that made many international players, from different countries of the world, move to play in the Iraqi league.[2]

The reasons behind the current study are:

1. Evaluating the performance level of the defensive skills of the professional player.
2. Recognizing the relation between the performance level of defensive skills of the professional player and the results of the matches in the Iraqi Handball Premier League.

Method of the Study

The used curriculum and the sample of the study: The researcher used the descriptive method of the correlated relations for its suitability to solve the problem of the study. The community of the study is represented in the Iraqi Handball Premier League Clubs that contain professional players: Al-Jiesh, Al-Karkh, Naft- Al-Janoob, Al-Shorta and Karbala. The sample of the study was the professional players from these five clubs; (10) professional players, two from each club. Each professional player was noticed in eight matches in the Iraqi Handball Premier League for the sport season of 2018-2019, which was conducted in (home and away round robin).

Means, Apparatus and Tools used in the Study:

- Resources and references.
- Tests and scales
- Internet websites
- Results input form
- Scientific notice
- Two Japanese Sony Video recording camera to film the matches
- Memory sticks with (32) gigabytes capacity.
- Dell laptop computer.

Procedures of the Study:

Having reviewing the handball specialized resources. A form was designed to specify the most important defensive skills in handball. The form was presented to a group of experts and specialists in handball.[3]those skills that got (70%) and over were taken into consideration; whereas the others were neglected in accordance with table (1).

Table (1). Shows the percentage of the selected defensive skills by the experts and specialists

No.	Defensive skills	Percentage
1	Offending the offender	81.81%
2	Covering	72.72%
3	Passing and receiving	74.54%
4	Blocking the fake	74.54%
5	Blocking the shoot and distracting the ball	74.54%

Setting the form of evaluating the performance level of the defensive skills: The form of evaluating the performance level of the defensive skills was designed for the professional players in handball as shown in table (2).

Table (2). The form of evaluating the performance level of the defensive skills

No	Defensive skills	Attempts	
		Successful	Failed
1	Offending the offender		
2	Covering		
3	Passing and receiving		
4	Blocking the fake		
5	Blocking the shoot and distracting the ball		

Method of Record: Each of the professional player has been watched and noticed in eight matches in the

Iraqi Handball Premier League for the sport season of 2018-2019 which is conducted in home and away round robin. The DVD recorded matches were shown to the experts and specialists to be analyzed and to evaluate the performance level of the defensive skills of the professional players in handball. Each skill of the defensive skills was given one (1) to the successful attempts and zero (0) to the failed attempts.[4] To know the performance level of the professional players in the defensive skills, the successful attempts scores, to each of the defensive skills, were summed in order to come with means and standard deviations of each skill.

Statistical Means: The researcher used the SPSS.

Displaying the Results: It is shown in the following tables the means, the standard deviations, the number of the professional players of the sample of the study for each of the selected defensive skills and the number of the matches for the professional players in the Iraqi handball Premier League who represent the clubs of : Al-Jiesh, Al-Karkh, Naft- Al-Janoob, Al-Shorta and Karbala, In table (3).

Table (3). Shows the means and the standard deviations to the evaluation of the sample of the study for the defensive skills of the professional players

Club	Times of watching	Defensive skills									
		Offending the offender		Covering		Passing and receiving		Blocking the fake		Blocking the shoot and distracting the ball	
		M	±DS	M	±DS	M	±DS	M	±DS	M	±DS
Al-Jiesh	8	8.750	2.087	8.063	1.208	8.125	0.954	7.875	1.217	7.563	1.374
Naft Al-Janoob	8	6.438	2.969	7.625	2.564	7.688	2.712	7.125	3.227	6.483	3.321
Al-Karkh	8	7.063	1.374	5.750	1.558	5.625	1.482	7.063	1.613	5.500	2.018
Al-Shorta	8	6.063	2.008	6.250	2.121	6.375	1.996	6.250	1.581	6.000	3.071
Karbala	8	5.938	1.148	6.875	0.876	6.813	0.961	6.875	1.664	6.063	1.990

Displaying the results of means, standard deviations, correlation factor, fault percentage and reference percentage between the defensive skills and the results of the matches for the professional players in the Iraqi Handball Premier League.

Table (4). Shows means, standard deviations, correlation factor, fault percentage and reference percentage between the defensive skills and the results of the matches for the professional players in the Iraqi Handball Premier League

Statistical variables Defensive skills	Unit	Matches	M	±SD	Correlation factor	Fault %	Reference
Results	Point	8	20.300	2.902	-	-	-
Attacking the offender	Point		6.850	2.179	**0.727	0.000	Incorporeal
Covering	Point		6.913	1.884	**0.586	0.000	Incorporeal
Passing and receiving	Point		6.925	1.893	**0.508	0.001	Incorporeal
Blocking the fake	Point		7.038	1.956	**0.542	0.000	Incorporeal
Blocking the shoot	Point		6.313	2.438	**0.689	0.000	Incorporeal

Discussing the Results

It is clear from table (4) that the results of correlation between the defensive skills and the number of scored goals of the professional players in each of the five clubs that have professional players, that the correlation factor in the skill of attacking the offender and the results of the matches has achieved the higher correlation factor than the other skills. In that, it achieved heigh and positive correlation factor (0.727). The fault percentage was (0.000) . The researcher states that the reason behind this is that the defending process requires high balance and correct timing. Therefore; it depends on the movement forward, back ward.[5] Thus it requires explosive strength to prevent the offender from breaking through nor shooting. The more the explosive strength in the feet the less the space the offender has for watching the goal.[6] As for covering skill, the results showed that there is a positive strong with the results of the matches, the correlation factor was (0.586). The fault percentage was (0.000). The researcher attributes this to the following idea: covering process is a prediction to the coming movement of the opponent. This requires from the defender to use the highest speed to the defensive covering. It also requires from the defender to have high concord, feet speed in addition to other parts of his body so that he can do the defensive duty. " It is the ability of neuromuscular system to respond quickly to the stimulus".[7] While the skill of passing and receiving has a correlation factor of (0.508), fault percentage of (0.001) this skill has positive relationship with the results of the matches. Despite achieving the least correlation factor, but it has no less importance than other defensive skills. The researcher attributes this decrease to the probability to decreasing level of fitness, or to the physical body mass of some players, or reaching the highest physical effort.

Developing the speed of the response is not the basic thing, but it should be linked with the correction and accuracy of the response. A quick wrong response and a slow correct response do not lead to the best results.[8]

The skill of blocking the fake has correlation factor of (0.542) and a fault percentage of (0.000). This certifies that there is incorporeal positive relation between the two variables. The researcher attributes that it is one of the most important defensive skills that the player should be trained to, continuously and all the week. And through which the defensive duty of the defending team may achieve success and make the planned offensive duty of the opponent. It can be implemented individually "the continuous training helps and the systematized training helps mastering the defensive plan of the player because each of them integrates the other and cannot be split during the training. Despite all that, training should be graded from the easy to the hard. According to what the player can accept as a habit. The coach should degrade from the individual to the team training play".[9]

While the skill of blocking the shoot and distracting the ball has a correlation factor of (0.689) and fault percentage of (0.000). The attribution of the researcher is the process of blocking the shoot can be individually and in group. In that, defender pretend, in front of the offender to tempt that there is a chance to shoot .But in fact it is a process used by the defender to get the ball and make the counter attack or, lessen the strength of the shoot so that it will be easier for the goal keeper control it.

Naturally this requires from the defender to have a good predicting to the skilful movements. Sometimes the offender can fake the offender and block in the suitable.[10]

Conclusions

The experience of some professional players in standing correctly and in the suitable time came from professional thinking reflects the higher interesting in such a skill in their training and competing to make the skill achieved high correlation. The skill of blocking the shoot and distracting the ball has achieved a high correlation marks because of the tall of some professional players in the accuracy of the correlation. There is no early and enough setting up to the competition.

And the contractions with the professional players who are not qualified in the aspect of fitness. The passing and receiving skill among the players needs harmony between all the players and the high fitness. This skill achieved less incorporeal correlation than other skills. The skill of blocking the fake did not achieve high correlation mark because of the body mass of some professional players. The passing and receiving has got less correlation marks because there is no harmony between some professional players and the rest.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Prevalence of Syphilis in Blood Donors Over One Year in Karbala Governorate, Iraq

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Abstract

Syphilis is the disease that caused by Treponema pallidum bacteria. Blood transfusion is the main ways of spreading the disease. A current study was planned to determine syphilis prevalence in the donor blood of Karbala by detecting Treponema pallidum antibodies in the serum of these people. The study included a blood sample of 30,716 Blood samples donated within one year to detect syphilis antibodies by ELISA testing. Out of 30716, 233 (0.76 percent) of blood screening results were positive for syphilis. Males (0.74%) were much higher than females (0.02%), $p < 0.01$. The association between the syphilis infection positivity and age group showed a high percentage of age group infection (25-55) years, but it was not significant. The prevalence of syphilis among voluntary blood donors in Karbala city, Iraq, was concluded to be low.

Keywords: *syphilis, Treponema, blood donor, spirochetes.*

Introduction

Blood is one of the primary constituents of the body, which flows all over the body and becomes a motive for survival. Because of the lack of artificial blood replacements, human blood transfusion is one of the most critical elements of treatment and process[1]. Donating blood is a major activity that saves millions of lives. Uncertain transfusion processes, however, carry the risk of transfusion-borne infections. Nevertheless, unclear transfusion approaches increase the risk of transfusion-borne infections. Estimate the prevalence between blood donors of transfusion-borne infections such as hepatitis B virus (HBV), hepatitis C virus (HCV) and syphilis antibodies or antigen,can detect the question of secret infections in prominent members of the general population and also provide a fact that is significant in the formulation of transfusion-borne infections. It can also provide us with a guide on the severity of certain venereal diseases in the population[2]. Treponema pallidum is a subspecies of spirochete bacterium which causes treponemal diseases including syphilis and yaws. It is not seen on a Gram-stained smear because the organism is too thin T. pallidum is a mobile spirochete usually acquired by near-sexual contact, reaching the host through squamous or columnar epithelium breaches[3]. It can also be spread by transfusion of blood. Blood screening is widely used and required before surgery and before marriage to prevent multiple blood-borne microbial infections among the general population. The World Health Organization (WHO) estimates that every year there are twelve million new cases of syphilis, with the largest number of reported cases in Asia[4]. Syphilis can be transmitted via sexual contact and indirect routes: infected objects, tattoos and blood transfusions[5,6]. Blood transfusion is one of the main routes of disease transmission; the incidence of syphilis antibodies in Asian and African blood donors

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is relatively mild to moderate[7].Syphilis is an infection caused by the spiral-shaped, gram-negative, highly mobile Treponema pallidum bacterium.[8, 9]. It can also be transmitted during pregnancy or at birth from mother to baby, resulting in congenital syphilis [10].It is typically not possible to contact syphilis by toilet seats, daily activities, hot tubs, or utensils or clothing sharing [11], mostly because the bacteria die very quickly outside the body, making it extremely difficult to transfer objects.[12]. The World Health Organization (WHO) conducted a study on the prevalence of four sexually transmitted diseases: chlamydia trachomatis, Neisseria gonorrhea, syphilis and trichomonas vaginitis. Syphilis has been found to account for about 10 percent of these sexually transmitted diseases [13]. Syphilis can cause severe effects such as damage to the aorta, heart, ears and bones if not treated. Such results may be fatal in some cases [14]. In Iraq, several surveys created for the identification of syphilis among the general population, such as Saleh [15] (2010), which assessed the incidence of specific treponemal antibodies in blood donors in the city of Baghdad (1, 75 percent), While Al-Badry[16] was found to have syphilis among men in 2012, 165 (0.91%) were found to have reached 60 (0.32%) in 2010 and 90 (0.49%) with major differences in 2011. According to our knowledge, there is no study conducted in Karbala City to determine the rate of Treponema pallidum infections among blood donors and therefore, between January and December 2018, we conducted a survey of the prevalence of syphilis among all blood donors in Karbala over a one year period.

Materials and Procedures

The work population was the subject donating blood at the primary blood bank of Karbala Town. Maximum of (30716) blood donors from January to December 2018 at the main blood bank. The research covered different age groups;on the same day, analysis is always carried out. From each individual included in this study, 5-10 ml of blood was taken and placed in gel tubes to allow it to coagulate at room temperature (20-25 ° C), then the sample was isolated by centrifugation at 3000 rpm for 5 minutes. Syphilis has been tested for all blood samples by ELISA techniques using the automated process of Treponema pallidum Hemagglutination Assay (TPHA).

Inclusion Criteria: The population selected for this research includes physically healthy people between the ages of 20-65 with a weight of not less than 50 kg, hemoglobin not less than 12.5 g/dL, good pulse and blood pressure that came to give blood at the blood bank center.

Exclusion Criteria: Over the past two months, donors exempted from this fieldwork include blood donors. In addition, those with anemia and jaundice over the past six months and those involved in high-risk activities such as sexual abusers and drug addicts are removed.

Statistical Analysis: Until entering the data in Microsoft office excels worksheet, data were collected and checked to determine the prevalence rates and percentages. The data was then analyzed using the Social Sciences Statistical System (SPSS, v.18).

Results

Among 30716 blood donors, between 22 years of age and 65 years of age, who came to donate blood at bank, using the ELISA technique, 233 (0.76 percent) had a positive syphilis result. The prevalence of syphilis among men who came to donate the blood was 0.74% and the prevalence of syphilis among women who came to donate the blood was (0.02%) and there is no substantial difference between the numbers of blood donors over the months of the year as shown in figure (1).

Of the 233 anti-syphilis positives recruited in this sample, only 5 (0.02%) were females and 228 (0.76%) were males. On the other hand, as shown in Figure (2), statistical analysis showed a significant correlation, $p < 0.0001$.

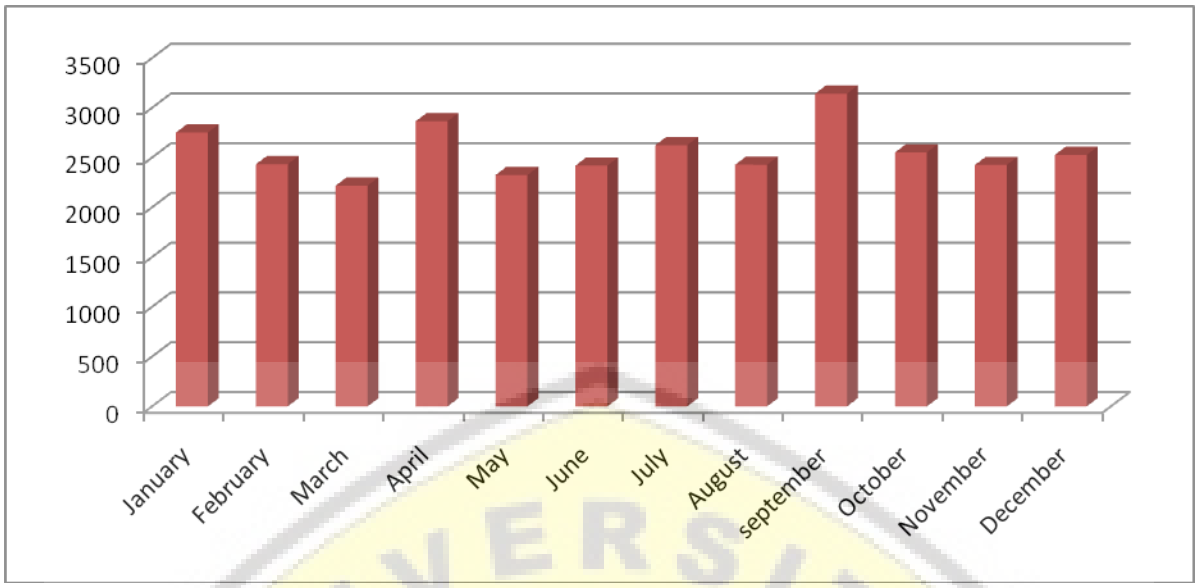

Figure (1): Show the number of donors according to month

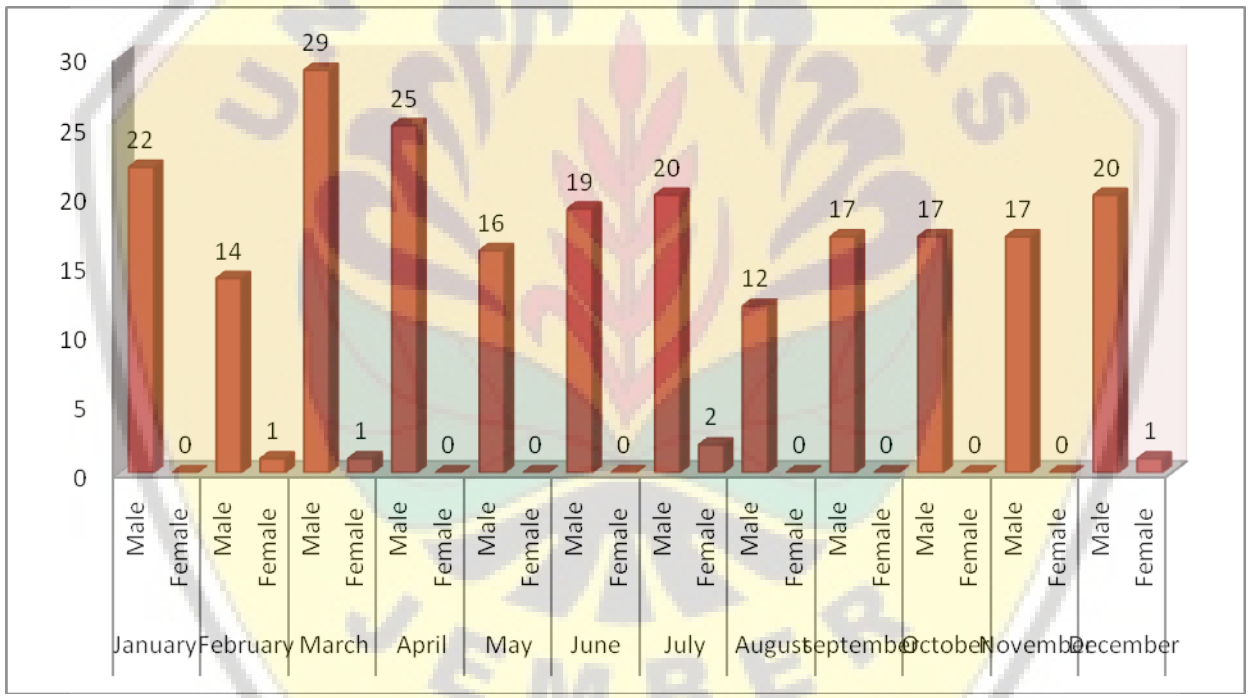

Figure (2): Show the number of positive cases according to gender

Discussion

The current study, which included 30,716 volunteers to donate blood within one year in the province of Karbala, found that the percentage of syphilis among these donors was 0.76 percent, as well as the plurality of infected donors in the 25-55 year sexually active age group. Several studies deal with the prevalence of syphilis in blood donors in Arab and foreign countries where the rate of prevalence varies. In a study conducted by[17] in Saudi Arabia, syphilis was shown to be 0.53 percent and [18] in China to be 0.88 percent and [19] to be 3.1 percent in Pakistan and [20] to be 1.09 percent in the city of Anbar and [21] to be 0.26 percent in Basra.

Compared to other studies, the prevalence of syphilis in blood donors in Karbala was low, although many people from within and outside Iraq visit the city,

which makes the chance of transmitting such diseases more than expected, resulting in this proportion of syphilis prevalence in healthy people. The increase in people's sexual performance mainly after the time of transition that has a major role in this change due to either emotional stress or the presence of invitations in the new lifetime that make many people overlook their conviction which makes it happen. The importance of blood donor syphilis seroprevalence is valuable information that will help us identify the unknown percentage of population that overcomes infections and reduce the risk of transfusion-borne infectious agents. The screening of all prospective blood donors for all transfusible infections is our recommendation. Blood sample positive for syphilis should be dismissed and treated properly by the affected donor. The prevalence of low population Treponema pallidum in Karbala city was concluded.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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The Effect of Some Teaching Strategies According to the Criteria for Ensuring the Quality of Teaching and Learning for Snatch and Jerk by Weightlifting for Students

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Abstract

The research contained the introduction and the importance of the research, as it touched on teaching strategies and the criteria for ensuring the quality of teaching and learning and its prominent role in the educational process, as well as identifying the hijacking and interchangeable lifters that researchers used in weightlifting. The importance of research lies in the impact of strategies on the criteria of ensuring the quality of teaching in the learning process.

The importance of research was demonstrated by using standards of quality assurance of learning to choose appropriate strategies in learning by teachers to expand their perceptions, which are reflected in their application of skill performance and reaching a better level in learning the effectiveness of weight lifting and delivery Modern information for them and thus their education in a strategy in accordance with the standards of quality assurance and this is what made this idea one of the ideas that invited researchers to go through to reach the educational process to the highest levels. As for the research problem, it is summarized that the researchers see that the many teachers do not take into consideration the strategies according to a correct standard in learning the snatchs and the winter. The main axes related to the research topic were also discussed, as they included the concept of learning and teaching, Teaching strategies, quality and standards and their role in the educational process and the activities in research. The researchers used the experimental approach it is appropriate for the nature of solving the research problem, as the results were presented, analyzed and discussed for the results of the activity evaluation of the three groups, through which the achievement of the research objectives and hypotheses was reached.

Keywords: *Teaching strategies,quality and weightlifting.*

Introduction

Due to the many changes and developments that the world is witnessing today in many areas of life, the tasks of teachers have multiplied and their roles and jobs diversified, all of which led to great interest in preparing teachers for the necessary professional preparation and developing the programs of institutions that prepare it to keep pace with new tasks and jobs.

The concept of quality is one of the modern concepts that have emerged as a result of intense global competition in various fields and it has become a guarantee of quality from the main issues in education at the global level and the weightlifting game that contains many lifts is considered one of the games that makes the learner feel happy while learning its activities. Various, weightlifting is a sporting activity that uses skills as an important basis for progress and player level integration.[1]

The quality of learning depends on choosing the optimal strategy in the learning process and thus delivering the information to the learner's mind in the correct manner and according to a real standard in the choice. The research problem lies in the lack of teachers 'reliance on real criteria in choosing the optimal strategy in teaching that corresponds to the requirements of the modern era in learning. To choose a problem, he was able to define the appropriate criterion for choosing the teaching strategy and to clarify which is better in the learning process for the colleges of physical education and sports science in general and the activities under

study in particular and this in turn helps in developing the process of Learn and reach out to the best levels.[2]

The Purpose of the Study: The importance of research was demonstrated by using quality assurance standards for learning to choose appropriate strategies in learning by teachers to expand their perceptions, which are reflected in their application of skill performance and reaching a better level in learning the effectiveness of weightlifting and the delivery of modern information to them and thus teaching them a strategy in accordance with quality assurance standards and this is what made this idea one of the ideas that researchers called for to take the educational process to the highest levels.

Method and Procedures

Society and Sample Search: The researchers have identified the research community as first-graders in the College of Physical Education and Sports Science - Al-Qadisiyah University for the academic year (2018-2019) and they are (168) students distributed among (6) people, with (25) students for each division which is (A-B-) C - D - E - F) As for the sample, it was chosen randomly and by lottery strategy, as three divisions (C - E - D) were chosen to be the research groups that work with the chosen method. (17) Students were chosen from each division, representing 10% of the parent community.

Study Design: The researchers used the experimental approach with a design (equal group's strategy) that suits the nature of the research problem.

Tests Used in the Search: The researchers prepared a questionnaire to determine the most appropriate test to evaluate the technical performance of each of the weightlifting activities, snatch and winter. This form, which contains (3) tests for each skill, was presented to a group of experts and specialists in the field of weightlifting. The (technical performance) test was nominated for the effectiveness the lift by the squatting method) for the hijacking efficacy, as well as the test (technical performance of the jerk lifting efficacy by opening the two legs way) was nominated for the jerk efficacy.[3]

For the purpose of specifying criteria for teaching method, researchers selected a set of criteria and designed a form for these standards, after which they were presented to a group of experts and specialists in the field of teaching method to indicate the validity or invalidity of the standards or to amend them and after collecting the form to identify the answers and observations of experts And with specialists, it was found that most experts agreed on the basic criteria found in the form after (4) of the paragraphs were modified and (5) of the paragraphs were deleted until the final criteria form was reached and Table (1) shows the percentage of experts agreeing on quality assurance standards.

Table 1: Determining the relative importance of the method according to the criteria for ensuring the quality of learning

S	Strategy	Estimated total	Relative importance	Type of indication
1	Training strategy	360	40.80	Does not depend
2	Strategy of the matter	310	34.00	Does not depend
3	Initiative strategy	420	46.70	Does not depend
4	Self-teaching strategy	400	49.1	Does not depend
5	Exchange strategy	600	77.55	Depends
6	Bifurcation strategy	730	82.54	Depends
7	Individual Program Strategy	310	34.35	Does not depend
8	Inclusion and inclusion strategy	410	46.56	Does not depend
9	Self-review strategy	355	40.9	Does not depend
10	Discovery strategy	735	85.9	Depends

Main Experience: The educational curriculum was implemented on the activities under study and the educational curriculum for the three experimental groups included (16) educational units distributed over (8) weeks and an average of two units per week. The work begins by dividing the sample into three experimental groups. The first group, Division (C), works in the exchange strategy, while the second group, Division (E), works with the bifurcation strategy, while the third group, Division (D), works with the discovery strategy.[4]

- The subject teacher explained the skill and presented it well and clearly to help identify the correct form of skills and how they are performed in the three experimental groups.
- The subject teacher, when performing the experimental group for the activities approved for them, monitors and follows to achieve order and calm.
- Upon completion of each educational unit, practical evaluation tests are conducted for the activities or duties that were carried out during the lesson and it is another educational method that introduces each student to the level he achieves and provides him with experiences that enable him to learn the characteristics, concepts and principles related to the skills to be learned and also helps to reveal strengths and weaknesses in performance.

Results

Table 2: Shows the calculated value (t) to assess skill performance in (pre and post) tests for the first group

Variables	Units	Pretest		Posttest		(t) value*	Significance level
		Mean	SD	Mean	SD		
Snatch	Grade	4.655	0.660	6.334	0.856	7.657	Sig.
Jerk	Grade	3.911	0.899	5.456	0.876	5.658	Sig.

* The tabular value of t at freedom (16) and the significance level (0.05) = (2.119)

Table 3: Shows the calculated value (t) to assess skill performance in (pre and post) tests of the second experimental group

Variables	Units	Pretest		Posttest		(t) value*	Significance level
		Mean	SD	Mean	SD		
Snatch	Grade	4.645	0.700	6.824	0.711	9.245	Sig.
Jerk	Grade	4.146	0.800	6.325	0.621	7.654	Sig.

* The tabular value of t at freedom (16) and the significance level (0.05) = (2.119)

Table 4: Shows the calculated value (t) to assess skill performance in (pre and post) tests of the third experimental group

Variables	Units	Pretest		Posttest		(t) value*	Significance level
		Mean	SD	Mean	SD		
Snatch	Grade	4.443	0.900	7.456	0.752	12.583	Sig.
Jerk	Grade	3.945	0.911	6.882	1.233	9.345	Sig.

* The tabular value of t at freedom (16) and the significance level (0.05) = (2.119)

Table 5: Shows the calculated value of (F) to assess skill performance in (dimensional) tests of the three experimental groups

Variables	Source of variation	Sum of squares	df	Square means	F	Significance level
Snatch assessment	Between groups	20.334	2	10.435	18.347	Sig.
	Within groups	26.567	48	0.736		
Jerkassessment	Between groups	23.095	2	11.790	16.398	Sig.
	Within groups	32.578	48	0.700		

Table 6: Shows the results of the (L.S.D) test for comparisons between the three groups of post-test in skill performance

Variables	Intermediate tests		Means		Mean diff.	Standard error	Significance level
Snatch assessment	Experimental 1	Experimental 2	6.333	6.478	-0.589	0.255	0.026
	Experimental 1	Experimental 3	6.569	7.875	-1.530	0.255	0.000
	Experimental 2	Experimental 3	6.937	7.790	-0.941	0.255	0.001
Jerk assessment	Experimental 1	Experimental 2	5.354	6.322	-0.765	0.284	0.010
	Experimental 1	Experimental 3	5.200	6.900	-1.647	0.284	0.000
	Experimental 2	Experimental 3	6.322	6.900	-0.882	0.284	0.003

Discussions

Discuss the pre and posttests of the technical performance of the activities under discussion for the first experimental group (exchange strategy): By presenting the results of Table (2) and analyzing it, we notice that the exchange strategy has had a positive impact on learning the technical performance of events (snatch- jerk). Where researchers see that the exchange strategy is one of the strategies that depend on transferring information from the teacher to the observer student who is considered a leader in the educational process, which allows him to participate effectively in the lesson and thus create a spirit of learning and a desire to show tendencies and needs as this strategy worked to create social relationships and work with Others and students work for every two (two) spouses, one of whom performs and the other gives feedback and behavioral decision-making during the lesson. Thus, we can say that the teaching method and their classifications depend primarily on the amount of student participation in the lesson as well as that. This strategy provides the learner with a key role in the learning process by interacting with his colleague and teacher directly according to previously prepared duties and using direct feedback. This is confirmed this strategy provides frequent opportunities for learning on duty with someone who is particularly involved in the monitoring process.[5]

Discussing the pre and posttests of the technical performance of the skills in question for the second experimental group (the branch strategy): By presenting the results of Table (3) and analyzing it, we notice that the branched strategy has had a positive impact on learning the technical performance of the activities (snatch - the jerk).This indicates the effectiveness of the cross-learning strategy in learning, as this strategy allows the learner to discover and perform a number of options resulting from a set of mental responses that lead him to choose the optimal solution and the best result within the subject of the lesson as the learner makes decisions about the required duties within his ability to branch and search And the choice is given by more than one choice and since the fields of physical education and sports, including weightlifting, are rich in opportunities for discovery, as the learner here enjoys diversity, branching, movement and performance. The cross-sectional strategy that requires the learner because decisions about the required duties within its capabilities and its ability to bifurcation and research including beyond known things.[6]

The researchers also attribute the development that took place in the second group that used the branched strategy to that this strategy was close to the levels of the sample individuals, as well as that the branched strategy gives all freedom to the student and is not restricted in terms of the answer and it has a spirit of vitality, fun, love of competition and adventure. "One of the important method to increase the learner's motivation in learning is suspense and excitement and the need for it increases when doing mathematical skills education, which makes the student see education as an enjoyable thing and gives him activity and vitality.[7]

Discuss the pre and posttests of the technical performance of the skills in question for the third experimental group (discovery strategy): By presenting the results of Table (4) and analyzing it, we notice that the discovery strategy has positively affected learning the technical performance of the skills (snatch-jerk). The researchers attribute the reason for this development in the performance of snatch and winter activities to the strategy of discovery, which is one of the method that are in line with the requirements of development in the sports field, especially in learning the effectiveness of weightlifting for junior students, it is one of the method that depend on the relationship between the student and the teacher.[8]

Questions by the teacher, thinking and giving an answer by the learner and therefore this partnership in the process of discovery depends mainly on the mixing of the teacher's experience that appears by formulating questions about the skill to be learned. The researchers believe that the student, through the strategy of discovery, which increased his cognitive awareness of motor skill, as the student helped to get rid of delivery to others and the old dependency method, which led to the development of creativity and innovation and the development of mental and physical competence and arousing motivations through the love of discovery, as discovery is a process of thinking It requires the individual to reorganize and adapt his information in a way that enables him to see new relationships that he had not previously known.[9]

Discussion of the dimensional tests of the technical performance of the activities under discussion for the three experimental groups: By presenting the results of Table (5-6) in skill performance and analyzing it, we notice that the discovery strategy has affected positively and came first in learning the technical performance of weightlifting activities (snatch - jerk).And thus transfer the learner From the role of the imitator to the model given to him by the teacher to the role of the producer of movement through the conjunction of the learning process practical application with a process of thinking that comes from a complete awareness of each part of the skill as a result of the learner's thinking during the process of discovery with The details of the movement and hence the full realization of the movement Cognition plays an important role in solving the problems facing an individual who needs to be always aware of the elements of the situation he is facing so that he can always overcome changing circumstances and that correct thinking is only after a correct awareness of all parts of the educational situation.[10]

Conclusions

1. All teaching strategies are reliable in learning according to the teaching situation.
2. The preference for strategies in the learning process for hijacking and wintering is (discovery strategy - forked strategy - reciprocal strategy).
3. The discovery strategy is the best type of strategy in learning the activities of snatch and weightlifting.

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The Effect of (Stairs, Gravity) Exercises in Developing Some Physical Abilities of the Muscles of the Legs and Improving the Achievement of the Long Jump Competition for Youth

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Abstract

The study aimed to prepare exercises (stairs, weight) to develop the physical abilities of the muscles of the legs and to know the impact of the exercises in improving the achievement of the long jump competition for young people, during which the researchers used the experimental approach (and by designing the two equal experimental groups with pre and posttests) to suit the nature of the problem and reach the achievement of the research goals. After the research community identified the young players for the long jump competition, whose ages ranged between (18-19) years, they were divided for the purposes of the search experience by (4) players for each of the first experimental (ladders) and the second experimental (gravity) research groups and each player was given (3) Attempts with a total of (12) attempts per group and they represent the young players for the long jump competition in the provinces of the Middle Euphrates. After completing the testing and measurement process for the research variables, the results of the research were extracted after statistical treatment. Including the researchers reached several conclusions, the most important of which were the following:

The (stairs) exercises to develop some physical abilities of the muscles of the legs were more influential in the development of (explosive ability, the force characterized by speed, the maximum speed) and the achievement of the competition compared to the exercises used in the (weighting) method.

Keywords: *Stairs, weight training and long jump competition.*

Introduction

Athletics is witnessing a great development at the present time and world records and high levels of sports have been achieved based on natural and human sciences such as sports training science and kinetic learning and other sciences. In recent times, sports training has taken new perspectives and different dimensions as it represents an organized and sequential process that aims to developing physical and motor capabilities through continuity in the training process and adopting modern training method that give priority to the type of training and the best method.

The long jump competition is one of the distinguished competitions in athletics, as it requires high physical and mobility capabilities and that the tremendous development in the level of digital achievement of this competition indicates to us that it is not possible or difficult for the player and coach to exceed these high levels by relying on the traditional training method used but rather, by relying on modern training method within

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the prepared training programs. Therefore, the trainers are required to place the developed exercises for physical and motor capabilities within the training program in a manner that is commensurate with the requirements of this competition.[1]

The researchers found that some long jump coaches in Iraq are still using traditional exercises such as weight training in their training programs, which are in fact exercises that increase the strength at the expense of speed and thus do not achieve the required results compared to the development taking place in the achievements during the world championships. Studying this problem and developing exercises that develop the physical abilities of the muscles of the legs in the long jump competition for youth in order to obtain the best results and improve achievement. One of the most influential physical abilities in achievement is the explosive ability, the strength marked by the speed of the muscles of the legs and the top speed, as the players 'victory is often attributed to their superiority in these abilities. Here lies the importance of research, especially when it is concerned with improving the achievement of young players in the long jump competition through training (stairs, gravity) dedicated to developing these capabilities and thus improving the achievement of this competition.[2]

Practical Part:

Field Search Procedures: All scientific research resorts to solving its problems to choose an approach appropriate to the nature of the problem and the method is the method or method used by the researcher in his research or study of his problem and access to solutions to it, researchers should use the experimental approach (and design the two experimental groups equal), as the experimental approach the most sincere approach to solving many scientific problems, in a practical and theoretical way, represents the young players of the long jump competition in the clubs of the Middle Euphrates governorates, who are between the ages of (18-18 years) and whose number is (12) players. (8) Players and They were randomly assigned to two experimental groups with (4) players for each group, after which the researchers found homogeneity between the two groups in variables (length, mass, training age) using the law of torsion, as the value of the torsion coefficient appeared to be confined between (±1), which indicates Homogeneity of the two individuals, as shown in Table (1):

Table 1: Shows the homogeneity of the sample

Variables	First Experimental (stairs)			Second Experimental (gravity)			Statistical significance
	Mean	SD	Skewness	Mean	SD	Skewness	
Length (Cm)	178	13.8	0.849	177	13.4	0.522	Homogeneous
Weight(Kg)	74.3	1.119	0.498	74.18	1.040	0.081	Homogeneous
Training age (Month)	26.4	2.854	0.913	24.9	2.901	0.415	Homogeneous

Table 2: Shows the mean and standard deviations for the first and second experimental groups in the study variables

Variables	First Experimental (stairs)		Second Experimental (gravity)		(t) value	Significant value	Statistical significance
	Mean	SD	Mean	SD			
The explosive power of the legs	2.301	0.121	2.279	0.115	1.573	1.257	Non sig.
Distinguished strength at the speed of the legs	33.253	2.214	33.452	2.148	0.975	1.146	Non sig.
Top speed (30) meters	3.322	.0610	3.332	0.059	1.265	1.251	Non sig.
Achievement	6.224	0.384	6.199	0.359	1.435	1.293	Non sig.

Also it was necessary for researchers conducting the process of parity to make sure that the two groups in the start line and one for the variables of the studied research which is (the ability of the explosive of the legs, distinctive and power as quickly as the legs, maximum speed (30 meters) and the achievement of the effectiveness of the long jump) as shown in the table (2).

Determine the physical abilities of the legs muscles and appropriate tests to measure them: After reviewing the relevant references and resources, the researchers identified some physical abilities of the men's muscles and the appropriate tests to measure them, as shown in the following table:

Table 3: Shows the physical abilities of the men's muscles and the appropriate tests to measure them

S	Ability	Tests
1	The explosive power of the legs	The long jump of stability
2	Distinguished strength at the speed of the legs	Long jump forward for 10 seconds
3	The maximum speed for the legs	Enemy (30m) from Flying Start

Description of the tests:

First: the explosive power of the legs, (the long jump of stability):[3]

- The purpose of the test: To measure the explosive muscle power of the muscles of the legs.
- The tools used: flat ground that does not expose the individual to slipping, a tape measure, drawing on the ground a starting line.
- Registration: calculates the distance.

Second: The force marked by the speed of the legs:[4]

Test name: Long jump forward for 10s:

- The purpose of the test: to measure the force distinguished by the speed of the legs.
- The tools used: a tape measure - the pitch - a stopwatch - a whistle.
- Registration: The laboratory records the largest distance traveled during the test time of (10) seconds and is given three attempts and the duration of rest between one attempt and another (5-7) minutes to restore recovery and the best attempt is recorded for him.

Third: The maximum speed for the legs:[4]

Test name: Enemy (30m) from Flying Start

- The purpose of the test: to measure the maximum speed.
- Instruments and devices used in measurement: a stopwatch and three parallel lines drawn on the ground. The distance between the first and second lines (10) meters and the second and third lines (30) meters.
- Registration: The recorder records the time taken by the runner tested on his form per second and for the nearest (0.01) second.

Fourth: Measuring achievement for long jump:[5]

Test name: Measurement of achievement for long jump:

- The purpose of the test: to measure the achievement of long jump.
- The tools used: a tape measure - a long legal jump court.
- **Performance specifications:** The player performs the long jump race in the legal way and the way in which it is accustomed to during training for the purpose of measuring the jump distance.

Pre-test: The researchers conducted the tribal tests on 20/12/2018 in the Najaf Sports Club stadium, as the research sample consists of (8) runners, ranging in age from (19-18) years.

Post-test: The post-test were conducted on 27/2/2019 for the individuals of the research sample in the Najaf Sports Club stadium, taking into account the conditions and instructions for carrying out these tests under the same available conditions and capabilities used in the initial (tribal) tests.

Statistical Means: The researchers used the Statistical Package for Social Sciences (SPSS).

Results and Discussion

Table 4: Shows the effect of stairs training in developing the most important physical abilities of the muscles of the legs and improving the achievement of the long jump competition for youth

Variables	Pretest		Posttest		(t) value*	Statistical significance
	Mean	SD	Mean	SD		
The explosive power of the legs	2.301	0.121	2.611	0.098	3.148	Sig.
Distinguished strength at the speed of the legs	33.253	2.214	36.568	2.187	4.051	Sig.
Top speed (30) meters	3.322	.0610	3.125	0.054	2.879	Sig.
Achievement	6.224	0.384	6.728	0.371	4.238	Sig.

* The tabular value (t) is (1.796) at the significance level (0.05), the sample size (12) and the degree of freedom (11).

Table (4) shows the statistical estimates obtained by the young long jump players. Which showed the effective effect in developing the physical abilities of the muscles of the legs and improving the achievement of the players included in the research and representatives of the first experimental group, which was trained in the style of stairs.

The progress in the physical abilities of the muscles of the two legs is attributed by the researchers to the use of stairs exercises that work effectively to develop (the explosive ability of the two legs, the force characterized by the speed of the two legs) by focusing their effect on the muscles of the legs, thighs and buttocks, so the stairs exercises have a great role in making muscles the legs are able to work with strong contractions and as quickly as possible and increase their systolic capacity, which helped in the development of their efficiency to achieve the required strength and speed during performance, as the amount of muscle strength exerted in training the stairs is large to overcome the force of attracting the Earth at the moment of pushing force The strength and speed that accompanied it to move the center of body mass, which gave in its final outcome the greatest possible ability exerted by the player during training.[6]

As for the maximum speed, the explosive power and speed-specific strength training for the legs in which the stairs exercises were specialized, especially exercises that develop strength and ability mainly worked in developing the maximum speed in terms of speed correlation and development with the explosive capacity and the distinctive speed of the speed for the legs (the speed and strength training leads to improved work The brain sends nerve signals to the motor units involved in the muscle work and then produces more speed and strength in the muscle work, because of its effective contribution to increasing the length and frequency of the step. One of the basic principles for improving the maximum speed is proportionality the optimum between step length and frequency.[7]

Table 5: Shows the effect of weight training in developing the most important physical abilities of the muscles of the legs and improving the achievement of the long jump competition for youth

Variables	Pretest		Posttest		(t) value*	Statistical significance
	Mean	SD	Mean	SD		
The explosive power of the legs	2.279	0.115	2.451	0.081	3.059	Sig.
Distinguished strength at the speed of the legs	33.452	2.148	35.126	1.987	3.984	Sig.
Top speed (30) meters	3.332	0.059	3.219	0.047	2.547	Sig.
Achievement	6.199	0.359	6.506	0.143	3.875	Sig.

* The tabular value (t) is (1.796) at the significance level (0.05), the sample size (12) and the degree of freedom (11).

Table (5) shows the statistical estimates obtained by the young long jump players. Which shows the effective impact in developing the physical abilities of the muscles of the legs and improving the achievement of the players included in the research and the representatives of the second experimental group, which was trained in the method of weighting.

The weight training exercises that researchers used is of great importance in developing the explosive capacity and the distinctive speed of the muscles of the legs, which depend on the basis of the lengthening and shortening of the muscle fibers, which led to an improvement in the speed of contraction and extensibility in the muscle.[8]

At the maximum speed, the researchers attribute the development of the individuals of the sample to the explosive power exercises and the speed's distinctive strength for the legs, as it included various exercises such as jumping, jumping and sprinting at different distances that led to the participation of the largest number of fast-rising muscle fibers and the improvement of the efficiency of the nervous and muscular systems in sending the neurotoxic to the working muscles Which had a great impact in increasing both the length and frequency of the step and thus improving the maximum speed of the players.[9]

Table 6: Shows the significance of the differences for the variables between the first two experimental groups (stairs) and the second (weighting) in the post measurement

Variables	First Experimental (Stairs)		Second Experimental (Gravity)		(t) value*	Statistical significance
	Mean	SD	Mean	SD		
The explosive power of the legs	2.611	0.098	2.451	0.081	2.295	Sig.
Distinguished strength at the speed of the legs	36.568	2.187	35.126	1.987	2.316	Sig.
Top speed (30) meters	3.125	0.054	3.219	0.047	2.264	Sig.
Achievement	6.728	0.371	6.506	0.143	2.521	Sig.

* The tabular value (t) is (1.717) at the significance level (0.05), sample size (24) and freedom degree (22).

From table (6) as for the maximum speed, the jogging exercises up the stairs were distinguished from all other jogging exercises, as the jogging steps in them were compelled by a fixed length by the factors that granted the privacy of development according to that method and among those factors that obligated that particularity are the angle of inclination of the ladders and the amount of degree of inclination angle The intensity of the performance rises and decreases accordingly.[10]

Among the requirements of these determinants when running stairs is the obligation of the player to take steps of approximately constant length imposed by the horizontal dimension between the degrees as well as raising the man's knee high to take the step and with almost constant heights and to raise the knee to the leader, it is imperative that the referee man take the full extension combined with the active pushing force of the instep and overcome On the force of the ground's attraction to the body, which leads to the intensity of the tension of the posterior muscles of the leg in order to obtain the force required for the movement of the player's body and among these compulsory measures taken by the members of the first experimental group of stairs exercises generate the optimum way to the art of running, as these movements are indications of good technique for the speed of players at the highest levels and the inevitability of those elected mechanical applications and the repeated practice of running upwards for the prescribed training period created the adaptations that happen to gain strength for the legs with the force of motivation and the skillful learning of fast running.[11]

Conclusions

The (stairs, weight) training to develop some physical abilities of the muscles of the legs had a moral effect in

improving the achievement of the players of the young long jump competition, as well as the (stairs) exercises to develop some physical abilities of the muscles of the legs were more influential in the development of (explosive ability, strength characterized by speed, Maximum speed) and achievement for the competition compared to the training used in the (weighting) method.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Comparison of Serum Levels of Male Sex Hormone between Smokers and Non-Smokers

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Abstract

Background: Male hormones played a key role in the differentiation and development of male sex. However, the effect of these sex hormones extends beyond their role in sex differentiation and growth. Cigarette smoking is considered one the main health problem and is predominant among males.

Aim: The aim of this study To elucidate the changes in the serum levels of male sex hormones due to cigarette smoking and its correlation with smoking.

Patients and Method :A comparative study conducted on 500 men - volunteers (250 smokers and 250 non-smokers) aged between 18 & 50 years .They investigated at Central Public Health Laboratory, Azadi Hospital and Kirkuk Hospital-Kirkuk using a personal interview and self-administered questionnaires from 1st of April to 15th of July 2019. Venous blood was collected and sera obtained and stored at -20°C for hormonal assay.

Results: There were significant (P<0.05) differences between the levels of TT, FT and FSH hormones in smokers and the levels of non-smokers, while LH level showed no significancy between smokers and non-smokers. Regarding the duaration of exposure to the tobacco, the correlation was negative for TT and FT with the amount of tobacco exposure (r-0.105). (r-0.078), but there was a positive correlation for FSH, LH (r 0.0008), (r0.037) TT, FT, FSH and LH levels are affected by the increase in cigarettes per day.

Conclusions: It is concluded that smoking is a positive and independent predictor of total testosterone, free testosterone and follicle stimulating hormone.

Keywords: *Total testosterone, luteinizing hormone (LH), follicle stimulating hormone (FSH), smokers.*

Introduction

Sex steroid hormones are produced in the gonads: (the testes in men and the ovaries in women). Sex steroid hormones are also produced from sex steroid precursors which origin from this adrenal cortex. Male hormones levels measured and reported in beat studies included total testosterone and unbound or free testosterone (FT). some studies have also demonstrated that men with low levels of free testosterone are at a higher risk of mortality[1-4] and that testosterone administration can increase the risk of cardiovascular adverse events as well.[5] In order to decrease the risks of sex hormones, it is necessary to identify the factors that influence hormone levels. Likely and potential relationship of a few elements, including age, cigarette smoking, weight list (BMI), liquor utilization and physical movement with hormone levels have been accounted for. It is accepted that ~34.9% of men overall are in the propensity for

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smoking[7] and there have been broad Concerns in regards to the connection between testosterone levels and smoking. However, the reported effects of smoking on testosterone levels in men are debated, with some suggestion even signifying no association[8] and others reporting higher[9] or lower[4-6,10-13] levels of TT (total testosterone) among smokers compared to nonsmokers. These researches also recorded likewise incompatible reports concerning to correlations of smoking and free testosterone (FT), follicle-stimulating hormone (FSH) and luteinizing hormone (LH). Such divergences may be accredited to variation in results of these researches like; size of samples prospective confounders used for regulation and the procedures employed for assessing tobacco exposure. The aim of this study to correlate male sex hormones levels between smokers and non-smokers.

Materials and Method

A cross sectional study was carried out in Kirkuk city from April 1st 2019 to 15th of June 2019 on 500 smoker and non-smoker subjects. Their ages ranged between 18-50 years . They were presented in Azadi General Teaching Hospital, Kirkuk General Hospital and central health public laboratory An interview was carried out with these men using questionnaire form designed for study purpose and consisted :age, smoking, alcohol consumption and physical activity,present history, family and medical histories. A sample of 10 ml of intravenous blood was obtained from each individual and placed into two test tubes. The first tube contained 5ml for hormone test another tube contained 5ml for biochemistry test. Overnight fasting venous blood specimens were drawn between 7:00 and 10:00 AM. All serum samples were stored at -20°C until required for processing in the laboratory. Glucose, total cholesterol, triglycerides and albumin were measured enzymatically on a spectrophotometer (Biotech - U.S.A.) in the central health public laboratory, using original reagents form Les Hautes Rives 02160, Maizy, France. Serum luteinizing hormone, follicle stimulating hormone, free testosterone and total testosterone was measured by ELISA instrument (Biotech - U.S.A.) using reagents from Monbind, Inc. Lake forcest, ca 92630, usa.

Results

As shown in table 1 there was a difference between the smokers BMI (29.6+5.6) more than nonsmokers BMI (26.5+12.8) appeared to have significant P <(0.005). Regarding fasting blood sugar there was a difference between the level of serum sugar(mg/dl) in smokers (123.8±35.9) more than the level of serum sugar of nonsmokers (103.4±17.3) but no significant (p0.1868) . and there was a difference between the level of serum cholesterol (mg/dl) in men smoker (199.1±25.4) more than the level of serum cholesterol of nonsmokers (173.6±14.1) but it was non significant (p0.7346) . The level of serum triglyceride showed a significant difference (p<0.005)between the level of smokers serum (173.1±20.8mg/dl) more than the level of nonsmokers serum (151.8±11.1mg/dl).

Table (1): Mean values ± SD of age, fasting blood glucose levels, serum cholesterol, triglyceride of 500 adult men

Parameters	Total Number N = 500	Smokers N = 250	Nonsmokers N = 250	P
	M±Std	M±Std	M±Std	
Age	31.216±7.709	32.5±9.4	33.04±8.7	0.4354
Serum sugar (gm/dl)	113.6±29.9	(123.8±35.9)	(103.4±17.3)	0.1868
Alcohol consumption	35.2%	20.4%	14.8%	-----
Serum cholesterol (gm/dl)	186.3±2.41	199.1+25.4	173.6±14.3	0.7346
Serum triglyceride (gm/dl)	162.5+19.8	173.1±20.8	151.8±11.1	<0.005

Regarding total testosterone hormone there was a significant (p<0.005) difference between the level of total testosterone in smokers (5.03±2.16 ng/ml) less than nonsmokers (7.26±1.53ng/ml) table (2).Free testosterone hormone level showed a significant (p<0.005) difference between the level of total testosterone in smokers (15.15±2.16pg/ml) less than nonsmokers (25.42±6.37 pg/ml).Regarding Follicle-stimulating hormone level,

our results recorded a significant (p<0.005) difference between the level of the hormone in smokers and nonsmokers. It was 7.57±3.20mlU/mLand 9.3±3.13 mlU/mL, respectively. Inspite of nonsignificant differences were recorded in mean values of luteinizing hormone level between smokers and nonsmokers but it was obvious differences in the levels of two groups. These values were 1.54±0.58 mlU/mL and 1.40±0.35 mlU/mL, respectively. there was no significant difference in luteinizing hormone between smokers and nonsmokers (p<0.1336) .

Table 2: Mean values of serum levels of estimated Hormone in the smokers and nonsmokers after grouping

Hormones	All sample N=500	Smokers N=250	Nonsmokers N=250	p-values
Luteinizing hormones (mlU/mL)	1.47+0.4	1.54+0.58	1.40+0.35	0.1336
Follicle stimulating hormone (mIU/mL)	8.46+3.2	7.57+3.20	9.3+3.13	<0.005
Total testosterone (ng/mL)	6.15+2.17	5.03+2.16	7.26+1.53	<0.005
Free testosterone (pg/dl)	20.28+8.35	15.1+2.16	25.42+6.37	<0.005

Discussion

Smoking is a pernicious killer that disappears behind thick smoke curtains, leaving at least 4 million victims in one year and so fearful that this rate could reach 10 million (in 2020)[4]. Tobacco smoke contains more than 4000 hazardous agents, including nicotine, tar, carbonic monoxide, polycyclic aromatic hydrocarbons and heavy metals. Most studies have recorded decline in the quality of semen, reproductive hormone system and diminished spermatogenesis, sperm maturation and spermatozoa function as result of reproductive system in smokers.[14,15]

Several studies have reported that smoking may affect sex hormones. A study analyzed 255 men (90 smokers and 165 nonsmokers), aged 30 to 70 years, seen as in outpatient in a primary health service in Canoas and Nova Santa Rita cities, Southern Brazil, demonstrated that smoking could stimulate acutely the release of gonadotropin-releasing hormone (Gn RH) and LH moreover. It has also been suggested that smoking can increase testosterone levels by reducing estradiol[16,17] additionally, the effects of smoking on male sex hormones levels are related to personal smoking history and TT, FT. Follicle-stimulating hormone and LH are synthesized in the pituitary gland and act as important regulating hormones in Sertoli cell and Leydig cell function the 17 beta-estradiol (E) level was elevated and the levels of FSH, LH, were lower in smokers[18].

FSH and LH levels appeared to be inversely associated with heavy and light smoking in our study the effect of smoking on male sex hormones levels may be also mediated indirectly through another mechanism. Yardimci, et al studied the effects of long-term cigarette smoking reduces TT, FT, FSH biosynthesis[4] .Their findings implicit that smoking may result in a gradual decrease in male sex hormones levels following long – term exposure to the tobacco probably related to the toxic effects of smoke on Leydig cell[13]. These studies implied that a decline in serum levels of testosterone due to increase in liver metabolism in chronic cigarette smokers. In conclusion, secretory dysfunction of Sertoli and Leydig cells in the testis because of increased oxidative stress, DNA damage and cell apoptosis could play significant roles collaboratively in the overall effect of tobacco smoking on male fertility as a result of diminished sperm quality[19] .

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

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Investigation the Physiological Role of Some Inflammatory and Anti-Inflammatory Biomarkers as Early Predictor Markers of Acute Myocardial Infarction

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Abstract

The aims of our study are to evaluate the predictive value of plasma fibrinogen, C-reactive proteins (CRP) and interleukin -10 (IL-10) as early vascular risk markers in patients with myocardial infarction. To elucidate the subject, total 50 patients complained clinically from myocardial infarction (Forty patients of myocardial infarction and Ten healthy subjects as control group) were subjected to ELISA analysis for C-reactive protein detection. The following results were observed:

1. Highly significant increase ($p<0.01$) concentration levels of serum hs C-reactive protein (hs CRP) in AM.I.
2. Highly significant increase ($p<0.01$) concentration levels of plasma fibrinogen in AM.I
3. Significant increase ($p<0.05$) concentration levels of serum IL- 10in AM.I.

Highly significant increase in concentration of serum levels of CRP and plasma fibrinogen at AM.I. These biomarkers are important for ACS early detection. In addition, the elevated levels of serum IL-10 revealed the important role as anti-inflammatory markers use as early predictor of vascular risk markers in AM, I. We recommend doing further studies using another biomarkers to clarify the relationship between acute phase protein levels and anti-inflammatory cytokine and the CHD severity.

Keywords: *Myocardial infarction, C-reactive protein, fibrinogen, IL- 10.*

Introduction

Heart diseases are the major cause of mortality and morbidity in the world[(1)]. Myocardial infarction is an inflammatory disease induces an initial pro- inflammatory response in which immune mechanism interacts with metabolic risk factors to initiate and activate lesions in the coronary artery[(2)]. Inflammation is play important role in the pathogenesis of atherosclerosis and the value of assessing the levels of inflammatory biomarkers has risen. The presence of inflammatory element in the atherosclerotic lesions and elevated concentrate levels of inflammatory biomarkers such as C-reactive protein and fibrinogen in the peripheral circulation correspond to an activation of the inflammatory process in the body[(3-6)]. Myocardial cell damage stimulates inflammation in response to tissue damage. High-sensitivity C-reactive protein (hs-CRP) levels might act as anearly marker of inflammatory response severity that provides prognostic information[(7)].

In recent years, many inflammatory biomarkers have been studied to determine whether increased levels

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of these molecules are related to a poor prognosis in patients who have had myocardial infarction. Many studies have shown relationship between C-reactive protein (CRP) and recurrent coronary events in patients with acute myocardial infarction (MI)[8, 9].Fibrinogen is the major coagulation protein in human blood by mass, fibrin threat formation precursor and blood viscosity determinant[10, 11]. Furthermore, coronary artery disease risk factors were manipulated by some authors trying to find the relationship between plasma fibrinogen concentration and premature myocardial infarction (MI) [11].

The aim of our study is try to determine the predictive value of serum IL-10, C-reactive protein and plasma fibrinogen as vascular risk markers in myocardial infarction.

Material and Method

Patients Groups: A total of 50 patients complain from M.I. Who were admitted to Baghdad teaching hospital (coronary care unit), were investigated biochemically from September 2018 to January 2019. Andpatients age between 30 –80 years.

Control Group: Total of 10 individuals were taken as a control group apparently healthy with no complain of myocardial infarction or other diseases, compatible with patients groups from age of the same age groups.

Collection of blood Samples: Draw 4ml of blood from each patients complain from M.I were aspiration by syringe 5 ml, then serum was separated by centrifugation at 3000rpm for 10 minutes, then collected serum was divided into 1ml small aliquots and immediately frozen at - 20ºC until used and thawing of each frozen sample was allowed only one at a time of the test

Detection of C-reactive protein by ELISA: Immunoenzymometric assay for quantitative determination of C-reactive protein and IL-10 in human serum has been carried out. The kit used was provided by monobind INC-company-USA-1, and Plasma fibrinogen level was determined by using kit provided by (TECO GmbH, Neufahrn, Germany)

Statistical Analysis: Data were collected and analyzed using SPSS version 10(package for social science). All data are expressed as mean ± SD. Comparisons between groups were performed with the use paired t-test. P. value of p<0.05 was considered statistically significant

Results

Table (1) shows increase in the means of C-reactive protein (CRP) In-patient with acute myocardial infarction (14.39±1.24) when compared with control group (6.59 ± 0.90).In addition, the compared statistic between CRP and control group by using t-test revealed the statistical analysis present high significant differences (p<0.01) (Table 1).

Table 1: The concentrate levels of C-reactive protein (CRP) (L) in patient's serum of acute myocardial infarction (AMI) and control.

Study Groups	No.	The Concentrate Levels of C-Reactive protein (CRP)/L	t-test
		Mean ± SD.	
Control	10	6.59 ± 0.90	11.38**
M.I	40	14.39±1.24	
Total	50		

**Highly significant at level (p < 0.01).

Table (2) shows increase in the means of plasma fibrinogen in patients with acute myocardial infarction (M.I) (325.91± 32.94) when compared with control group (101.55 ± 6.67).In addition, the compared statistic between plasma fibrinogen and control group by usingt-test revealed the statistical analysis present high significant differences (p<0.01) (Table 2).

Table 2: The concentrate levels of Plasma fibrinogen (mg/dl) in patients of acute myocardial infarction (AMI) and control.

Study Groups	No.	The Concentrate Levels Ofplasma fibrinogen (mg/dl)	t-test
		Mean ± SD.	
Control	10	101.55 ± 6.67	
M.I	40	325.91± 32.94	8.92**
Total	50		

** Highly significant at level (p < 0.01).

Table (3) shows increase in the means of plasma IL-10 in-patient with acute myocardial infarction (M.I) (9.81 0±2.38) when compared with control group (6.59 ±0.90).In addition, the compared statistic between plasma IL-10 and control group by usingt- test revealed significant differences (p<0.05) (Table 3).

Table 3: The concentrate levels of interleukin -10 (IL-10) (pg/dl) in patients of acute myocardial infarction (AMI) and control.

Study Groups	No.	The Concentrate Levels Ofserum IL-10(pg/ml)	t-test
		Mean ± SD.	
Control	10	6.59 ±0.90	
M.I	40	9.81 0±2.38	2.84*
Total	50		

* Significant at the level ($p< 0.05$).

Discussion

Various inflammatory biomarkers that can detect accurately the damage in myocardium at early stage are important and necessary to improve current strategies and detect who are risks for acute myocardial infarction[12].

Our results show highly significant increase in concentration levels of C-reactive protein (CRP) in patients of acute myocardial infarction compared to control groups (Table 1).These results agree with other observation its reported fibrinogen and hs-CRP used as an early stage detecting biomarker and prognosis decision for CHD[13,14].

CRP is an acute phase protein, release in human blood stream in response to present various inflammatory and infective states. Elevated the mean concentrations of CRP in human blood stream may indicate widespread inflammation and instability of plaques in blockage arteries[19,20].

Moreover, some authors mention a strong relationship between high-sensitivity C-reactive protein and mortality after myocardial infarction [7, 13].

Several studies have indicated that major inflammatory biomarkers such as CRP are an important risk marker in patients with ST segment elevation of myocardial infarction (STEMI)[15, 16, 19].

The present study revealed highly significant increase in concentration mean levels of plasma fibrinogen in acute M.I versus control groups (table 2). These results agree with other authors like (Li-Feng H. et al., 2014) who reported a relation of plasma fibrinogen to the severity of coronary artery disease (CAD)[17].

Fibrinogen plays a key role in the final step of the coagulation cascade such as the formation of fibrin. It is also a major determinant of plasma viscosity and erythrocyte aggregation[21]. Moreover, some authors mention a positive correlation between high circulating plasma fibrinogen and adverse outcome in patients with myocardial infarction[17,18].

Recent studies suggested fibrinogen markers plays an important role in pathophysiology of atherosclerosis plaque and elevated level of plasma fibrinogen was an independent indicator for the severity of CAD [17, 22].

On the other hand, our study show significant increase in concentration mean levels of serum IL- 10 in acute M.I versus control groups (table 3).These results agree with some studies shows increase serum levels of IL-10 during attack of myocardial infarction are related with improve endothelial vasodilator function[25]. Moreover, increased in concentration levels of serum anti-inflammatory cytokine (IL-10) are related with improvedendothelial vasodilator in patients with elevated CRP serum levels,so the balance between pro- and anti-inflammatory mediators is essential determinant of endothelial function. In addition, primary pro-inflammatory cytokines play a pivotal role in plaque formation in human arteries and can be used as predictor of inflammation. Moreover, stimulate the production of IL-6, a secondary pro-inflammatory by effect of primary pro-inflammatory which causes blockage stimulates the formation of acute phase proteins by the liver such as CRP, serum amyloid A (SAA) and fibrinogen. These proteins can be used as early predictor markers of inflammation [23, 24].

During atherosclerosis, release of proinflammatory cytokines causes initiating inflammation process in response to tissues damage while the anti-inflammatory cytokinesare also released to limit the excessive inflammatory reactions [26].

Overall, our study found that serum C-reactive protein and plasma fibrinogen levels were higher in patients with AM.I compared to normal subjects. These results proved that there is a significant relationship between biomarkers CRP and fibrinogen levels and the progress of CHD. The significant increase in the anti-inflammatory cytokine may be useful markers for predicting vascular risk in patients with AM.I.

Conclusions

Highly significant increase in concentration of serum levels of CRP and plasma fibrinogen at AM.I.

These biomarkers are important for ACS early detection. In addition, the elevated levels of serum IL-10 revealed the important role as anti-inflammatory markers use as early predictor of vascular risk markers in AM, I. We recommend doing further studies using another biomarkers to clarify the relationship between acute phase protein levels and anti-inflammatory cytokine and the CHD severity.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Estimation of the Effect of Temperature Change on Blood Bag in the Blood Bank in Al - Zahra Hospital in Diyala

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Abstract

Background: The blood warming before transfusion is important and very necessary. The blood warming is done by using putting test tube that contains blood inside the water bath. Also, it could use others alternative methodis check the same purpose, it is included immerse the blood unite in a bowl of water, in spite of that is said to be dangerous. The current study was investigated about the effects of this method.

Objective: In this study, was to estimate the Complete Blood Count(Hb, PCV, MCV, MCH, MCHC, RBC and Hemolysis) and metal (K, Na and Cl) in blood donors.

Patients and Method: This study is a probable clinical study in which one donerwas included in the study. The investigation was started from August 2019 during November 2019 at the segment of AL-ZAHRAA Hospital in Diyala their ages from (35) years.

Results and Discussion: The blood warming is studied before the blood transfusion by immersing it into the water bath. The blood was warmed with 4° C, 25° C, 37°C and 40 °C with Ethylene Di amine Tetra Acetic Acid (EDTA) anticoagulant when determining the Complete Blood Count (CBC). The procedure repeated after 5 days and 2 weeks. In case of rapid blood, giving blood with 37°C because otherwise cases emergencies. As for children and cases of blood transfusion, altogether prefer a 25°C and 37°C. In this study conducted in the blood bank of Al- Zahra Hospital in Muqdadiya the room temperature was determined to be suitable for giving blood to the hospitalized persons.

Keywords: *Transfusion, Temperature, warming, stored blood.*

Introduction

The blood is usually stored at temperatures (2-6)°C[(1)]. Some clinical cases required transfusion of the blood at a large amount in intensive care and operating room[(2-4)]. Cold Blood transfusion especially at large amount is dangerous, influences metabolism and hypothermia. In addition, leads to cardiac arrest and coagulopathy arrhythmia especially in elderly patients[(5-8)]. (50-90)% of the patients felted hypothermia after an operation in knee replacement surgery due to cold air in the operation room lead to heat loss. Moreover, application the disinfectant such as alcohol on the skin leads to heat loss therefore the temperature of body decrease. Liquid transfusion at large amount results in a decrease in the temperature[(9)]. Some of the current reports found if transfused one litter liquid at (4)°C, the temperature of body decrease 0.25°C[(10-12)]. Some of the others studied founded that (50-70)% of the patients drop (1-3)°C at the general anaesthesia state.Heat loss leads to interfering with cardiac activation. Furthermore, low body temperature may lead to hypokalemia. The hypokalemia is main causes increase heart rate, arrhythmias diseases

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and ventricular fibrillation. The operative hypothermia increases the catecholamines in the blood, resulting in the blood vessels vasoconstriction[13]. Also, the infection rate is increased in the patients with hypothermia more than normal temperature body about (6.3) times. The hypothermia has a direct effect on the coagulation; and decreases of the platelets, leads to loos of the blood clotting, therefore the bleeding time become longer[14,15].

Warming blood for transfusion has been a common practice since the early 1960s when a group of papers appeared on the dangers of hypothermia following cold blood transfusions [16].

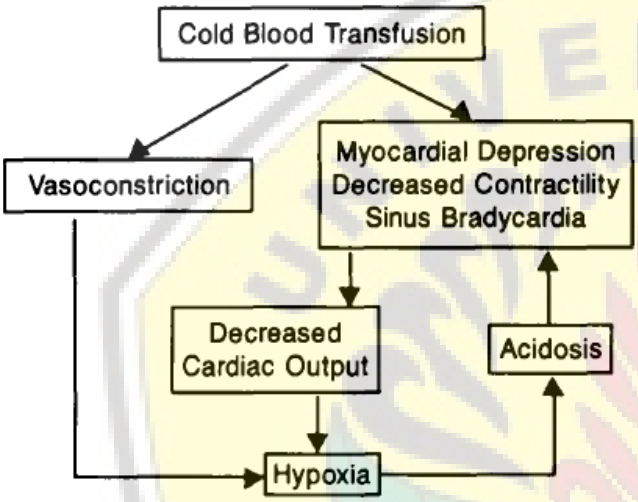

Figure (1): A cycle of effects caused by hypothermia[17]

Material and Method

This study is a likely,Clinical study, in which one status, with the blood bank, included in this study. The Study was started from August 2019 during November 2019 at the segment of AL-ZAHRAA Hospital in Diyala. That status was male their aged (35) years.

These procedures from blood film to determine the complete blood count:

1. Theblood smear is done by taking fresh blood (5) mL. The samplesare taken from the vein or the capillary. Then it stored in the plastic box contained on (EDTA). EDTA prevents the clotting of the blood. Then, sent to the lab within two hours.
2. Preparation of the microscopic slide is perform by trained personnel such as a pathologist, medical laboratory technologist, hematologist, or laboratory assistant. These personnel use a base slide, a blood spreader by capillary tube on slide. The common method, which used slide, is the wedge method. The wedge method used blood (1-2) mm and placed on the edge of the slide, that called the base slide.
3. While anotherslide called a spreader slide, which has chipped edges. The side of the spreader slide with chipped edges is put on the original slide (base slide). This makes the blood spread on the slide base.
4. The smear is made with the spreader inclined at an angle of approximately 30° to the blood. The smear should cover two-thirds of the base slide and should have a feathered end. The smear should then be air-dried. The frosted end of the slide should be label with the patient's name, identification number and date. The dried smear is fixingby the alcohol and stained.
5. The smear is immersed in the stain for approximately (10) min, then diluted with water and allowed an additional ten minutes for the cells to properly stain. Following the stain application, the slide is rinsed under running water. The slide shouldwipe underneath by cotton to removing excess stain. Then, the slide is kept in the rack.

The procedure to determine the Potassium: Potassium reacts with sodium to form turbid potassium tetraphenyl boron. The turbidity of the potassium level was read by the electro photometer.

Assay:

Wavelength …….578 nm Hg 578 nm

Optical path ……..1 cm

Temperature ….. 20-25°C

Measurement ……. Against reagent blank

	STD	Sample	STD	Sample
Working reagent	2000µl	2000µl	1000µl	1000µl
STD	200µl	-------	100µl	------
Supernatant	-------	200µl	------	100µl

To produce homogeneous turbidity, The STD or the clear supernatant has to be added to the center of the surface of the working reagent in the cuvette. Mix each cuvette before proceeding to the next sample and stand for five minutes. Measure absorbance of the standard (ΔA_{sample}) against working reagent blank between (5-30) min.

Calculation of the potassium concentration

$$C=5 \times \frac{\Delta A\ Sample}{\Delta A\ standard}$$

These procedure to determine the Chloride: Chloride reacts with a mercury II to form mercury II chloride complex. The complex reacts with iron ions to form a blue coloured complex, wherever, the resulting absorbance change at (590) nanometer.

Assay:

The wavelength ..... (590) nm (560-600 nm), HG 578 nm

The optical path …….. (1) cm

The temperature ……. (20-37) °C

Measurement …… Against reagent blank, only one blank per series is required

Pipette in to cuvettes	Macro		Semi micro	
	STD	Sample	STD	Sample
STD	50µl	------	20µl	-------
Sample	-----	50µl	-------	20µl
RGT	2000µl	2000µl	1000µl	1000µl

Mix, incubate for 5 minutes in the dark and measure the absorbance of the sample (A_{sample}) and STD (A_{STD}) within 60 minutes against the reagent blank. Do not expose to light

Calculation of the chloride concentration

$$C=100 \times \frac{A\ Sample}{A\ standard}\ [mmol/L]$$

$$C=355 \times \frac{A\ Sample}{A\ standard}\ [mg/L]$$

These procedure to determine the Sodium: Sodium is sediment with magnesium and urinal acetate complex, the Urinal icons changed to yellow due to reaction with thioglycolic acid.

Assay:

Wavelength ……410 nm (360-410)

The cuvette ….. Lightpath (one cm)

The temperature ..37°C

1. The instrument is Adjust on zero.
2. The pipette put into a cuvette

	Standard	Sample
Standard (µL)	20	-----
Sample (µL)	-----	20
Precipitating sol (ml)	1.0	1.0

3. The tubes are closed and mix then stand for five minutes then shake for (30) second then stand for (30) minute then centrifuge for (5-10) minute.
4. Separation the clear suspension and pipette on another

	Blank	Standard	Sample
Precipiting (µL)	20	----	-----
Supernatant (µL)	----	20	20
Reagent (ml)	1.0	1.0	1.0

5. Mixing and incubate at 25 °C for (5-30) minute.
6. The absorbance is read for sample, standard and blank.

Calculation of the sodium concentration:

$$C = \frac{\text{Absorbance of sample}}{\text{Absorbance of standard}} \times \text{standard conc.}$$

Results

Table one show the results after storage for five day and two weeks and measure with room temperature, 4°C, 37°C and 40°C, increase on sodium and chlorine potassiumand chlorine level.

The hemoglobin was decreased after storage and heating caused a small difference. Red Blood Cell was decreased after storage and decrease after heating.

Table (1): Results after storage and heating

	Storage Time	Temperature (°C)			
		4°C	25°C	37°C	40°C
Hb(g/dl)	5 days	11.7	11.8	11.5	10.9
	2 weeks	8.2	9.9	9.8	10.1
PCV% of blood	5 days	37.1	37.2	36.4	34.7
	2 weeks	23.8	29.4	29.1	30
MCV(fL)	5 days	77	78	78	79
	2 weeks	79	79	78	78
MCH(pg)	5days	24	24.9	24.8	24.7
	2 weeks	26.7	26.5	26.3	26.5
MCHC(g/dl)	5 days	31.7	31.8	31.7	31.3
	2 weeks	31.8	33.7	33.7	33.8
RBC	5days	4.75	4.7	4.65	4.41
	2 weeks	3.55	3.73	3.4	3.28
Hemolysis	5 days	0.03	0.03	0.02	0.03
	2 weeks	0.06	0.09	0.1	0.09
K(g/dl)	5 days	17.8	25	22	23
	2 weeks	32	33	30	37
Na(g/dl)	5 days	146	134	133	133
	2 weeks	150	147	148	144
Cl (g/dl)	5 days	78	81	77	79
	2 weeks	99	90	88	80

Discussion

The blood stored at (4)°C produced progressive academia and hyperkalemia[18][19]. Heating causes increasing in Na and Cl level and some changes in Potassium level.

Some of the studies showed the time between the heating and the hemolysis assay have a great effect on the degree of hemolysis[20]. The hemolysis depended on the heating blood during transfusions[21][22]. But, Determining the threshold is very difficult[23][24].

The risk of the hemolysis becomes harmful and dangerous if the blood heat lessthan (46) °C. Furthermore, blood warming more than (43) °C be believed safe. Our results don't discuss temperature more than (46) °C, because it is very high. However, these results suffer from some bias. In fact, the studies we used to reach these conclusions were based on small samples. Other biases were also present, like the nonrandom selection of blood units. However, most of the blood samples were matched and in most studies, samples for comparison were from the same blood bag and thus had the same characteristics. Moreover, many factors that related to the hemolysis varied among the studies. Furthermore, the results were explained by several causes such as used unite ages, the comparator temperature, the interval time between blood heating and haemoglobin concentration, used preservatives and anticoagulants, the type of infusion of the blood's exposure to heat, the pressure and the stagnant character of the blood. Some reports examined the separation effects of the transfusion machine from the temperature by measuring hemolysis after transfusion with cold blood. These bias are related to the many used procedures.

The transfer of heat from the warmer to the blood is critical to the effectiveness of any unit. The temperature of the blood being transfused to the patient is inversely related to the flow rate and immediately related to both the temperature of the warmer and the initial temperature of the blood[25].

Some advantages of in-line systems are:

1. They can mostly be used as well with RBCs as with WB units, although flow rates may be slower with RBCs.
2. Time the warmer is set up, new units can be started at once.
3. Entry ports must puncture before warming, so warmed blood cannot mistakenly return to the blood bank for the issue to other patients.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Prevalence of Migraine Headache among Secondary School Students in Ramadi City, West of Iraq

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Abstract

Background: Migraine is the most common primary headache in children which leads to disturbance of school performance and impaired quality of life.

Objective: To identify the prevalence of migraine headache in secondary school students in Ramadi city and to study some precipitating factors.

Patient and Method: A cross-sectional study was done on secondary school students in Ramadi city, Iraq for studying the prevalence of migraine headaches during the studying year, 2019. Data about age, gender, family history of migraine, precipitating factors of headache like diet (chocolates, cheese and coffee), sleep deprivation, stress and menstruation in girls were collected by a special questionnaire paper.

Results: The prevalence of migraine headaches in this study was (6.5%). Girls were reported significantly more than boys. Higher age students were reported with significant-high prevalence. A family history of migraine was reported positive in (66%) of student's migraine cases.(22%) of migraine headache precipitated by sleep deprivation, (20.2%) of them precipitated by stress and (13.8%) precipitated by diet. In girls, (28.8%) of migraine headache was precipitated during menstruation.

Conclusion: High prevalence of migraine headaches among secondary school students in Ramadi city. Consultations are recommended for the treatment of acute cases and how the students and their families can minimize the symptoms and so improve the quality of life.

Keywords: *Migraine headache, secondary schools, Ramadi city.*

Introduction

Headache is a common complaint in children and adolescents. Headaches can be a primary problem or occur as a symptom of another disorder (secondary headache). Primary headaches are most often recurrent and the most common forms of primary headache in childhood are migraine and tension-type headaches.[1]

Migraine is characterized by episodic attacks that may be moderate to severe in intensity, focal in the location on the head, have a throbbing quality and associated with nausea, vomiting, light sensitivity and or sound sensitivity. Migraine can also be associated with an aura that may be typical (visual, sensory, or dysphasia) or atypical (hemiplegic, Alice in Wonderland syndrome).Migraine without aura is the most common form of migraine in both children and adults.[2,3]

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Migraine has been reported to occur in up to 10.6% of children between the ages of 5 and 15 years and up to 28% of older adolescents. Migraine typically runs in families with reports of up to 90% of children having a first or second-degree relative with recurrent headaches.[4,5]

Triggering factors that may precipitate migraine headache include; skipping meals, inadequate or irregular sleep, dehydration, weather changes, menstrual periods in female adolescents, feeling of irritability, tiredness and food cravings.[6,7]

Diagnosis of migraine headaches is by history and physical examination, including a neurologic examination. The history needs to include triggering events, the timing of the headaches, associated neurologic symptoms and detailed characterization of the headache attacks, including frequency, severity, duration,associated symptoms, use of medication, disability and a family history of migraine. General health conditions are also important for the identification of possible secondary headache disorders.[6,8]

Treatment aims to reduce headache frequency, severity, duration and disability. These include the treatment of acute headaches by non-steroidal anti-inflammatory drugs and triptans. When the headaches are frequent (more than one headache per week) or disabling (causing the patient to miss school, home, or social activities) a preventive or prophylactic therapy may be warranted.[4] Behavioral evaluation and therapy are essential for effective migraine management. This should include adequate fluid intake without caffeine, regular exercise, not skipping meals and making healthy food choices and adequate (8-9 hour) sleep regularly.[9,10]

The aim of this study are:

1. Identify the prevalence of migraine headaches among secondary school children.
2. Identify the prevalence of migraine among age and gender.
3. Show some triggering factors on the disease.

Subject and Method

A cross-sectional study was done during studying year, 2019, to assess the prevalence of migraine headaches among secondary school students in Ramadi city, after taking permission from the Directorate of education in Ramadi city. This study was done only on migraine headache without aura type. The total number of secondary school students in Ramadi city is (39047) Boys are (21625) and girls are (17422). The study done after visiting different primary schools for boys and girls selected randomly.

All students in secondary schools, direct questions about the history of headaches were taken and the diagnosis of migraine headaches was made based on the diagnostic criteria of the International Classification of Headache Disorders III (ICHD-III).[11]

Diagnostic criteria for migraine without aura (ICHD-III):

A. At least five attacks fulfilling criteria B–D

B. Headache attacks lasting 2–72 hours (untreated or unsuccessfully treated)

C. Headache has at least two of the following four characteristics:

   1. Unilateral location
   2. Pulsating quality
   3. Moderate or severe pain intensity
   4. Aggravation or causing avoidance of routine physical activity (e.g., walking or climbing stairs)

D. During headache at least one of the following:

   1. Nausea and/or vomiting
   2. Photophobia and phonophobia

E. Not better accounted for by another ICHD-III diagnosis.

All diagnosed migraine headache students in secondary schools,a list of questions and information taken directly from the students and from the family by the indirect way which includes filling papers sent by the student's hand and received in the next day and or by taking the mobile address and speaking with the family, including;

1. Age.
2. Gender.
3. Family history.
3. Precipitating factors; diet (chocolate, cheese and coffee), stress, sleep deprivation and menstruation in females.

Exclusion Criteria: Headaches of causes other than migraines.

Data collected were checked for accuracy and completeness and were coded and entered into the Statistical Package for Social Sciences (SPSS), Descriptive statistics for all studied variables and Chi-squared test were used and P-value level <0.05 was considered significant throughout the study.

Results

The total number of students in visited secondary schools included in this study was 1445, the number of students who diagnosed as a migraine was 94 (6.5%). Figure 1.

Boys were diagnosed asmigraine in 35 (4.9%) cases from 747 male students. Girls were diagnosed in59 (8.5%) cases from 698 female students.

Age distribution of migraine cases revealed that most of the cases reported in higher age students. Table 1.

Positive family history was found in 62 (66%) of cases. Figure 2.

Precipitating factors of migraine cases showed that sleep deprivation recorded in 21 (22%) of cases, the stress in 19 (20.2%), diet in 13 (13.8%) and in girls, menstruation reported in 17 (28.8%) of (59) migraine cases. Table 2.

Figure 1. The prevalence of migraine patients among all secondary school studied students.

Table 1. Distribution of migraine cases among age and gender.

Gender	13 Year	14 Year	15 Year	16 Year	17 Year	18 Year	Total
Boys	4	4	4	3	11	9	35(4.9%)
Girls	4	10	9	9	13	14	59(8.5%)
Total	8(8.5)	14(14.9)	13(23.4%)	12(26.6%)	24(13.8%)	23(12.8%)	94

p-value among genders and deferent age group are significant <0.05.

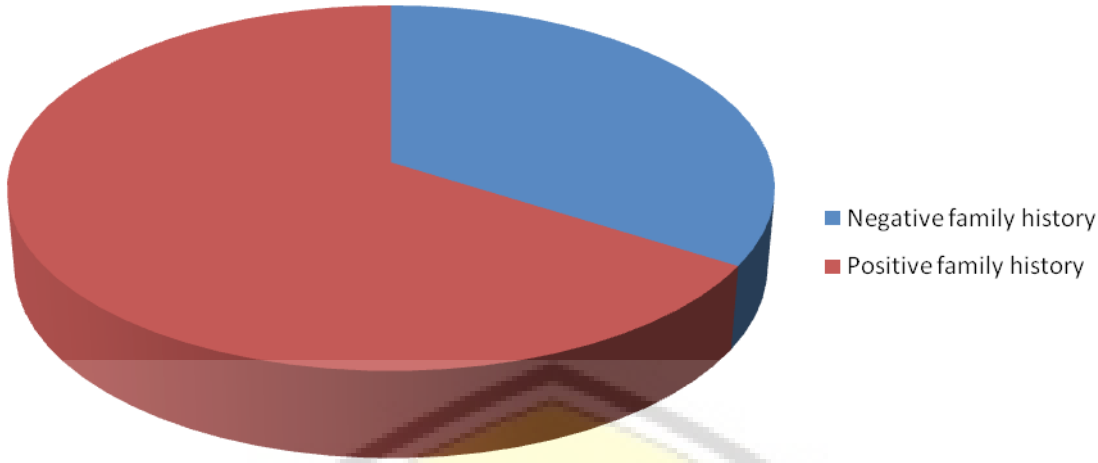

Figure 2. Positive family history reported in 66% of migraine cases.

Table 2. Precipitating factors of migraine headaches among secondary school students.

Character	Precipitate Migraine	Not Precipitate	Total
Diet (chocolates, cheese and coffee)	13 (13.8%)	84 (91.5%)	94
Sleep deprivation	21 (22%)	79 (78%)	94
Stress	19 (20.2%)	81 (79.8%)	94
Menstruation (girls)	17 (28.8%)	42 (71.2%)	59

Discussion

Headache is the most common pain condition in children and adolescents and migraine is one of the most common causes of primary headache[12]. No previous study conducted previously in our city about the prevalence of migraine, this study revealed that (6.5%) of secondary school students had a diagnosis of migraine. Studies in Turkey showed a prevalence of (8.8%) [13], Sri Lanka (7.8%)[14] and Kuwait (10.9%)[15]. The lowest reported rates were in Jordan (2.9%)[16], Hong Kong (3%)[17]. The differences are probably due to genetic predisposition, environmental factors and used diagnostic criteria.

Girls were reported more prevalence than boys diagnosed migraine cases, most of the other studies [18,19] showed that the overall migraine prevalence is twofold higher in adolescentgirls than in adolescent boys. This increase in the female group is likely due to secondar yhormonal changes that take place around this age and that hormonal effect triggers migraines in female adolescents.[20]

This study demonstrates that the prevalence of migraines more in older age students than that of lower ages. Other studies in Germany [4,21] and Turkey [13] studies suggest that the increase of migraine headache prevalence with age in adolescents may reflect the biology of brain development.[4] Further reasons for the high prevalence could be increased school stress with diminished leisure time. Furthermore a change in lifestyle factors like increased consumption of coffee and smoking in adolescents which could trigger headache.[22,23]

Concerning the family history of migraine, (66%) of migraine students had a positive family history of migraine. A positive family history also obtained in studies in Iran [24] Pakistan [25]. Researches showed that first degree relatives of subjects with migraine have a 1.9 times higher risk of developing migraine compared to the general population,[26] and the concordance rate for migraine in monozygotic twins is 34% compared to 12% in dizygotic twins, [27] suggesting the importance of genetic factors in migraine development.

A migraine trigger is any factor that on exposure or withdrawal leads to the development of an acute migraine attack in a susceptible individual.[28] Sleep deprivation and stress were recorded as big trigger factors in this study. Different precipitating factors for migraine had

been described by several authors previously. Sleep deprivation was reported as the most frequent trigger in France[29] study and that stress was reported as the most trigger in India [30] and Barazel[28] studies. Sleep deprivation is likely to be common among school students because of the need to prepare for examinations or class tests. Stress may be related to school activities friends and bullying or may be related to family problems. The mechanism of these triggers to precipitate headache is unknown, but many hypotheses showed that most triggers excite cortical neurons, which leads to an inhibitory response in the periaqueductal gray matter and the nucleus raphe magnus through the trigeminal nucleus, which can be perceived as migraine pain.[31,32] Diet was also recorded as precipitating factors for a migraine headache in this study. Many other studies also record multiple types of dietary triggers for migraine[29,30]. Studies showed that diet can play an important role in the precipitation of headaches in children and adolescents with migraine. The list of foods, beverages and additives that trigger migraine includes cheese, chocolate, citrus fruits, fatty foods, ice cream, caffeine withdrawal and alcoholic drinks.[33] The pathophysiology of dietary triggers may due to the release of serotonin and norepinephrine, causing vasoconstriction or vasodilatation, or by direct stimulation of trigeminal ganglia, brainstem and cortical neuronal pathways.[33,34] Menstrual cycle in girls was an important triggering factor for a migraine headache in this study, same results were reported in many other studies.[35] Researches proved that normal hormonal changes in adolescents girls caused by the menstrual cycle can trigger migraine.[36]

Conclusion

Migraine is an important neglected disease among children in Ramadi city, high prevalence of this problem had been diagnosed among secondary school students, with higher prevalence among girls. Sleep deprivation and stress were recorded as important triggering factors for the disease. In girls, a higher percentage of migraine headaches was precipitated during menstruation. Explaining to patients the probable precipitating factors for this disease and how to deal with them is recommended. Health education sessions are also recommended inside schools to seek for the underestimated cases and manage them.

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Death Rate among Neonate Admitted to Salahaldin Teaching Hospital in Tikrit, Iraq

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Abstract

Background: Neonatal period is the most dangerous period during child life. Neonatal deaths in Iraq account for more than half of under-five children deaths. There is a variation in neonatal death according to the causative factors in a different area of the world.

Objective: To show the rate of neonatal death among newborn babies admitted to the neonatal care unit in Salahadin teaching hospital and studying some related factors.

Patient and Method: Across section hospital-based selected study was done on a neonatal patient admitted to the neonatal care unit in Salahaldin Teaching Hospital during the period from the first of January to October 2016.

Results: The total number of admitted cases in the neonatal care unit was (262). (61.8)%were male, (38.2)% were female. Most of the neonate discharged well (75.6%), (6.5%) discharged on parent's responsibility,(2.3%) were referred to other more developed hospitals. The neonatal death rate was (15.6%), with a male to female ratio of 2.4:1. RDS represents a major cause of death (53.6%), followed by neonatal septicemia (22%). Most of the death occurs among neonate with the gestational age of fewer than 28 weeks (31.7%).

Conclusions: A high neonatal death rate was recorded in Salahaldin Teaching hospital in Tikrit city. This needs a big effort to treat this problem with the introduction of new equipment.

Keywords: *Neonatal death, neonatal care unit, Salahaldin Teaching Hospital.*

Introduction

The neonatal period is defined as the first 28 days after birth which is the stage for the creation of physiological adaptation to extra uterine life and this period is a vulnerable period during neonatal life.[1] Neonatal death now account about more than two- thirds of deaths in the first year of children life and half of deaths in children under five years old.[2] During 20th century the mortality death of neonate had been relatively decreased, however still there was a gap between the developed and developing countries and between the same country in different geographical area [3,4]. About two-thirds of the world's neonatal deaths occur in just (10) countries, mostly in Asia & Sub-Saharan Africa as these two regions represent more than 2 million of the

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annual deaths[5,6]. So that the death rates are widely used to compare the health and well-being of populations across & within countries.[7] There are many causes involved in neonatal death but in general, the most common causes of mortality rate in low-income countries were prematurity, sepsis, pneumonia and birth asphyxia.[8] While in high-income countries leading causes of death are preterm birth and congenital malformations[9].

Many studies have shown that neonatal mortality is influenced by multiple factors such as maternal health (before, during and after pregnancy), neonatal conditions at the time of delivery and postnatal care of babies, all these factors play a significant role in reducing neonatal mortality [10].

Other important and indirect determinants of neonatal mortality aresocioeconomics, demographics, health care system,cultural practices and technology[10,11].

Aim of the study;

1. Clarify the death rate among newborns admitted into Salahaldin Teaching Hospital.

2. Study the distribution of death cases regarding age, gender, gestational age, maternal age and antenatal care.

PATIENTS AND METHOD

Across section, a hospital-based selected study was done on neonatal patients admitted to the neonatal care unit in Salahaldin Teaching Hospital in Iraq during the period from the first of January to October 2016. Before attending the study, acceptance from the director of Salahaldin Teaching Hospital and the parents of each neonate was taken.

Exclusion Criteria:

Newborns who died immediately after birth: Each neonate included in the study were assessed by a prepared questionnaire and that data includes the following;

1. Gestational age,assessed by Ballard scoring system.
2. Gender.
3. Age of admission.
4. The fate of baby, including; discharging well, death or discharge on parent's responsibility.
5. History of maternal antenatal care, maternal age and history of maternal infections during pregnancy.
6. Type of disease of dead neonates.

The Statistical Package for Social Sciences (SPSS, version 18) was used for data entry and analysis. Chi (χ^2) square test of association was used to compare proportions of different factors among different groups of the study sample. A p-value of less than 0.05 was regarded as statistically significant. The pie chart used to present the data.

Results

The total number of cases taken in this study was 262. (61.8)% of them were male and only (38.2)% were female.

Most of the admitted cases discharged well 198(75.6%), while 17(6.5%) discharged on parent's responsibility, 6 (2.3%) were referred to other more developed hospitals, the dead neonate represent 41(15.6%) from the total admissions. Table 1.

Neonatal death distribution according to gender shows that most of the dead babies were male 29(70.7%) versus 12(29.3%) were female, as shown in table 2.

The most common causes of death were respiratory distress syndrome (RDS) 22(53.6%), followed by sepsis (22%), as shown in table 3.

The neonatal death distribution according to gestational age shows that most of the dead neonates had a gestational age of fewer than 28 weeks 13(31.7%). Table 4

The patient distribution according to Age of admission and outcome shows that most of the dead babies were at aged 0-3 days 32(78%). Table 5.

Most of the dead patients occur from mothers of (20-40) years old 157(79.3%) and in maternal infection during pregnancy 6(14.6%) and 24(58.5%) with irregular antenatal care. Table 6.

Table 1. The patient distribution according to the outcome.

Outcome	Frequency	Percent
Well	198	75.6
Referred	6	2.3
Discharged on responsibility	17	6.5
Death	41	15.6
Total	**262**	**100.0**

Table 2. The patient distribution according to gender.

		Outcome				Total
		Discharged Well	Referred to other hospitals	Discharged on parents responsibility	Death	
Sex	Male	121	3	9	29	162
		61.1%	50.0%	52.9%	70.7%	61.8%
	Female	77	3	8	12	100
		38.9%	50.0%	47.1%	29.3%	38.2%
Total		198	6	17	41	262
		100.0%	100.0%	100.0%	100.0%	100.0%

X^2 =2.345, df=3, P value<0.05 significant.

Table 3. The patient distribution according to causes of death.

Cause of death	Frequency	Percent
RDS	22	53.6%
Sepsis	9	22%
Birth asphyxia	2	4.9%
Pneumonia	2	4.9%
Cong. anomaly	6	14.6%
Total	**41**	**100.0%**

Table 4. The patient distribution according to gestational age.

Gestational Age	Outcome				Total
	Discharged Well	Referred to other hospitals	Discharged on parents responsibility	Death	
<28	8	0	3	13	24
	4.0%	0%	17.6%	31.7%	9.2%
28-32	15	0	6	7	28
	7.6%	0%	35.3%	17.1%	10.7%
32-37	88	6	3	11	108
	44.4%	100.0%	17.6%	26.8%	41.2%
37-41	77	0	2	10	89
	38.9%	0%	11.8%	24.4%	34.0%
>41	10	0	3	0	13
	5.1%	0%	17.6%	.0%	5.0%
Total	**198**	**6**	**17**	**41**	**262**
	100.0%	**100.0%**	**100.0%**	**100.0%**	**100.0%**

X^2 = 68.685, df=12, P value<0.05 significant

Table 5. The patient distribution according to age of admission.

Age of admission	Outcome				Total
	Discharged Well	Referred to other hospitals	Discharged on parents responsibility	Death	
0-3	88	2	14	32	136
	44.4%	33.3%	82.4%	78.0%	51.9%
4-7	53	2	1	2	58
	26.8%	33.3%	5.9%	4.9%	22.1%
8-11	29	2	0	3	34
	14.6%	33.3%	0%	7.3%	13.0%
> 12	28	0	2	4	34
	14.1%	0%	11.8%	9.8%	13.0%
Total	**198100%**	**6100%**	**17100%**	**41100%**	**262100%**

$X^2 = 27.652$, df=9, P value<0.05 significant

Table 6. The patient distribution according to maternal age, antenatal care and maternal infection.

		Outcome				Total	x^2, df, p-value
		Well	Referred	Discharge on responsibility	Death		
Mother age	< 20 years	3316.7%	350.0%	635.3%	717.1%	4918.7%	$X^2 = 8.195$, df = 6,
	20-40	15779.3%	350%	1164.7%	3278%	20377.5%	
	>40	84%	00%	00%	24.90%	103.80%	P value > 0.05 NS
ANC	Regular	6934.80%	233.30%	15.90%	512.20%	7729.40%	$X^2 = 18.35$, df=6, P value < 0.05 S
	Irregular	6532.8%	350%	741.20%	2458.5%	9937.8%	
	Non	6432.8%	116.70%	952.90%	1229.30%	8632.80%	
Maternal infections	Yes	3316.7%	116.7%	211.8%	614.6%	4216%	$X^2 = 0.35$, df = 3 p value > 0.05 NS
	No	16583.3%	583.3%	1588.2%	3585.4%	22084%	
Total		**198100%**	**6100%**	**17100%**	**41100%**	**220100%**	

Discussion

Neonatal death is still considered an important indicator for both maternal and neonatal health care[12].

In the present study, neonatal death was recorded in (15.6%) of all neonates admitted to the neonatal care unit. This was similar to that reported in a study in India,[13] in which neonatal death (16.1%). But it was lower than reported in a study done in the Neonatal Care Unit in Saudi Arabia[14] in which neonatal death was (22.4%) and higher than of that reported in USA study (6.9%).[15]The reason why we had a high death rate is probably due to lack of medical equipment and advanced techniques and also due to a delay in seeking medical help by neonate families.

In this study male had higher death rate than female with male to female ratio (1.4:1), this maybe attributed to that male is more labile to perinatal insult, infections, RDS and other problems.[16,17] Similar results were obtained in a study in Nigeria, with male to female ratio was (1.5:1).[16]

In this study the major cause of death was RDS. This result was similar to what reported in a study done in Iraq[18] and the United Arab Emirates.[19] But it disagrees with a study inNorway,[20] in which congenital malformations were the leading cause of death (54%). In this study sepsis account for 22%of fetal death, this result wassimilar to a study done in Pakistan (23%)[21], while its account in Niger (42%).[22] Most of the cases admitted in

the neonatal care unit were preterm babies and with RDS and that most of the recorded death due to lack of update facilities in the management of prematurity.

In this study, neonatal death according to the gestational age occur mostly among preterm babies of less than 28 weeks gestational age, the same results were obtainedin Bangladesh (59.59%) [23] .This is probably due to more liability of preterm babies to complication like apnea, RDS, respiratory failure, hypoglycemia, heat instability.[24]

Most of the neonatal death recorded in the present study occurs during the first three days of life, this goes with another study done in Pakistan[25]. This can be explained as the first three days of neonatal age are the most dangerous time during the neonatal period in which there are more risks for mortality and morbidity and that the neonates at this age are also liable to pregnancy and delivery-related complications like complications of prematurity, birth asphyxia & infectious disease.[2]

Regarding the effect of maternal age on the increasing rate of neonatal death, the present study showed that most of the neonatal death occurs with 20-40 maternal age groups, this differs from another study in Saudi Arabia [14] in which neonatal death occurs mostly among maternal age below 20 years. In our community, most of the pregnancies occur between 20-40 years old women.

Most of the neonatal death occurs among women with irregular antenatal care which agree with another study done in Egypt[26] and New Guinea[27]. This is probably because most of the mothers in this study were from low educated families and from rural areas with difficulty in seeking medical help.

Conclusion

The neonatal death rate recorded in this study was (15.6%). The male death rate recorded more than females. RDS was the major cause of neonatal death. Lower gestational age, lower age babies, maternal irregular antenatal care visit are increased risk of neonatal death. More attention to the Neonatal Care Unit by providing each unit with necessary devices that are important for resuscitation and follow up of patients is recommended.

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Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Breast Cancer among Young Women in Baghdad, Iraq

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Abstract

Background: Breast cancer is the commonly diagnosed cancer among women globally and the major reason of deaths related to cancer in developing world, although breast cancer in young women is less common and often overlooked, it is still considered a major health concern. This study aimed to study breast cancer among young Iraqi women.

Methodology: A retrospective study done on 50 diagnosed breast cancer cases below 40 years during period of 2017 and 2018 among women records of attendees to women health center in AL-ELWYIA maternity teaching hospital.

Result: Out of total diagnosed breast cancer case during period of 2017 and 2018 (264), 50(18.9%) patients were below 40 years. the peak age at presentation ranged from 35-39 years (50%),family history was detected in 24% of cases, early menarche before age of 12 years was detected in 26% of cases,68% of patients presented with painless palpable mass, stage 2 disease were recognized in 76% of the studied sample and 86% were ductal in origin.

Conclusion: the breast cancer among young Iraqi women under 40 years had high incidence rate but might be less aggressive than what was reported in western countries.

Keywords: *breast cancer, incidence, young age, Baghdad, Iraq.*

Introduction

Breast cancer is the most common malignancy among the Iraqi population constituting one third of the registered female cancer and 17.8% are diagnosed in patients under 40 years [(1)]Although the diagnosis of breast cancer is much less common in women under the age of 40 years, it remains a great challenge to patients, families and health care providers and it can have a greater impact than in older women[(2,3)]. In woman under 40 years of age, delay breast cancer diagnosis is a common problem due to various factors such as a lack of information about the disease and consequent delay in seeking medical care,lack of screening programs in this age group and fast tumor growth and pattern of breast parenchyma, which can hinder the identification of lesions both on clinical examination and on certain imaging method[(4,5)] so the Knowledge of the clinical and imaging forms of breast cancer in young woman and correlation with the pathological finding of these cancers is important for improving the detection of mammary lesions in this group[(6)]. Tumors in young women are more likely to be of a higher histological grade [(7)] and to be classified as estrogen receptor and progesterone receptor negative[(8,9)]. In addition, young women are more likely to have local recurrences, to be diagnosed

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at a more advanced stage and to have an inferior 5 year survival compared to their older premenopausal counterparts[9,10].

The differences in tumor characteristics and clinical outcomes suggest that breast cancer arising in young women may be a distinct clinical entity. A study by Anders and colleagues [8] looked at tumor gene expression between two age specific cohorts (young, ≤ 45 years; and older, ≥ 65 years) and identified 367 gene sets that could differentiate tumors in young women from tumors in older women. This suggests that breast cancer in young women may be distinct with a unique underlying biology[11].

Objectives: To describe the clinical profile, image findings and pathological aspects of breast cancer in young women, to enhance early detection of cancer in young Iraqi women.

Patients and Method

A retrospective study done among women records of attendees to women health center in AL-ELwyia maternity teaching hospital. The required data obtained from the information system data base during a 2-years period starting from January 2017 and December 2018. 50 patients were enrolled in this study, patients proved to have breast cancer by histo-pathological study. The evaluated variables included age at diagnosis, marital status, age of menarche, number of parity, history of lactation and first degree family history of the breast cancer, clinical presentation, clinical and radiological diagnosis were also recorded. Statistical analysis was performed and different variables were analyzed.

Result

A total of 50 breast cancer patients below 40 years were enrolled in this study, the mean age of patients was 33.8(±3.7) years, 50%(25) of patients were between 35-39 years, figure -1.

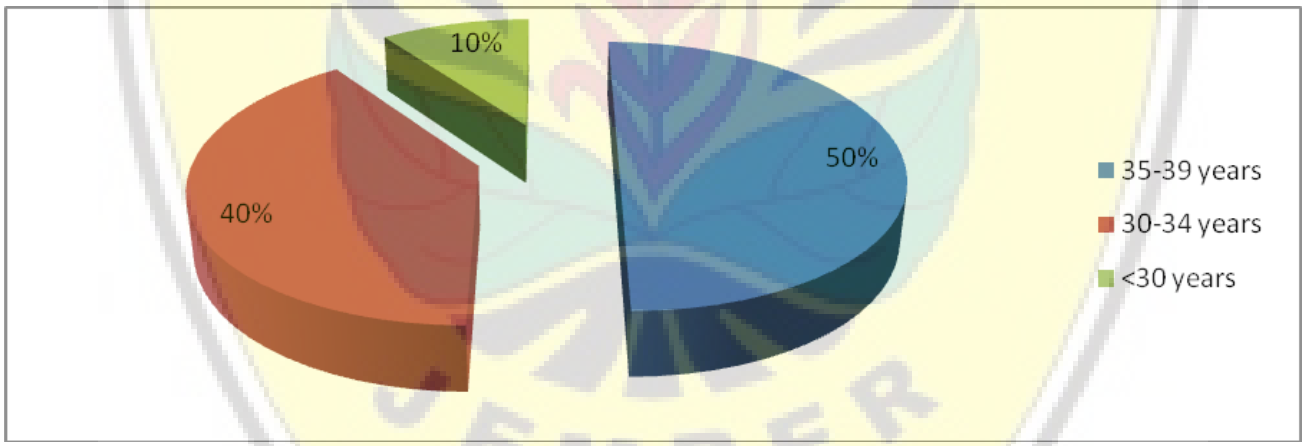

Figure 1: Age distribution of studied patients.

Study of some risk factors showed, 76%(38) were married and from those 12%(6) had one or two child and 76%(38) had three or more children, only 4%(2) of patients had age of menarche more than 14 years. 24% (12) had positive first degree family history and 86%(43) of patients had lactation history more than 6 months, table 1.

The ultrasound finding of those patients revealed that 76%(38) of patients had only mass, the mass was in UOQ among 70%(35) of patients and no one patients had lesion in both breast, table 2.

Table 1: Risk factors for studied group.

Variable		Number (%)
Marital status	Married	38(76%)
	Divorced	5(10%)
	Single	4(8%)
	Widow	3(6%)
Parity	Nil	6(12%)
	≤2	6(12%)
	≥3	38(76%)
Menarche age	≤11 years	13(26%)
	12 or 13 years	35(70%)
	≥14 years	2(4%)
Family history	+ve	12(24%)
	-ve	38(76%)
Lactation history	+ve	43(86%)
	-ve	7(14%)

Table 2: Ultrasound finding of studied patients.

Variable		NO(%)
Ultrasound finding	Mass	38(76%)
	Mass with associated features	12(24%)
Site of tumor	UOQ	35(70%)
	UIQ	7(14%)
	LOQ	0
	LIQ	1(2%)
	Retroareolar	6(12%)
	More	1(2%)
Laterality	Right breast	36(72%)
	Left breast	14(28%)
	Both	0

Majority of patients had stage II breast cancer (76%) and only one patient had stage IV and I. Grade 2 represent 78%(39) of studied patients and invasive ductal carcinoma found in 86%(43) of patients, table -3-.

Table 3: Histopathological finding of studied patients.

Variable		NO(%)
Tumor stage	Stage I	1(2%)
	Stage II	38(76%)
	Stage III	10(20%)
	Stage IV	1(2%)
Tumor grade	Grade 1	1(2%)
	Grade 2	39(78%)
	Grade 3	10(20%)
Histopathological type	Invasive Ductal carcinoma	43(86%)
	Invasive Lobular carcinoma	7(14%)
	Other	0

The clinical presentation of studied patients was showed that 68% (34) of patients had lump and 42%(21) of patients had pain, other showed in figure 2.

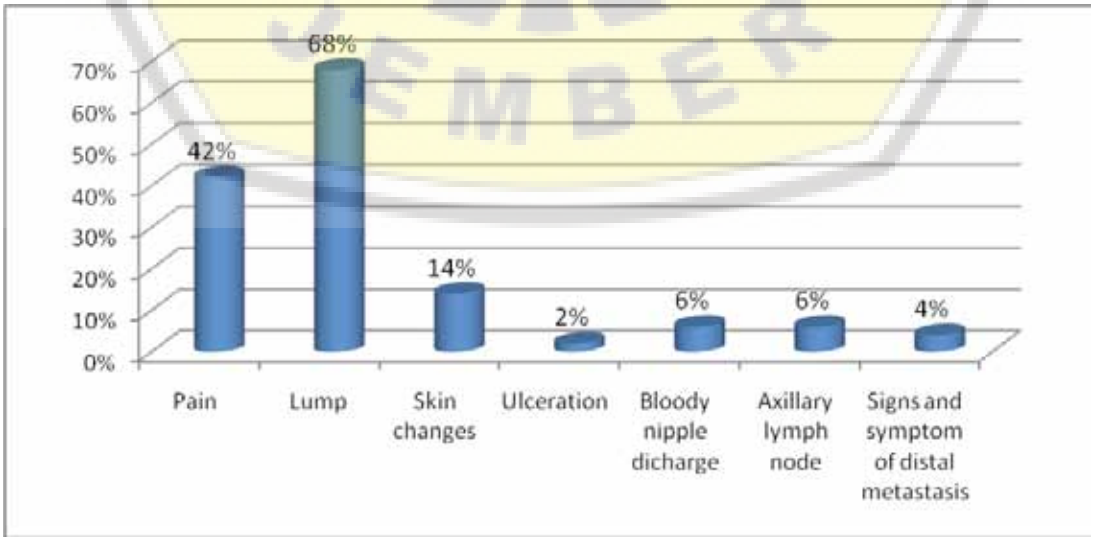

Figure 2: Clinical presentation of studied patients.

Discussion

Breast cancer incidence increases with age with vast majority of women being diagnosed after age of 40 years[11], the comparison of clinic-pathological and radiological features of breast cancer arising in young women with those older ones has been the subject of discussion in several studies[12]. In the present study we have chosen to define early onset breast cancer when diagnosed at age of 40 years and younger, breast cancer is described as young women disease in Arab World and other developing countries[13,14] compared to that observed in Western countries in which the median age for breast cancer is a decade younger and approximately two third of patients are aged under 50 years [15] this may be due to clear social, economic and population differences. A total of 264 breast cancer patients were enrolled in this study 81.1% were 40 years and above while 18.9% were below 40 years. The latter is slightly lower than other Asian countries such as Korea[16], Iran[17] and Saudi Arabia[18] but is significantly higher than that of western population [19]. This suggest the possibility that certain differences in pathogenesis of breast cancer may exist between young Iraqi patients and women in western population these differences may be related to race,social back ground factors, dietary habits, economic development level and environmental exposure among other. In this study 76% of our patients were married or had married. Married women were more likely to receive a breast examination within the last years than single (never married) or no longer married women[20]. 76% of those below 40 years had 3 or more child, Rodriquez et al found that women aged less than 35 years with early child bearing and multiparty are risk factors probably due to short term elevation in breast cancer risk for several months immediately following a birth[21]. In this study 26% of those below 40 years had early menarche before age of 12 years in compare to Najmeh et al who found that 17.6% of patients had early menarche which is considered one of the possible risk factors of breast cancer[22]. Presence of familial background has been identified as an important risk factor for developing breast cancer at an early age and to be suggestive of hereditary syndrome [23]. In this study 23.5% of those below 40 years had positive family history of breast cancer in accordance with previously reported data from sidoni et al study who found that (24%)of patients below 40 years had positive family history [24], larger series have reported much higher proportions up to 48%[25], while McAree et al study reveals only 13.4% had a positive family history [26]. Antoniou et al found that breast cancer at an early age is more likely to be associated with an increased familial risk, especially in women harboring a BRCA1 mutation[27], however BRCA1 analysis was not available in our center at time of study there for the relationship between a positive family history and a positive BRCA1 mutation not properly assessed, the genetic component should be more explored,since genetic studies including young women are very scarce nationwide and there is insufficient data to provide conclusive evidence . Currently, there no routine screening program in Iraq for women less than 40 years of age for that reason most women in this age group are symptomatic and presented mostly with palpable lump. The examination finding in this study were palpable lump in 68%, pain, axillary node, skin changes no breast cancer diagnosed in a symptomatic women which in agreement with Agnese et al that reported that young patients under 40 years were much more likely to present with palpable lump 70%[28]. Ultrasound study reveals that 76% of patients presented with mass. Histo-pathological review of the sample of the study revealed that 86% of breast cancer were ductal (invasive ductal carcinoma) in compare to Cj Fisher et al. who found that 88% of those aged below 40 years were ductal[29] and McAree et al. found that 85.5%of breast cancer were invasive ductal type [26].In this study 20% of patients are diagnosed at grade 3 which is lower than the result of Abdullateef et al. who found that 32.8%of patients below 40 years were grade 3[1] and also lower than the result obtained by fernandopulle et al. study that identified that 60% of patients are grade 3 in young Asian women [30] the later tumor grade at diagnosis might be related to delay diagnosis in young patients, which can be explained by work pressure or low index of suspicion by the patients and primary physician.

Conclusion

The breast cancer among young Iraqi women under 40 years had high incidence rate .Larger studies are warranted to confirm our findings. We have to increase awareness of women regarding this disease and start screening to high risk patients in this age group.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Effectiveness of Gail Model in Assessing the Risk of Developing Breast Cancer in Baghdad, Iraq

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Abstract

Background: The Gail Model is a statistical breast cancer risk assessment algorithm that was developed in 1989 by Dr. Mitchell Gail and colleagues with the Biostatistics Branch of the National Cancer Institute's Division of Cancer Epidemiology and Genetics. The Gail Model looked at a woman's personal medical history, familial history and reproductive history. The Gail model has been widely used and validated with conflicting results.

Method: A Gail model were assessed for 200 convenient patients, 100 patients with history of breast cancer diagnosed during the last year (case) and other 100 patients with benign breast disease (control) and who attended the oncology hospital in medical city and Imamin Al-kadhimin medical city during 2019. The relative risk was measure for each patients and calculated 5 year risk >1.7% was regard as high risk, chi-square and student T test was used to find association between two groups.

Results: Calculated 5 year risk >1.7% found in 21% of case and in 11% of control and no association was found between two groups in the relative risk of breast cancer ($\chi^2 = 3.7$,df=1, p= 0.054)

Conclusions: The Gail model is not useful in identifying risk of breast cancer in women and should not be used for that purpose.

Keywords: *Gail model, breast cancer, relative risk, Baghdad, Iraq.*

Introduction

Breast cancer is the most frequent cancer among women, impacting 2.1 million women each year and also causes the greatest number of cancer-related deaths among women. In 2018, it is estimated that 627,000 women died from breast cancer – that is approximately 15% of all cancer deaths among women[(1)]. And in Iraq it regard as second cause of cancer-related deaths[(2)].

Thus the increasing in breast cancer rate has enhanced global breast health initiatives and attention towards breast cancer risk assessment and awareness[(3,4)]. Breast cancer causes serious concerns even in healthy women, both because of its incidence and mortality. The steps that should be taken in order to decrease this threat can be arranged as following: assessment of breast cancer risk of women, determination of risk groups, careful monitoring of such high-risk groups, informing individuals with risk factors and extending screening and reachable treatment programs in every society[(5,6)]. Breast cancer risk factors have been defined by previous studies. Age and female sex are important risk factors for breast

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cancer. Other factors can be increase breast cancer risk including personal and family history of breast, ovarian and endometrium cancer; history of lobular carcinoma in situ-matched biopsy of atypical hyperplasia; positive BRCA 1 and BRCA 2 genes; early menarche (<12 yr), late labor (>30 yr); induced abortion; late menopause (>55 yr); hormonal replacement treatment (HRT); alcohol over-consumption; smoking; lack of physical activity; diet rich in fat; body mass index (BMI); and high socio-economic level [7-9].

Over the past two decades, a number of statistical models that predict the risk of breast cancer have been designed to select high risk women for risk reduction strategies based on some risk factors that are associated with increased risk. There are two main types of models. The first type assesses the probability of BRCA mutations such as Claus model in which all predictions are only based on family history [10]. The second type used risk factors of breast cancer includes Gail model (GM) and its modified one (GM2) which calculates 5-year and lifetime invasive breast cancer risk [11]. The GM is the most commonly used risk prediction model and has been well studied, validated and applied in various studies worldwide [12, 13].

Objective: To evaluate the performance of model in estimating the risk of breast cancer in the clinical setting.

Material and Method

A total of 200 patients equal or above 40 years, 100 patients with history of breast cancer diagnosed during the last year (case) and other 100 patients with benign breast disease (control) and who attended the oncology hospital in medical city and Imamin Al kadhimin medical city between June and December 2019. The required information was age, age at menarche, age at first live birth, first degree relative numbers with breast cancer, previous breast biopsies with or without atypical hyperplasia, BRCA mutations and woman race. Unknown BRCA mutations and the white race/ethnicity variables were used for all the women in this study in estimating their risks [14]. The relative risk was measure for each patient which available at (http://www.cancer.gov/bcrisktool/) and calculated 5 year risk >1.7% was regard as high risk[15], chi-square and student T test was used to find association between two groups.p≤0.05 was considered significant.

Results

The mean age of breast cancer patients was 51.3±9 years which was higher than the mean age of control benign patients (49±6.5 years) and it was statistically significant(p=0.02).Distribution of participants in different categories of age atmenarche, age at first lived baby and family history was almost similar in both groups and no association were observed between the two groups (P= 0.62, 0.717, 0.27 respectively).Higher frequencies of previous breast biopsy were recorded in control patients compared to breast cancer patients (P<0.001), Gail model scores, that predict 5-year risk of invasive breast cancer, in breast cancer patients and control patients were 1.25±0.7 and 1.26±0.7, respectively and nostatistically difference existed between them (P = 0.9) table -1-

Table 1: Difference in Risk factor used in Gail model among studied groups.

Variable		Participants (No)		P Value
		Breast Cancer Patients	Control Patients	
Age	40-49 years	53	55	0.02*S
	50-59 years	25	36	
	≥60 years	22	9	
	mean±SD	51.3±9	49±6.5	
Age at menarche	≤11 years	10	13	0.62*
	12-13 years	73	74	
	≥14 years	17	13	

Variable			Participants (No)		P Value
			Breast Cancer Patients	Control Patients	
Ageat first live birth	Nil parity		17	12	0.717*
	<20 years		20	17	
	20-24 years		26	25	
	25-29 years		21	26	
	≥ 30 years		16	20	
Family history of breast cancer	Negative		78	84	0.27*
	Positive	One	21	14	
		≥ Two	1	2	
Previousbreast biopsies	Negative		94	77	0.001*s
	Positive		6	23	
Gail score			1.25±0.7	1.26±0.7	0.9**

*Chi-square test, ** Student T test, ^{S}significant ≤ 0.05.

Using the cut-off value of 1.7 in Gail score, patients were categorized into high andlow risk groups. The model was able to correctly characterize 21 patients in the breast cancer group as having high risk of breast cancer(sensitivity = 21%) and the model was correctly characterize 89 patients in control group as having low risk of breast cancer (Specificity =89%) and no association was found between two groups in the relative risk of breast cancer (χ^2=3.7, df=1, p= 0.054).

Discussion

As the incidence of breast cancer is rising in Iraq, it is important to detect women with a high risk for early detection, timely treatment and prevention. Mitchell Gail, a biostatistician, developed a mathematical model in 1989 to assess the risk of breast cancer risk based on the results from the BCDDP–a large screening study that included 284,780 women who had been undergoing annual mammographic examination [16]. Later, it was modified by involving atypical hyperplasia in breast biopsy, race and ethnicity [17]. Most Western countries use the Gail model to assess the risk of breast cancer. The drawbacks of the Gail modelwere that it does not consider lobular neoplasia, family history of breast cancer in second-degree relatives and family history of ovarian cancer. This led to the development of various other models considering the factors that were neglected in the GM such as history of breast cancer in second-degree relatives, which was included in the Tyrer–Cuzick model. To many countries and cities around the world validated the GM apart from the United States like Canada[18], Italy [19] and England [20]. Several reports focused on the performance of the Gail model in Asian population and the results of these reports were in agreement with the finding of the current study, there are no studies in Iraq to date assessed predictive breast cancer risk models.In this study, Gail model was assessed by case control study to validated in risk prediction for breast cancer and different components of the Gail model were compared between patients with confirmed breast cancer and control patient, In this study, the two groups differed significantly in terms of age, number of previous breastbiopsies, sensitivity of model was 21%, specificity was 89% and it failed to differentiated between breast cancer patient and control patients, this resembled to A study of Gail model in Turkish women compared 650 breast cancer patients with 640 healthy women as control group. In this study,age and first live birth (≥30) were statistically significant between caseand control groups but other risk factors used in Gail model were not different between two groups, sensitivity of model 13.3% and specificity was 92%. They concluded that Gailmodel is not appropriate for risk estimation inTurkish population [21], Iranian study on 560 women that showed a significant association of patients age, age at first baby and history of previous biopsy, no association was found between age at menarche, first degree family history and Gail model also showed very low sensitivity (13.9%) and high specificity (91.4%) of the Gailmodel in Iranian population and Indian study [22]

that showed Gail model is not useful in identifying the risk of breast cancer in Indian women. Several points noted regarding the limitations of the current study. Most importantly, that a sample of patients selected from are ferralcenter in Bagdad might not be representative of Iraqi female population. Larger studies including women from different parts of country should be conducted in order to obtain anaccurate assessment of the Gail model performance in Iraqi women, the relatively small number of patients that were included in current study, may hinder detection of significant association between the variables and risk of breast cancer and limit proper interpretation of results, Case-control nature of the study and lack of patients follow-up, do not allow researchers to assess absolute risk of cancer development among study population. Based on the results of the current study, it could be suggested that current version of Gail model should be modified to make it applicable for breast cancer risk estimation in Iraqi women.

Conclusion

The Gail model underestimate risk of breast cancer in Iraqi women and should not be used for that purpose.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Incidence of Vitamin D Deficiency in Children in Babylon Province

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Abstract

Purposes of Study: analysis and measurement of incidence and to show clinical factors that association vitamin D deficiency in children between < 1 year - 11 years old.

Design and Method: This study is prospective, total children 172 with 108 male and 64 female. Age group of children extend from <1-11 years old and planned into four groups: < 1, 1-3, 4-7, 8-11 years old. Serum 25-OHD assay, serum calcium and alkaline phosphatase were measured. Vitamin D deficiency were arrange into three groups according to severity of vitamin D as following : mild vitamin D deficiency is 20-30 ng/ml, moderate vitamin D deficiency is 10-20 ng/ml and severe vitamin D deficiency is< 10 ng/ml.

Results: Among 172 children, 95 of children were healthy, 77 children had vitamin D deficiency. 25-OHD deficiency showed 16.8%, 38.9% and 44.2% in mild, moderate and severe cases respectively. Age of children was older age (5.59±3.42) in vitamin D deficiency. Mean vitamin D deficiency is much lower with highly significant association (P value = 0.00) in compare to normal children. Male gender were predominant in normal and deficient vitamin D respectively but with independence association. Serum calcium and alkaline phosphatase measurement showed hypocalcaemia with elevated level of alkaline phosphatase in vitamin D deficiency and both of them had highly significant difference (P value = 0.00).

Conclusion: Vitamin D deficiency is very common (44.76%) in age group between <1-11 years old and severe vitamin D deficiency (< 10 ng/ml) is the commonest vitamin D deficiency (44.2%) specially older age group (8-11years). vitamin D deficiency is associated with significant hypocalcaemia and elevated alkaline phosphatase.

Keywords: *Vitamin D deficiency, children, incidence.*

Introduction

Vitamin D is a vital source for formation of healthy bone[1], it is not found in many food and so sunlight exposure is main source of vitamin D[2] .

1,25 dihydroxyvitamin D3 (1,25-OHD) is active compound of vitamin D, responsible for calcium and phosphate absorption from small bowel and vitamin D deficiency is a leading etiology of rickets and osteomalacia[3-6] .

Exact definition of vitamin D deficiency is not established[7-9]. There are range of diagnostic values of vitamin Ddeficiency, less than 50 nmol/L is a more frequent value[10,11] and less than 20-37 nmol/L is other depending value[12,13] .Consequently vitamin D deficiency prevalence are wide-ranging 15%-60% over the different countries of world [14,15]. Vitamin D deficiency is a common disease in adult and children and this may related to insufficient sunlight exposure [16].

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25-hydroxyvitamin D (25-OHD) is reliable guide for investigation of vitamin D deficiency [17] and 1,25-OHD is not suitable as laboratory marker of vitamin D because short half-life of serum 1,25-OHD[18].

Vitamin D deficiency is the etiology of rickets in age group mostly more than 5 years [16]. The Centers for Disease Control and prevention (CDC) show that vitamin D deficiency are 9%-11%, 19%-22%, 22% and 22%-28% in age group 1-8 years, 9-13 years, 14-18 years and adult age old respectively when CDC is depending that value of vitamin D deficiency is less than 20 ng/ml [19].

Current study aimed to evaluate incidence and to show clinical factors that association vitamin D deficiency in children between < 1 year- 11 years old.

Materials and Method

This study is prospective, total children 172 with 108 male and 64 female,were admitted in Babylon teaching hospital for gynecology and pediatrics between February/2018 to June/2019.Age group of children extend from<1-11 years oldandplanned into four groups: < 1, 1-3, 4-7, 8-11 years old. Clinical and laboratory investigation for admitted children were done.

One sample of blood was taken, put in gel and clot activators tube, then centrifuge and serum25-hydroxy vitamin D (25-OHD),serum calcium and alkaline phosphatase were investigated to all children.

Serum 25-OHDassay were measured by cobas e 411 analyzer (serial No. is 18P8-03) while serum calcium and alkaline phosphatase were measured by cobas c 111.

Vitamin D deficiency were arrange into three groups according to severity of vitamin D as following : 1) mild vitamin D deficiency : 20-30 ng/ml, 2) moderate vitamin D deficiency : 10-20 ng/ml, 3)severe vitamin D deficiency : < 10 ng/ml as in table 1. normal concentration for 25-OHD, calcium, alkaline phosphatase are 30-100 ng/ml, 8.4-11 mg/dl and < 300 U/L respectively.

SPSS program (version 22) was using for Statistical measurement. continuous variable were represented by Mean ± SD and median and calculated by independent sample T or Mann-Whitney U tests according to normal distribution of the data. Chi square (X2) were used to calculated the association between categorical parameters and P value < 0.05 was Significant.

Results

Among 172 children, 95 of children were found to have normal concentration of vitamin D, 77 children had vitamin D deficiency. 25-OHD deficiency showed 16.8%, 38.9% and 44.2% in mild, moderate and severe cases respectively (Table 1).

Table 1: Clinicopathological basic characteristic in children with vitamin D status (total n. =172).

	Characteristics	Total N (%)
Age (Years)	< 1 year	32(18.6%)
	1-3	51(29.7%)
	4-7	44(25.6%)
	8-11	45(26.2%)
Gender	Male	108(62.8%)
	Female	64(37.2%)
25-OHD	Normal	95(55.2%)
	Deficiency	77(44.8%)
25-OHD deficiency	20-30 ng/ml mild deficiency	13 (16.8%)
	10-20 ng/ml moderate deficiency	30(38.9%)
	< 10 ng/ml severe deficiency	34(44.2%)

Mean age of children was older age (5.59±3.42) in vitamin D deficiency, age < 1 year was least percentage and age 8-11 years is highest percentage of vitamin D deficiency (Table 2).

Mean vitamin D deficiency is much lower (13.375±5.99) and had highly significant association (P value = 0.00) in compare to normal children. Male gender were more frequency and showed 58.9% and 67.5% in normal and deficient vitamin Drespectively but with independence association (Table 2).

Serum calcium and alkaline phosphatase measurement showed hypocalcaemia (8.218±0.612) with elevated serum concentration of alkaline phosphatase (269.157±14.41) in vitamin D deficiency and both of them had highly significant difference (P value = 0.00) as in table 2.

Table 2: Compare incidence and association between sex and age groups according to vitamin D status.

Vitamin D status				
Parameters		**Normal 25-OHD**	**25-OHD deficiency**	**P value**
25-OHD (mean±SD)		38.211±4.186	13.375±5.99	*0.000
Sex Groups	Male	56(58.9%)	52(67.5%)	#0.247
	Female	39(41.1%)	25(32.5%)	
Age (mean±SD)		4.745±3.524	5.59±3.42	*0.119
Age Groups	< 1 year	23(24.2%)	9(11.7%)	#0.071
	1-3 year	27(28.4%)	24(31.2%)	
	4-7 year	26(27.4%)	18(23.4%)	
	8-11 year	19(20%)	26(33.8%)	
Calcium (mean±SD)		8.56±0.035	8.21±0.61	“0.00
Alkaline phosphatase (mean±SD)		254.8±2.756	269.157±14.41	“0.00

#Chi-square Test, *Mann-Whitney U Test, “Independent Samples T Test

Table 3 showed that mild vitamin D deficiency is more proportion in age group 1-3 years (61.5%) but zero in age group 8-11 years, but severe vitamin D deficiency described inverse to above data (mild vitamin D deficiency), were more percentage (41.2%) in age 8-11 years and less percentage (5.9%) in age < 1 year. There were independent association between three groups of vitamin D deficiency with age groups (P value = 0.057).

Table 3: Compare incidence and association between age groups according to severity of Vitamin D deficiency.

Vitamin D deficiency				
Age Groups	**Group 1 (Mild Deficiency)**	**Group 2 (Moderate Deficiency)**	**Group 3 (Severe Deficiency)**	**#P value**
< 1 year	2 (15.4%)	5(16.7%)	2(5.9%)	0.057
1-3 year	8(61.5%)	6(20%)	10(29.4%)	
4-7 year	3(23.1%)	7(23.3%)	8(23.5%)	
8-11 year	0(0%)	12(40%)	14(41.2%)	

#Chi-square test

Discussion

In current study, we assessment incidence and association of 25-OHD deficiency in children (≤11 years) in compare to originally normal 25-OHD concentration inmatched healthy children.

Our result of sex distribution areis more frequent in male (67.5%) in both categories of 25-OHD (normal and deficient 25-OHD) and the older age group (8-11 years, 5.59±3.42 years) is most frequent in children with 25-OHD deficiency . There are insignificant association in compare age groups, age (mean±SD) and sex to both categories of 25-OHD(P value are 0.071, 0.119 and 0.247 respectively). Young et al [20] showed that 25-OHDdeficiency were predominant in female in both normal and deficient 25-OHD, 25-OHD deficiency are common in age 6-12 years and there are insignificant associated of age and sex with 25-OHD. The 25-OHD

deficiency evaluation in Birmingham reported high percentage in male [21] and Craig et al [16] was also reported 55% of male with 25-OHDdeficiency.

Mild cases of 25-OHD deficiency in current study have high percentage in 1-3 age group, while moderate and severe cases of 25-OHD deficiency are more in older age group (8-11 years), there are insignificant association of age groups with three categories of 25-OHD deficiency (P value = 0.057).Many researchers reported high frequency of well-being children and adolescent[22,23].

Our study reported 25-OHDdeficiency are 16.8%, 38.9% and 44.2% for mild, moderate and severe cases respectively. Catherine et al [24] showed 40%, 12.1% and 1.9% for 25-OHDconcentration ≤ 30, ≤ 20 and ≤ 8 ng/ml respectively.

In our result, the mean serum concentration of 25-OHD(normal and deficiency conditions)) are 38.211±4.186 and 13.375±5.99 respectively and incidence of 25-OHDdeficiency is 44.76%. Young et al [20] presented that mean concentration of 25-OHD were 27.01±5.59 and 14.86±3.2 for children with normal and deficient 25-OHD respectively and prevalence of 25-OHD deficiency are 59.1%, these data are near to our result.

The current research showed 42.8% (total patients are 33) and 57.1%(total patients are 44) of 25-OHDdeficiency in age group <1-3 and 4-11 years old respectively. 25-OHDdeficiency in children reported 50% and 70% of 1-5 years and 6-11 yearsage old respectively in united states of America[25,26].

Clinical manifestation of 25-OHD are various, so the accurate incidence of 25-OHDdeficiency will affected and resulting to different incidence rate among the world [27] .

Also in current study, there are both hypocalcaemia(8.218±0.612) and higher concentration of alkaline phosphatase (269.157±14.41) in children with 25-OHD deficiency. Both of serum calcium and alkaline phosphatase have significant association to 25-OHD status .

Many studies showed serum hypocalcaemia and elevated serum alkaline phosphatase children with vitamin D deficiency [28,29] . Craig et al [16]demonstrated that vitamin D deficiency rickets were found to have elevated alkaline phosphatase (range 229-5443 IU/L) and hypocalcaemia (12%).Young et al [20]exhibited lower concentration serum calcium (9.67±0.36 mg/dl) and elevated alkaline phosphatase (257.96± 65.89 IU/L), there were significant (P value, 0.018) and insignificant (P value,0.073) association between serum calcium and alkaline phosphatase respectively with vitamin D status.

In conclusion, vitamin D deficiency is very common (44.76%) in age group between <1-11 years old and severe vitamin D deficiency (< 10 ng/ml) is the commonest vitamin D deficiency (44.2%) specially older age group (8-11years). vitamin D deficiency is associated with significant hypocalcaemia and elevated alkaline phosphatase.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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The Contribution of Facet Joint Arthritis on Patients with Chronic Back Pain in Basrah

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Abstract

Background: Chronic back pain is a very common global health problem and a major cause of disability. Although the facet joint disease is one of the most common causes, diagnosis is a bit difficult and needs a high index of suspicion.

Aim of the Study: To assess the prevalence of facet joint disease in patients with chronic back pain in Basrah and to determine the accuracy of diagnosis by therapeutic injections.

Patients and Method: In this follow up cross sectional study, (238) patients with chronic back pain were examined at the Medical Consultation Center of Basrah University. Ninety eight patients were diagnosed as facet joint disease and received a single therapeutic injection (medial branch block), of local anesthetic mixed with long acting steroid and followed for three months. Only 88 patient were followed for three months, 10 patients were missed.

Results: The prevalence of facet joint disease in our sample was 33.6%, with regional prevalence of cervical, thoracic and lumbar regions as (26.4%), (13.6%) and (42%) respectively. We found no significant association between having positive outcome results and the characteristic variables like gender and age of the patient, onset and duration of pain and the region being involved. Other variables like BMI, distribution and type of pain, number of affected levels and presence of radiological abnormalities, showed a significant association with the results.

Conclusions: Facet joint disease can be diagnosed clinically by collecting specific clinical and radiological features. Confirmation of the diagnosis and treatment can be done by local injection with high accuracy.

Keywords: *Chronic back pain, facet joint, medial branch block.*

Introduction

Chronic back pain is a common, yet exhausting problem affecting many patients. The differential diagnosis is very wide and the pain generator(s) may be hard to differentiate from the history, physical and routine diagnostic studies, in some cases. Diagnosis and treatment is complicated, as numerous studies express a poor correlation between imaging findings and patient symptoms[1,2]. In spite of the advancement in imaging of the spine, the amount, type and location of pain gathered by the history and the physical examination are the most important part of a patient's evaluation. Imaging studies are mainly for confirmatory only[3]. The facet joints

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are one of the most common elements of chronic LBP (15-45%)[4-6].

The facet joint is a true synovial joint with a fibrous hyaline capsule, articular cartilage menisci and synovial lining[7,8]. It takes dual innervation from medial branches originating from posterior primary rami at the same level and one level above [8,9].

The history in patients with facet joint pain is often nonspecific, but may report pain in the spinal region affected, which is worse with extension and torsional loads and when radiation is present, it does not follow, but may mimic, a radicular pattern [9-11].

Diagnosis is not easy always, it is the set of clinical and imaging features rather than any single sign [12,13]. Spinal intervention is only effective when the patient's symptoms, physical findings and diagnostic imaging matching together[14-16].

The accepted standard incorporates clinical judgment with a diagnostic or therapeutic facet joint injection with steroid. Though liable to operator error, multiple studies establish that skillful use of facet joint injections can provide dual diagnostic and therapeutic objectives in returning patients to function[16-21].

Patients and Method

This follow up cross sectional study was conducted in Basrah center of orthopaedic surgery, (Medical Consultation Center of Basrah University) during the period from the first of June 2017 to the 31st of October 2018.

In this study we evaluate 238 adult patients complaining from chronic back pain.Inclusion criteria was an adult patient (aged 20 – 80 years old) complaining from back pain last more than 3 months duration.

Exclusion criteria, if the patient was a known case of inflammatory arthritis (rheumatoid arthritis, ankylosing spondylitis…etc.), a recent history of trauma or spinal surgery (less than 3 months) and in patients with severe or progressive neurological impairment (cauda equina syndrome)

After taking an informed consent, a detailed history was obtained from all patients and a physical examination was performed with review of all needed radiologicaland laboratory investigations, reaching the diagnosis and suggesting treatment for each case.

For every symptomatic level, we inject that level and one level above, because every facet joint innervated from 2 roots. Figure (1) below shows a case example.

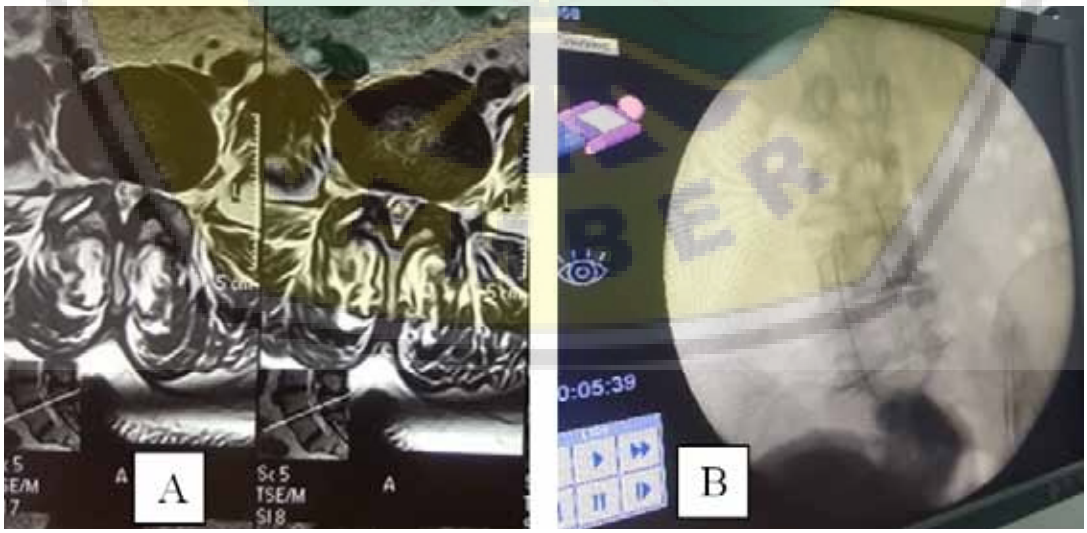

Figure 1: A 64 Y/O female with chronic LBP, diagnosed as a Lt. side L4-5 facet joint arthritis, treated by local injection. (A) Axial T2 MRI of the affected level L4-5, Rt. Facet joint arthritis and effusion. (B) Flouroscopic image at time of injection.

After the intervention, we keep the patients for 30 minutes to 1 hour under observation, then discharge, to re-evaluate again after 2 weeks, 1 month and 3 months periods.

A positive response was considered if the patient had a greater than 50% relief of pain and the ability to perform previously painful movements. Data were recorded on a Microsoft Access 2013 database. The SPSS version 21 Statistical Package was used to generate frequency tables. The prevalence and 95% confidence intervals (CI) were calculated. Differences in proportions were tested using the Chi-square test. Fischer's exact test was used whenever the expected value was less than five. Results were considered statistically significant if the P value was <0.05.

Results

A total number of 238 patients with chronic back pain, (87 patients cervical, 22 thoracic and 129 lumbar regions), meeting inclusion criteria were studied. Female patients were 131 (55%) with a mean age of (51± 9 yrs.), while male patients were 107 (45%), with a mean age of (49± 11 yrs.). Patients age was classified into 3 groups; 20-39 yrs. 34 (14%), 40-59 yrs. 121 (51%) and 60-79 yrs. 83 (35%).

After a thorough examination and review of all investigations we diagnose 98 patients with facet syndrome as the main pathology or pain generator for them, with regional involvement as 27, 5 and 66 patients in the cervical, dorsal and lumbar regions, respectively. Demographic characters for patients with facet joint arthritis intable (1).

Table 1: Gender, age and BMI characteristics of the patients n=98.

Gender			Age (Yrs.)			Total
			20-39	40-59	60-79	
Male	BMI	Normal	3(60%)	1(20%)	1(20%)	5(100%)
		Over wt.	3(16.6%)	10(55.6%)	5(27.8%)	18(100%)
		Obese	3(19%)	5(31%)	8(50%)	16(100%)
		Morbid obesity	1(20%)	3(60%)	1(20%)	5(100%)
	Total		10(23%)	19(43%)	15((34%)	44(100%)
Female	BMI	Normal	1(25%)	3(75%)	-	4(100%)
		Over wt.	1(5%)	17(80%)	3(15)	21(100%)
		Obese	2(9.5%)	15(71.5%)	4(19%)	21(100%)
		Morbid obesity	-	5(62.5%)	3(37.5%)	8(100%)
	Total		4(7.5%)	40(74%)	10(18.5%)	54(100%)
Total	BMI	Normal	4(45%)	4(45%)	1(10%)	9(100%)
		Over wt.	4(10.5%)	27(69%)	8(20.5%)	39(100%)
		Obese	5(13.5%)	20(54%)	12(32.5%)	37(100%)
		Morbid obesity	1(8%)	8(61%)	4(31%)	13(100%)
	Total		14(14%)	59(60%)	25(26%)	98(100%)

Pain characteristics shown in table 2.

Table 2: Distribution of the sample by region of involvement according to presenting pain characteristics (n=98). (Axial+* refers to patients with axial and no true radicular pain)

Region	Onset		Duration			Distribution		
	Sudden	Gradual	3-<6 Months	6 M - 1 yr.	> 1 yr.	Axial	Axial+*	Neuro. Claud.
Cervical	8(33.3%)	19(25.7%)	2(16.7%)	7(25.9%)	18(30.5%)	11(52.4%)	16(24.2%)	0(0.0%)
Thoracic	1(4.2%)	4(5.4%)	1(8.3%)	1(3.7%)	3(5.1%)	5(23.8%)	0(0.0%)	0(0.0%)
Lumbar	15(62.5%)	51(68.9%)	9(75.0%)	19(70.4%)	38(64.4%)	5(23.8%)	50(75.8%)	11(100%)
Total	24(100%)	74(100%)	12(100%)	27(100%)	59(100%)	21(100%)	66(100%)	11(100%)

After doing the pain therapy injection for the 98 patients, we followed them for 3 months. At the 3 months follow up, 10 patients didn't reach the final examination and only 88 patients were re-examined and documented as the main target of the study, table (3).

Table (3): distribution of patients according to the outcome of the intervention by region of involvement after 3 months. (n=88, 10 patients missed in the follow-up)

Cervical (25 patient)		Thoracic (3 patients)		Lumbar (60 patients)		Total (88 patients)	
Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
23(92%)	2(8%)	3(100%)	0	54(90%)	6(10%)	80(90.9%)	8(9.1%)

From this table we can calculate the prevalence of facet joint arthritis in our sample as (33.6%). Regional prevalence, in cervical (26.4%), thoracic (13.6%), lumbar (42%).

Chi square analysis, (table 4), showed **no significant association** between having positive outcome results and the characteristic variables (like **gender and age of the patient, onset and duration of pain and the region being involved, cervical, dorsal, or lumbar regions**). That's means the result of pain therapy in patients with facet arthritis didn't significantly affected by the age or gender of the patient, the onset or duration of pain and the region involved by this disease. On the contrary, we found that **BMI, distribution and type of pain, number of affected levels and presence of radiological abnormalities**, showed a **significant association** with the results. That's means having a mechanical type of pain was significantly associated with positive results (P value 0.044), while having neurological claudication was significantly associated with negative results (P value 0.005). As for the number of levels affected, having one level of involvement showed a significant association with positive outcome results (P value 0.048). In relation to radiological abnormalities, the presence of facet arthritis alone was associated with positive results, while presence of other features like spinal stenosis or large disc bulge was associated with negative results (P value 0.000).

Table 4; Distribution of the sample by outcome (3 months follow-up period) according to demographic features/characteristics (n = 88, 10 patients missed in the follow-up).

Variable		Negative	Positive	Total	P value
Gender	Male	4(10%)	36(90%)	40(100%)	Not significant
	Female	4(8.3%)	44(91.7%)	48(100%)	
Age	Below 60	6(9.2%)	59(90.8%)	65(100%)	Not significant
	60-79 yr.	2(8.7%)	21(91.3%)	23(100%)	

Variable		Negative	Positive	Total	P value
BMI	Normal or over wt.	0	42(100%)	42(100%)	Fisher's Exact Test0.006
	Obese and morbid obesity	8(17.4%)	38(82.6%)	46(100%)	
Onset	Sudden	1(4.5%)	21(95.5%)	22(100%)	Not significant
	Gradual	7(10.6%)	59(89.4%)	66(100%)	
Duration	3- 6 months	1 (10%)	9(90%)	10(100%)	Not significant
	6m – 1 year	1(4%)	24(96%)	25(100%)	
	> 1 yr.	6(11.3%)	47(88.7%)	53(100%)	
Type	Mechanical	5(6.4%)	73(93.6%)	78(100%)	Fisher's Exact Test0.044
	Not Mechanical	3(30.0%)	7(70.0%)	10(100%)	
Distribution	Axial alone or with other manifestations	4(5.1%)	74(94.9%)	78(100%)	Fisher's Exact Test 0.005
	Neurological claudication	4(40%)	6(60%)	10(100%)	
Number	One level	2(3.6%)	53(96.4%)	55(100%)	Fisher's Exact Test 0.048
	More than one level	6(18.2%)	27(81.8%)	33(100%)	
Region	Lumber	6(10%)	54(90%)	60(100%)	Not significant
	Cervical & Dorsal	2(7.1%)	26(92.9%)	28(100%)	
Radiology	Facet arthritis	0(0%)	75(100%)	75(100%)	Fisher's Exact Test 0.000
	Facet arthritis + spinal stenosis	8(61.5%)	5(38.5%)	13(100%)	

Discussion

In this study we consider clinical diagnosis of facet joint arthritis in 98 patient, then confirming the diagnosis by diagnostic and therapeutic medical branch blocks, remarking positive results as pain relief of greater than 50%, with ability to perform previously painful movements, as in the systematic review which was conducted by Manchikanti et al, in 2016 [22], pain relief of greater than 50% was the outcome measure for diagnostic accuracy assessment of the controlled studies with ability to perform previously painful movements. This review provided significant evidence for the diagnostic validity of facet joint nerve blocks.

While Mark V. Boswell et al in 2015[23], postulated that the available evidence is Level I for lumbar facet joint nerve blocks, with at least 75% pain relief with an average prevalence of 16% to 41% and false-positive rates of 25% to 44%.

It's difficult to get 75% or even more pain relief from a single pain therapy injection to the facet joint because the spine problem is multimodal in most and not a single pathology.

The follow-up period in our study was a three months' time, because we believe that is the average time for a single injection to make its effect and to decrease the number of escaped patients from follow-up visits.

Manchikanti et al [24], in a randomized, double-blind, controlled trial with one-year follow-up on 120 patients to determine the clinical effectiveness of therapeutic local anesthetic cervical medial branch blocks with or without steroid in managing chronic neck pain of facet joint origin. The average number of treatments for 1 year was 3.5 ±1.0 in the non-steroid group and 3.4 ± 0.9 in the steroid group.

The prevalence of facet joint arthritis in our study was 33.6%,with regional prevalence in cervical (26.4%), thoracic (13.6%) and lumbar region (42%). In a prospective study done by Manchikanti et al in 2004 [25], on (500) patients with chronic non-specific spinal pain, the prevalence of facet joint pain in patients with neck pain, thoracic and lumbar was 55%, 42% and 31% respectively. The difference in percentages with our sample was probably because of the place where the study conducted.

Another study done by AC Schwarzer et al[26] in 1995, a diagnosis of zygapophysial joint pain was made in 23 of 57 patients (40%).

Regarding variables that affect the outcome of facet joint blocks, Manchikanti et al [27], found that factors like gender, age of the patients, mode of onset of the pain and duration of the pain, all had no significant correlation on the diagnosis, while the presence of previous surgery was significantly affect the diagnosis. While Alfred C. Gellhorn et al [28], suggested that the prevalence of facet-mediated pain in clinical populations increases with increasing age, suggesting that facet joint osteoarthritis might have a particularly important role in older adults with spinal pain.

Conclusion

We believe that facet joint disease has received far less studies than other important osteoarthritis phenotypes such as knee osteoarthritis and other features of spine pathologies such as degenerative disc disease.

It can be diagnosed by careful clinical and radiological assessment and confirmation by diagnostic blocks with a reasonable accuracy.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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The Effect of Silver Nanoparticles on Biofilm Formation in Environmental Isolates of Pseudomonas Aeruginosa

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Abstract

Alternative therapeutic agents such as silver nanoparticles are considered as a desirable agent to help manage and prevent the biofilm formation of different bacterial species.In the present study, eleven environmental strains of bacteria from water samples were identified as *P. aeruginosa* using classical method. We synthesized silver nanoparticles (AgNPs) by using*Myrtus communis* leaf extract as anti-biofilm formation agent. Using a tube method we have determined the minimum inhibitory concentrations (MIC) valueof AgNPs against planktonic growth of *P. aeruginosa*.the AgNPs were exhibited significant inhibition activity against PAE1 (environmental strain) with MICvalue of 150 µg/ml. Moreover, 0.5x MIC of AgNPs were separately tested to examine their anti-biofilm formation activities. We found that 100% (11/11) of environmental isolates were revealed a significant reduction in the rate of the biofilm production in the presence of 0.5x MIC of AgNPs. Thus, these results highlight an inhibitory role for synthesized AgNPs by using *Myrtus communis* leaf extract on biofilm formation of environmental of *P. aeruginosa* isolates and suggest that it can be added to the list of a potential anti-biofilm formation targets.

Keywords: *P. aeruginosa, Clinical isolates, Environmental isolates, biofilm, silver nanoparticles.*

Introduction

P. aeruginosa is a Gram-negative rod-shaped bacterium leading for many contagions immune compromised persons, burned patients and individuals hardship from cystic fibrosis(1). Overall there was a higher prevalence of biofilm-like formations in chronic wounds. This was the first evidence suggesting that biofilms are present in chronic leg wounds. Follow up studies suggest that while wound infections may be polymicrobial, the distribution of bacteria within wounds favors monospecies biofilms(2). Silver nanoparticles (AgNPs) are nanoparticles of silver of between 1 nm and 100 nm in size. Frequently, described as being 'silver' some are composed of a large percentage of silver oxide due to their large ratio of surface-to-bulk silver atoms(3). Numerous shapes of nanoparticles can be constructed depending on the application at hand. Commonly used are spherical silver nanoparticles but diamond, octagonal and thin sheets are also popular. Their extremely large surface area permits the coordination of a vast number of ligands(3).

Materials and Method

Materials: $AgNO^3$ was purchased from (Himredia, India) and *Myrtus communis* was obtained from a local farmer in Hilla, Iraq.

Identification of suspected P. aeruginosa: Seventy water samples were collected from Shatt al-Hillah and Al-yahudia. The samples were placed in sterile glass containers until they were cultured onto nutrient media

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(HiMedia, India).Suspected isolates were grown on cetrimide agar to detect pigment (yellow-green to blue-green) production and an ultraviotet lamp was used to detect for fluorescein production [4]. Then, these colonies were cultivated on MacConkey agar [5].They identified strains were sub cultured on nutrient agar plates/slants and stored at 4°C for short-term storage until required for the study.

Preparation of Plant Extract: Ten grams of fresh leaves from *Myrtus communis* was obtained and confirmed to have been grown in Hilla (a central province in Iraq). The identity of the plant was confirmed by a taxonomist working at University of Baghdad. To obtain the plant extract, the leaves were washed andchopped into small pieces and soaked in baker containing 100 ml of distilled water. The mixture was heated at boiling point for 10 minutes and then cooled and sprinkle twice with whateman-1 filter paper and then the extract was filtered with Millipore filter (0.45 µl) which was stored at 0–4℃ for further use.

Synthesis of Silver Nanoparticles (AgNPs) Using M. communis Extract: The silver NPs were prepared by adding 10 mL of *M. communis* extract to 250 mL aqueous solution consist of 1.69 mg of silver nitrate (0.001 M) in a 250 mL round-bottom flask. The round-bottom flask was equipped with a magnetic stir bar. The reaction mixture was heated and stirred. The reaction mixture was allowed to cool down and 100 ml of reaction mixturewas dried out for 4 hours at 80ºC in an oven to remove water. 20-30 ml of ethanol was added to remove plant extract residues and obtain pure nanoparticles by forming them with ethanol. The reaction mixture was centrifuged at 5000 rpm/15min for six times. A black precipitate of nanoparticles was formed, which was dried out at 80ºCfor 8 hours. 0.06 g of silver nanotubes and ions was taken in a quantity of distilled water and put in ultrasonic water bath. The mixture was put in water bath ultrasonic for 60 mins to disruption the particles of silver and to ensure the recovery of particles nanoparticles are once again as small as they can be then measured size of Nano silver particles on (SEM)[6].

Scanning the Silver nanoparticles under the SEM: A 100µl comprising 250ppm of silver nanoparticles were laid on the aluminum slide and dried in a dark place at room temperature and then tested with SEM [7]. The images of nanoparticles were obtained in the scanning electron microscope (Quanta^{TM}, USA, 450-FEI in Faculty of Pharmacy, University of Babylon, Hilla). The information regarding magnification utilized, applied voltage and the size of the content of the images were confined on the photographs itself.

Minimum Inhibition Concentration (MIC) of AgNPs: Minimal concentration of AgNPs which shows inhibition of visible bacterial growth or turbidity was referred as MIC. In vitro MIC testing of strains (environmentalstrains) was determined by dilution tube method according to [8]. This assay is typically performed on planktonic (free floating) bacterial cells. AgNPs was diluted into various concentrations, 450, 150, 50, 16.6, 5.5 µg/ml, in sterile TSB broth in test tubes. The inoculate were prepared as follows: environmental isolates of *P. aeruginosa* were cultured in TSB broth for 24 hours at 37ºC and harvested in a centrifuge (18,900 x g for 15 min) and washed three times with sterile TSB broth. The pellet was re-suspended in a direct TSB broth containing approximately 2 x 10^7 CFU/ml. The inoculum tube and the 0.5 McFarland standard were compared visually [9].A UV-9200 spectrophotometer (UK) was then used to confirm that the inoculum tube was at the required turbidity of between 0.08-0.1 at OD600nm.2 ml of inoculum suspension was inoculated into test tubes containing 1 µl of the various concentrations of AgNPs. Each individual experiment was included a growth control tube (no AgNPs) and a sterility (no inoculated) tube. The tubes were incubated at 37°C for overnight and afterward the tubes were examined for growth or turbidity using unaided eye. These experiments were repeated three times.

Biofilm formation assay in the presence of AgNPs: The Biofilm formation was estimated before and after adding Nano silver particles in the following steps: The biofilm quantification assay was carried out using a microdilution method according to[10]. The inoculumenvironmental isolates were prepared as described in the previous paragraph (MIC of AgNPs).For microtitration, the environmental bacterial suspensions were titrated in at least three times in 96 flat-bottom wells. A test well, 100 µL of inoculum suspension contain approximately 2 x 10^7 CFU/ml was inoculated into well containing 100 µL of the 0.5x MIC of AgNPs which was diluted by TSB broth.A negative control, TSB broth without bacterial inoculum was included. A positive control, TSB broth with bacterial inoculum was included to quantify the biofilm formation of isolates without AgNPs.

The 96-well plates were then incubated at 37ºC. At

24 hours post incubated, the bacterial suspensions were aspirated and each well was washed three times with 220 µL of sterile PBS (0.1 M, pH 7.2). Subsequently, fixation of adhered cells was performed at 80 ℃ for 30 mins. The plates were removed from the oven and left at room temperature to cool down and then they were stained with 220 µL of crystal violet solution (0.5%) for 1 min. The plates were then washed with distilled water and dried at room temperature. In order to quantify adhered cells, 220 µl of decoloring solution (ethanol/ acetone solution, 80:20% respectively) was added to each well for 15 min.

Afterwards, absorbance readings the assimilation of the eluted stain were taken in an ELISA reader (BIOTECH ENGINEERING, Spectrophotometer UV-9200) at wavelength of 490 nm and the samples were classified according to [11].Three replicates of experiments were carried out. Reading of *P. aeruginosa* biofilms, strains were classified into the following categories: weak biofilm producers, moderate, strong biofilm producers. environmental isolates were classified into four categories, by using the mean optical densities (OD) relative to the ODc results. The categories to determine a positive isolate using this approach were based on the following criteria: non-adherent if ODt ≤ ODc; weakly adherent (+) if 2 x ODc < ODt; moderately adherent (++) if 3 x ODc < ODt; or strongly adherent (+++) if 4 x ODc < ODt.

Statistical Analysis: All values were taken as the mean value and standard deviation calculated. The differences were analyzed by using Student's t test employing Origin 8.0 version Software. A value of $P<0.05$ was considered to be statistically significant [12].

Results and Discussion

Identification of environmental bacterial isolates: It was of interest to study environmental isolates of *P. aeruginosa*, obtained from Shatt al-Hillah and Al-yahudia. eleven environmental isolates were chosen for further identification. The environmental isolates were PAE1, PAE2, PAE3, PAE4, PAC5, PAE6, PAE7, PAE8, PAE10, PAE11 and PAE12.

AgNPs synthesis:

Nanoparticles size determination by SEM: The SEM micrograph was used to measure the size of silver nanoparticles that prepared in present study. In this image observed spherical nanoparticles in the size range 33.9 to 41.98nm which is proved strongly that the particles prepared in our laboratories are nanoparticles (Figure 1)**.** The nanoparticles were not in direct contact even within the aggregates, indicating stabilization of the nanoparticles.In a recent paper by [13], the SEM micrograph revealed that the size of AgNP was found to be too small (5-30nm) in the case of AgNP prepared from *Myrtus communis*.

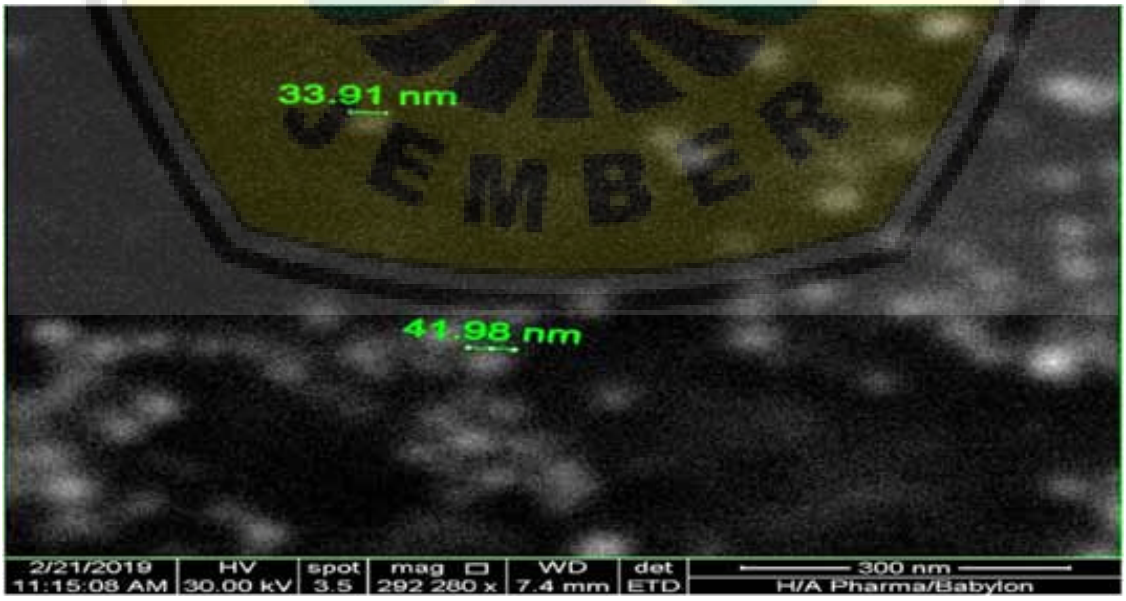

Figure 1. The SEM micrograph of AgNPs formed by Myrtus communis leaf extract.

Determination of Minimum Inhibition Concentration (MIC) of AgNPs: The results revealed that silver nanoparticle exhibited significant inhibition activity against PAE1 isolates with MIC value of 150 µg/ml. While, all of the isolates were found to be sensitive to the AgNPs with MIC value of 450 µg/ml (Table 1). These results are in good agreement with other studies which have shown that the silver nanoparticles synthesized using *M. communis* leaf extract had better or comparable antibacterial activity compared with other inorganic antibiotics [14]. The UV photo-reduction method was used for the synthesis of silver nanoparticles and the MIC value of nanoparticleswas found to be 2 µg/ml against *P. aerogunosa*[15].

Evaluation of the Effect of 0.5 x MIC of AgNPs on Biofilm formation: Initially bacterial suspensions were titrated in at least three times in 96 flat-bottom wells. To monitor this, the optical density ratio for each isolate (ODt) versus the optical density of the negative control (ODc) was determined. The screen was carried out three times and the mean data, expressed into the following categories: weak biofilm producers, moderate, strong biofilm producers, are shown in Table 3.Biofilm quantification analyses showed that 100% (11/11) of the environmental isolates were biofilm producers, indicating that this technique was efficient for the detection of biofilm production. The environmental isolates of this study had the following results for the categories of biofilm production: 81.8% (9/11) were moderately adherent and 27.2% (3/11) were strongly adherent. The results from this study are shown in the table 2.

Table 1. MICs of AgNPs for P. aeruginosa environmental strains.

Environmental isolates	MIC(µg/ml)
PAE1	150
PAE2	450
PAE3	450
PAE4	450
PAE5	450
PAE6	450
PAE7	450
PAE8	450
PAE10	450
PAE11	450
PAE12	450
PAE14	450

Table 2. Evaluation the rate of the biofilm formation of P. aeruginosa environmental strains.

Isolates	O.D	Biofilm Response	Biofilm Response
Control	0.013 ± 0.006	No biofilm	-
PAE1	0.286 ± 0.08	strongly biofilm	+++
PAE2	0.2 ± 0.11	moderately biofilm	++
PAE3	0.3 ± 0.09	strongly biofilm	+++
PAE4	0.17 ± 0.04	moderately biofilm	++
PAE5	0.22 ± 0.1	moderately biofilm	++
PAE6	0.34 ± 0.18	strongly biofilm	+++
PAE7	0.24 ± 0.107	moderately biofilm	++
PAE8	0.26 ± 0.05	moderately biofilm	++
PAE10	0.23 ± 0.04	moderately biofilm	++
PAE11	0.25 ± 0.04	moderately biofilm	++
PAE12	0.23 ± 0.06	moderately biofilm	++
PAE14	0.19 ± 0.04	moderately biofilm	++

The previous section has shown MICs of synthesized silver nanoparticles were 150 µg/ml against isolates (PAE1) and 450 µg/ml against all of other isolates. Thus, the effect of 0.5x MIC of AgNPs on the biofilm-forming ability of *P. aeruginosa* clinical and environmental strains *P. aeruginosa*was further investigated. of the two environmental isolates (PAE6 and PAE3) considered to be the highest valueof biofilm producers (in the absence of 0.5 x MIC AgNp) with OD readout (0.34 ± 0.18 and 0.3 ± 0.09) respectively. Whereas, treated PAE6 and PAE3 isolate with 0.5 x MIC of AgNps was shown a significant reduce in biofilm production with OD readout (0.047 ± 0.013 and 0.062 ± 0.01), respectively. The overall measurement results are summarized in the table 3 and figure 2.

Table 3. Biofilm Formation of environmental isolates of P. aeruginosa post treating with 0.5 x MIC AgNp.

Isolates	O.D	Biofilm Response	Biofilm Response
Control	0.011 ± 0.001	No biofilm	-
PAE1	0.058± 0.009	No biofilm	-
PAE2	0.051 ± 0.004	No biofilm	-
PAE3	0.062 ± 0.01	No biofilm	-
PAE4	0.061 ± 0.013	No biofilm	-
PAE5	0.05 ± 0.013	No biofilm	-
PAE6	0.047 ± 0.01	No biofilm	-
PAE7	0.068 ± 0.008	No biofilm	-
PAE8	0.08 ± 0.019	No biofilm	-
PAE10	0.088 ± 0.010	No biofilm	-
PAE11	0.07 ± 0.017	No biofilm	-
PAE12	0.098 ± 0.002	No biofilm	-
PAE14	0.076 ± 0.002	No biofilm	-

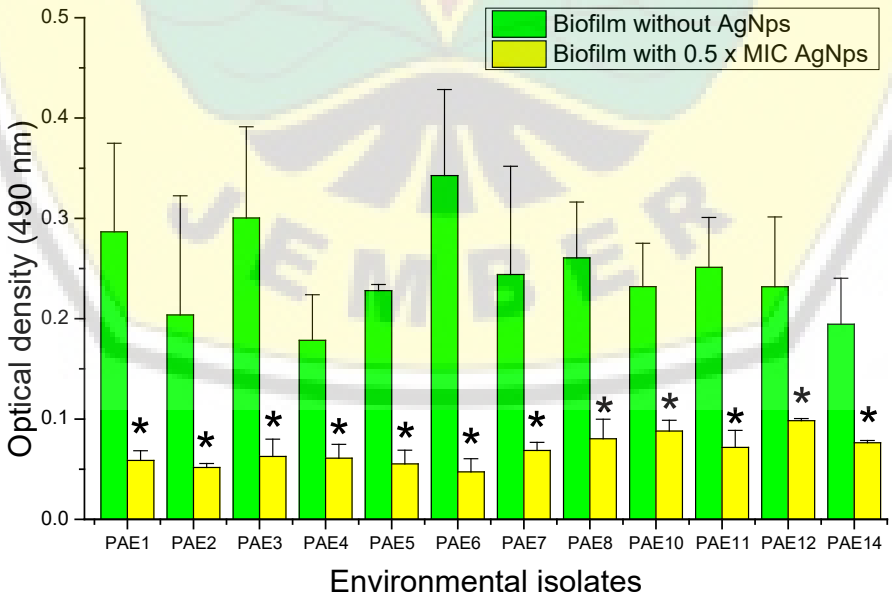

Figure 2. Inhibitory Effect of 0.5 x MIC of AgNPs on Biofilm formation of P. aeruginosa environmental isolates. P. aeruginosa environmental isolates were inoculated into a 96-well plate and either treated with the 0.5x MIC of AgNPs or untreated, the negative control was TSB broth only. Data were analysed against negative control by oneway t.test (*p≤0.05).

Conclusion

These results support the importance of further studies on using silver nanoparticles to control nosocomial infections caused multidrug resistant to most antibiotics. In regards to the results implied in this work concerning the action of synthesized silver nanoparticles from *M. communis* leaf extract, their use can be recommended as a potential alternative therapeutic agent for the control of microorganisms, with less risk of toxicity to mammalian cells.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Diagnostic Role of 2D Speckle Tracking Echocardiograghy in Detection of Subclinical LV Systolic Dysfunction in Asymptomatic Patients with Type 2 Diabetes Mellitus

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Abstract

Background: Left ventricular longitudinal systolic dysfunction has been identified even in asymptomatic patients with diabetes mellitus (DM) and preserved LV ejection fraction (LVEF). Subclinical LV systolic dysfunction may be identified by reduction in longitudinal function which can be assessed using 2D speckle tracking.

Aim: Early detection of LV systolic dysfunction in asymptomatic diabetic patients assessed by 2D speckle tracking and its correlation with diabetic duration.

Patients and Method: cross sectional study include 50 diabetic patients with normal EF compared with 50 age-matched healthy volunteers. To determine longitudinal function, three LV apical views were acquired in both diabetic group and healthy volunteer group .Using 2D strain software, end systolic LS were measured in 18 LV segments.

Results: No significant difference in LVEF was noted between two groups. Diabetic patients had more advanced diastolic dysfunction and increased LV mass compared with normal subjects. Basal, middle and apical LS were significantly lower in diabetic patients compared with control subjects,with 52%(26/50) of the diabetic patients showing abnormal global LS values (cut off value -18.4,mean -2SD in control subjects). Diabetic duration was correlated with reduction of global LS.

Conclusion: In addition to diastolic dysfunction subclinical LV longitudinal dysfunction is frequently observed in asymptomatic diabetic patients with normal LVEF. The decrease in LS correlated with duration of diabetes.

Keywords: *Diabetes mellitus,speckle tracking, longitudinal function.*

Introduction

Diabetes mellitus (DM) refers to group of common metabolic disorders that share the phenotype of hyperglycemia. Several distinct types of DM are caused by a complex of interaction of genetic and environmental factors(1).

DM is a major burden upon health care facilities in all countries, the incidence of DM is rising globally it is estimated that 366 million people had DM in 2011(approximately 8.3% of word population and this figure is expected to reach 552 millions by 2030(2).

Death and disability due to cardiac dysfuntion perhaps the most common complication of DM(3).

DM is a major contributor of the development of

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heart failure despite absence of coronary artery disease and hypertension even in patient with preserved (LV) ejection fraction. This condition is known as diabetic cardiomyopathy[4-6].

Patient with early diabetic cardiomyopathy often have evidence of global diastolic dysfunction but preserved systolic function as reflected by normal LVEF, compared with LV ejection fraction, myocardial velocity, strain and strain rate analysis are more sensitive indexes of LV function and have been demonstrated to be abnormal in patients with DM[7,8].

The presence of impaired longitudinal function in diabetic patients has been reported when using tissue Doppler imaging [9].

However, tissue Doppler imaging has it's own limitation including angle dependency and 1D nature of it's measurement. The recent development of 2D speckle tracking echocardiography overcome some of these limitation and it's accuracy have been reported [10,11].

Myocardial strain echocardiography can detect myocardial damage beyond that indicated by EF by assessing myocardial deformation in any direction. Furthermore newly developed layer-specific tracking imaging can evaluate myocardial function layer by layer[12].

LVEF is not a sensitive for subclinical LV systolic dysfunction Myocardial strain echocardiography can detect myocardial damage beyond that indicated by EF by assessing myocardial deformation in any direction. Early manifestation of diabetic LV systolic dysfunction can be appeared longitudinally because subendocardial fibers which are prone to vulnerable to myocardial ischemia have longitudinal trajectory [13-15].

Recent investigation have found that 2D speckle tracking echocardiography including LV longitudinal myocardial systolic dysfunction rather than LV diastolic dysfunction should be considered the first marker of preclinical form of diabetic cardiomyopathy in DM patient with preserved LVEF without overt HF[16-19].

The aim of this study was to asses the longitudinal strain in asymptomatic diabetic patients using 2D speckle tracking echocardiography to detect any subclincal LV systolic dysfunction even before impairments of other echo parameters like pulse and tissue Doppler and its correlation with diabetes duration.

Patients and Method

Cross sectional study conducted in Al-Yarmouk and Baghdad teaching hospitals, started from 1st of June 2016 to 30 April 2017

Inclusion Criteria:

1. Group 1 normal healthy people (control group)(50 persons) mainly hospital staff or patients relative.
2. Group 2 patient with established DM type2 of variable duration (50 persons).

Exclusion Criteria:

1. History of coronary artery disease.
2. Presence of moderate to severe valvular heart disease.
3. Significant rhythm disturbances
4. Moderate to sever hypertension

Echo Cardiography: Two dimensional transthoracic echocardiography was performed using available equipment (Vivid E9).

LV volumes and EF was measured using modified simpson method from apical four and two chamber views.

Relative wall thickness, LV mass and LV mass index according to Devereux' formula, were measured the following formulae relative wall thickness =2x PWT/LVDd

$$\text{LV mass (g)} = 0.8 \times (1.04 \times ((\text{LVDd}+\text{PWTd}+\text{SWTd})^3 - (\text{LVDd})^3)) + 0.6$$

LV mass index (g/m^2)=LV mass/body surface area where LVDd is LV diastolic dimension PWTd is posterior wall at end–diastole and SWTd is septal wall thickness at end diastole.

Left atrial volume was calculated atrial area and length (L) in apical 2-chamber view (A_2) and 4-chamber (A_1) views using the formula ($0.85X\ A_1XA_2$)/L.

LV volume was indexed to BSA (g/m)

Two Dimensional Speckle Tracking: Using available 2D strain software (Vivid E_9) the endocardial border in the end systolic frame was manually traced. A region of interest was then drawn to include the entire myocardium. The software algorithm automatically

segmented the LV into six equidistant segment and selected suitable speckles in the myocardium for tracking. The software automatically generated time-domain LV strain profile for each of the six segments of each view,from which end-systolic strain was measured . The average value of strain at each level (basal, middle and apical) and global strain obtained from averaging the strain value of 18 LV segments was calculated.

For GLS assessment, three LV apical views, apical four- chamber, two-chamber and long axis views were acquired at high frame rates. In each plane three consecutive cardiac cycles were acquired during a breath hold and digitally stored for off-line analysis using 2D software (Echopac PC available equipment (Vivid E9).

Statistical Analysis: Statistical analysis was done using computerized statistical software, statistical package for social sciences (SPSS) (version 24).

1. Mean and standard deviation was done for all quantitive continuous variables.
2. Pearson correlation with 2-tailed analysis were used to test association between continuous data sets.

Significant result is considered when P-value <0.05 and highly significant when <0.001 and non-significant when >0.05.

Results

Table 1 shows the clinical characteristics of the studied group, the mean diabetic duration was (7.09+3.4y). The study included 50 age matched control people 29 male (58%) and 21 female (42%) with male to female ratio was 1.3:1 and 50 diabetic (type 2) patients, 27 male (54%) and 23 female (46%) with male to female ratio was 1.1:1The mean age of control group (61.9+3y) and mean age of diabetic type 2 group (57.5+7y) without significant statistical difference .-The mean BSA of the control group was (1.63+0.06m^2) which is nearly similar to diabetic type 2 group (1.66+0.09m^2).

The mean HbA1C in diabetic group was 7.5+2.4.64% of diabetic patients have mild hypertension,68% of diabetic patients were taken oral hypoglycemic drugs, while 32%were on insulin. 42%of diabetic group have dyslipidemia versus 32% of control group while 62% of them were smokers versus 22% of control group.

Table 1: Demographic characteristics of DM patients and control subject

	DM Patients n=50	Control Subject n=50	p-value
Age (Years)	57.7±7	61.9±3	NS
Sex male/female%	27/23(54)	29/21(58)	NS
BSA (m^2)	1.66±0.09	1.63±0.06	NS
HR	77±2.5	73±4	<0.05
HT (%)	32(64%)	0(0)	<0.001
DL (%)	21(42%)	16(32%)	NS
Smoker (%)	31(62%)	11(22%)	<0.05
Medication			
ACl/ARB%	14(28%)	0(0)	<0.001
B-bloker	7(14%)	0(0)	<0.05
Ca-antagonist (%)	18(36%)	0(0)	<0.05
Diuretics%	5(10%)	0(0)	NS
Duration of DM %	7.09±3.4y	N/A	
HbA1C (%)	7.5±2.4	N/A	
Glucose (mg/dl)	216.5±22.6	N/A	
Retinopathy	14(28%)	N/A	
Neuropathy	12(24%)	N/A	
Nephropathy	16(32%)	N/A	

Table 2 shows standards echocardiographic parameters. The LV wall thickness, LV mass index and LA volume index were significantly higher in diabetic group in comparison with control group(P-value<0.05). There was no difference in LV systolic function of both groups, LVEF was nearly similar(62.8±1.6 versus 64.7±1.1).E/A was significantly higher in diabetic patient compared to control group (P value<0.009) while DCT, IVCT and IVRT assessed by pulse doppler echo were not different between both groups.

Tissue Doppler study showed that peak systolic and early diastolic annular velocity (E') was significantly lower in diabetic group resulting in a higher E/E' compared with control subjects.

LVEF was not different between two groups. LV mass index, relative wall thickness and left atrial volume index were significantly higher in diabetic patients. Peak systolic and early diastolic annular velocity (E') was significantly lower in diabetic group, resulting in a higher E/E' compared with control subjects.

Table 2: Standard echocardiographic data

	Diabetic Patients n=20	Control Subject n=50	p-valu
IVC (mm)	10.8±1.05	9.3±0.5	<0.001
PW (mm)	9.9±0.8	9.06±0.1	NS
LVDd (mm)	45.7±3.07	43.3±1.1	NS
LVDs (mm)	30.8±2.4	27.7±1.8	NS
LVEDV (ml)	81.2±6.1	82.2±1.8	<0.05
LVESV (ml)	27.07±9.3	31.5±4.0	NS
LVEF %	62.8±1.6	64.7±1.1	NS
LVMI (M-mode)g/m^2	121.2±10.5	90.6±3.9	<0.001
RWT	0.44±0.01	0.41±0.007	<0.001
LAVI (ml/m^2)	39.3±3.3	29.7±1.2	<0.001
E-Velocity (cm/s)	76.0±5.4	77.5±6.4	NS
A-Velocity (cm/s)	97.4±7.3	70.08±2.6	<0.001
DCT (ms)	237.2±10.7	248.1±8.8	NS
E/A	0.8±0.04	1.00±0.001	<0.009
IVCT (ms)	57.7±9.7	55.7±3.7	NS
IVRT (ms)	113.4±15.9	96.1±7.1	<0.002
S,Velocity (cm/s)	8.2±0.7	9.00±0.001	<0.001
E,Velocity (cm/s)	6.6±0.7	7.8±0.7	<0.02
E/E,	12.3±1.9	9.4±0.99	<0.009

Global longitudinal strain in control subjects was -20.8+1.2 These data was used to establish abnormal cut-off value of global LS. This was calculated as the value of the mean - 2SD using the cut- off value of 18.4, 52% (26/50) of diabetic patients showed abnormal global LS values,as shown in fig 1.

GLS and regional longitudinal strain at the apical, mid and basal LV levels were significantly lower in diabetic patients compared with control subjects as shown in figure 2-4 (P value<0.05).

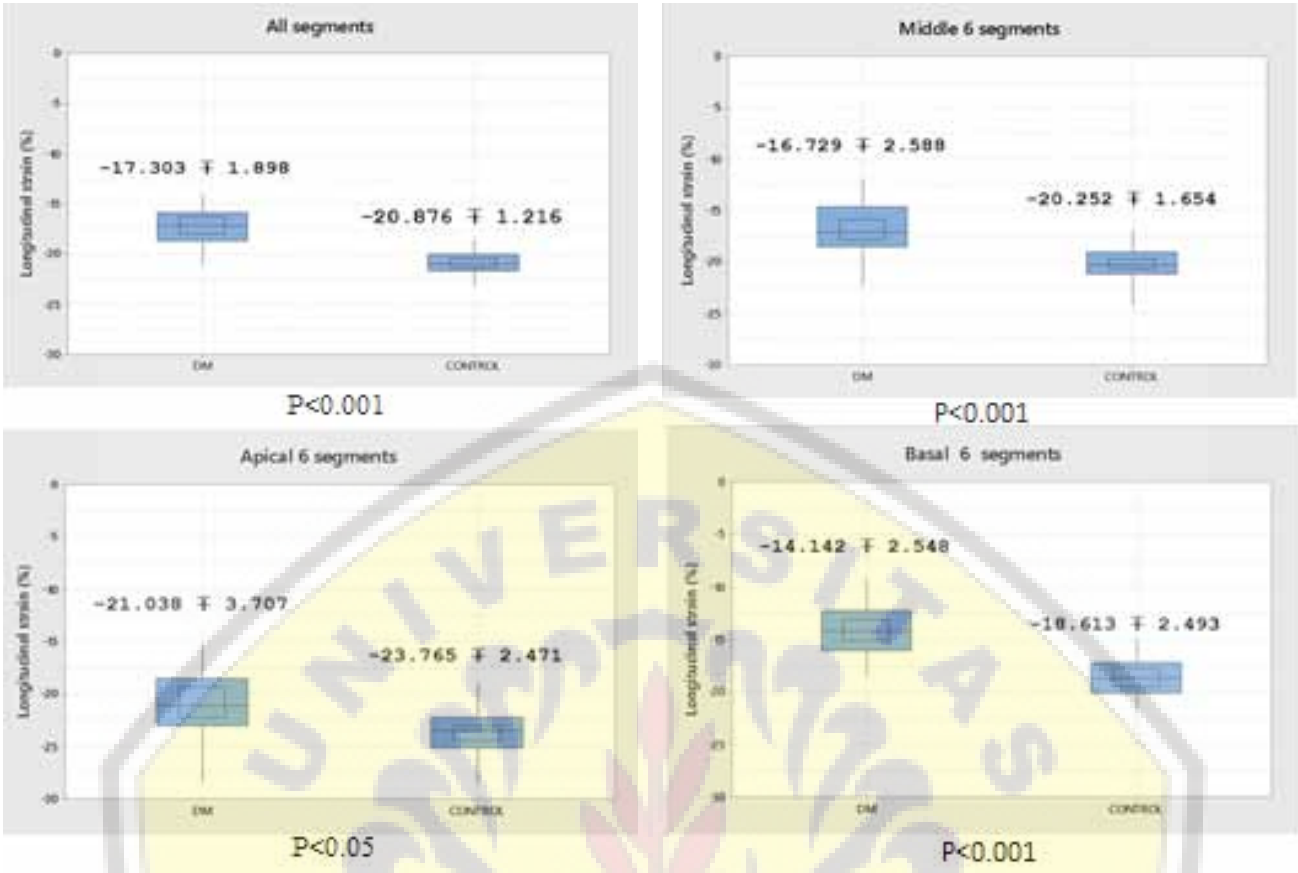

Figure 1: Boxgraph showing global and reginal strain values of diabetic patients and control subject numerical values are presented as mean±SD

Table 3: Pearson correlation of global LS with echo findings data and duration of DM

Global LS	Pearson Correlation (r)	P-value
E,	0.59	0.03
RWT	0.44	0.02
E-wave velocity	0.35	0.01
Duration of DM	0.75	0.04

Correlation is significant at the 0.05 level (P-value)

Statistical analysis revealed that global LS was correlated with LV diastolic dysfunction, E· (P-value=0.03) and with E-wave velocity (P-value=0.01) and with LV hypertrophy, relative wall thickness (P-value = 0.02). Reduction of the global LS was correlated with diabetic duration (P-value <0.05).

Table 4: Difference in GLS between short and long duration of DM

Duration of DM	Number of DM patients	GLS	P-value
<5years	18	-18.7+2.1	<0.05
>5years	32	-16.6+2.3	

Diabetic patients were divided into two groups according to the duration of the disease (<5 years and >5 years), we found global LS was significantly lower in the diabetic group with longer disease duration (-16.6+2.3) compared with short disease duration (-18.7+2.1) the difference was statistically significant (P-value less than 0.05

Discussion

Diabetes mellitus is known to be associated with the development of heart failure even without the presence of co-existing coronary artery disease, so detection of early stage of diabetic heart disease is necessary, because early treatment will prevent overt heart failure, The development of myocardial fibrosis,glucose toxicity and microvascular disease have been called upon to explain abnormalities in diabetic cardiomyopathy, however,detectable at an early stage only using GLS[20,21]

Global LS were significantly reduced in diabetic patients compared with age matched control subject, the reduction in LS was evenly distributed in the LV. Average global LS in diabetic patients was -17.3+1.8 compared to -20.8+1.2 which was statistically significant (P-value <0.05),also regional LS at base, middle and apical LV level were significantly lower in diabetic patients compared to control subject as shown in figure 5.

LVEF was not different between control and diabetic group: The hemodynamic impact on LV systolic function can therefore be largely underestimated if using only indices such as EF (which is affected by the geometry of the chamber and of changes in preload and afterload) or tissue Doppler (which has limitations primarily related to angle dependence and tethering).

The development of myocardial fibrosis,glucose toxicity and microvascular disease have been called upon to explain abnormalities in diabetic cardiomyopathy, however, detectable at an early stage only using GLS[20,21].

Similar to previous tissue Doppler studies [22] we observed that global and regional LS were significantly reduced in diabetic patients, 52% (26/50) of patients showed LV longitudinal systolic dysfunction determined as global LS < 18.4%.

Erande et al. showed that 23% of DM patients with preserved LVEF had LV longitudinal systolic dysfunction determined as GLS <18%.[16]

Nakai et al. reported that global longitudinal strain in DM patients was significantly lower than that in age-matched normal subjects despite of similar LVEF and 43% of DM patients showed LV longitu-dinal systolic dysfunction determined as global LS <17.2%.[19]

Mochizuki et al showed that 37% of patients with preserved LVEF had LV longitudinal systolic dysfunction determined as GLS <18.[23]

Although the prevalence of subclinical LV longitudinal systolic dysfunction in DM patients with preserved LVEF varied among studies, this may depend on patient characteristics such as severity of DM or DM related complications.

This study showed that LV mass index was higher among the DM patients than control people which is attributed to effect of left ventricular hypertrophy which is related to hypertension because 64% of DM patients were hypertensive.

Reduction in global LS was correlated with early diastolic indices (E- wave velocity and E') and correlated with relative wall thickness as shown in (table3).

Significant correlation between global LS and E' confirm the link between systole and diastole which has been confirmed in previous studies [24].

This study showed that diabetic duration was correlated with global LS as shown in table (3).

When dividing diabetic patients into two groups according to the duration of the disease (<5 years and>5years) GLS was significantly lower in diabetic group with longer disease duration (-16.6+2.3) compared with short disease duration (-18.7+2.1) (P-value less than 0.05) as shown in table (4).

The correlation between global longitudinal LS and diabetic duration highlights the relationship between long-term hyperglycemia and the im.

Conclusion

1. Subclinical LV longitudinal dysfunction is frequently observed in asymptomatic DM type2 patients with normal LVEF.
2. There is positive correlation between decrease in GLS and duration of DM type2.
3. GLS is a useful echocardiographic indicator for early detection of subclinical LV systolic dysfunction in

DM type 2 patients.

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Estimating Serum Levels of Hepatitis B Surface Antibodies among Vaccinated Individuals with Various Post-Vaccination Duration

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Abstract

Introduction: Infection with hepatitis B virus represents a global health problem due to its both acute and chronic presentation that might be catastrophic, as it contributes to around 50% of cases diagnosed with hepatocellular carcinoma worldwide. Its prevalence is highly variable but can be extremely horrible as in Vietnam where it reaches 30%. The introduction of hepatitis B vaccine as an integral part of the global immunization program has a grave impact on the reduction of both vertical and horizontal transmission of HBV although the seroprotective level of anti-HBs seems to be affected by many factors at the top of which is the duration after the last dose of vaccination.

Aim of the Study: To evaluate serum anti-HBs in vaccinated individuals against HBV with various duration after the last dose of vaccine.

Materials and Method: A total number of 178 healthy individuals who have received the 3 doses of HBV vaccine were randomly selected. The upper limit of duration after the last dose of HBV vaccine was 18 years and the lower limit was 1 year. For all participants, both HBs Ag and anti-HBs were assayed and the results were statistically evaluated.

Results: The results of the current study have shown a significant decline in serum level of anti-HBs with increasing duration after the last dose of vaccine (r_s= - .648, P = .001). It was evident that the prevalence of seroprotective level of anti-HBs was decreasing with age to reach 31% only in those received the last dose of vaccine 18 years ago. In the few years after the last dose of vaccine, the seroprotection was 88%.

Conclusion: There no need to confirm the seroprotective level of anti-HBs in fully vaccinated individuals as the efficacy of the vaccine seems to be sufficient. The declining in anti-HBs with time is an expected finding but it has not proved that this has an impact on subsequent HBV infection.

Keywords: *Anti-HBs, seroprotection, HBV vaccine, hepatitis B, HBs Ag.*

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Introduction

Hepatitis B is regarded as a major health problem worldwide and is associated with catastrophic sequelae due to the potential severe impairment of liver function secondary to chronic liver disease, liver cirrhosis, or even hepatocellular carcinoma (HCC). Hepatitis B virus (HBV) is highly contagious, with about 50–100 times

more infectious compared to Human Immunodeficiency Virus (HIV)[1]. By the use of hepatitis B vaccine, an enormous benefit has been gained in the battle against HBVfor being safe and effective with the protective ability of 98-100% against hepatitis B virus[2]. According to World Health Organization (WHO), it is estimated that 1.3 million people died as a result of hepatitis B or C viruses in 2015 and 1 in 3 people is thought to be infected with one of these viruses worldwide, furthermore, the majority of these cases are unaware of their infection[3]. Around 2 billion people are reported to have a history of infection with HBV, of these, nearly 20 million are infected with hepatitis E and 185 million are infected with hepatitis Cas well[4]. After infection with HBV, the immune system plays a pivot role in the clearance of the virus and in hepatocellular damage as well. The terms ''immune tolerant'' phase and the ''non-replicative phase'' have been replaced with the new terms: "high replicative" and "low inflammatory" phase respectively with limitation of the use of term ''inactive carrier'' phase which was formerly used[5]. With the application of the recommendation of the WHO in 1991 regarding the widespread use of hepatitis B vaccine, the prevalence of infection with HBV in children and fulminant hepatitis has been significantly decreased in many countries[6]. In most countries, the second-generation hepatitis B vaccine is routinely used in three doses (0, 1 and 6 months duration) and the protective level of anti-HBs antibody is ≥10 IU/L[7]. Many factors have been implicated in the immune response to HBV vaccine including age, body mass index and smoking where increasing age, obesity, use of immune-suppressive drugs and smoking are associated with poor anti-HBs production in response to HBV vaccine[8,9].

Aim of the Study: To evaluate serum anti-HBs antibodies in individuals received 3 doses of hepatitis B vaccine.

Materials and Method

The current study enrolled 178 apparently healthy individuals aged <18 years, attended a private medicallaboratory for routine checking, who had received the 3 standard doses of hepatitis B vaccine according to the schedule recommended by WHO, during the period from April 6, 2019, to July 10, 2019. Individuals with chronic diseases, on immune-suppressive drugs or smokers, were excluded from the study in addition to those who were uncertain about their vaccination status. From each participant, 5 ml of venous blood was collected under sterile condition, centrifuged at 3000 rpm after being clotted and serum was stored at -20 centigrade. Serum anti-HBs was quantitatively measured using ELISA technique. Individuals with serum anti-HBs concentration of ≥10 IU/L were considered as protected while individuals with serum anti-HBs concentration of <10 IU/L were considered as non-protected. To exclude a coincident hepatitis B infection, all participants were examined for the presence of HBs Ag. Data were analyzed using SPSS software version 23. After testing the normality of distribution, Spearman's test was used to assess the effect of duration after the last dose of HBV vaccine onserum concentration of anti-HBs, p-value ≤0.05 at 95% CI was considered significant statistically. Kruskal-Wallis test and Mann-Whitney test were applied to investigate the presence of a significant difference among groups of participants.

Results

A total of 178 participants have been included in the current study with a mean age of 10.2 years (range: >1.5 years to<19 years). The age distribution of participants is shown in table 1. For better clarification, participants were grouped according to age into 3 groups as shown in table 2.

Mean serum anti-HBs was 33.3IU/L but noticeable differences were observed in respect to age, so, we have calculated the of means of all of three groups as shown in table 3. of the total 178 participants, only 110 were discovered to have the protective level of anti-HBs in serum which represents around 62% of the total participants.

Using Kruskal-Wallis test and Mann-Whitney test, there was a significant difference among the 3 age groups in respect to their anti-HBs titer ($p<0.05$) where the group of age 1-6 years had the higher titer (mean 64.2 IU/L, range 10.6-143.2 IU/L) followed by the group of age 7-12 years (mean 31.9 IU/L, range 7.4-129.2 IU/L) while the group of age 13-18 years had the lowest titer of anti HBs Ab (mean 11.2 IU/L, range 5.7-48.4 IU/L. In orderto determine the relationship between serum concentration of anti-HBs and duration after the last dose of HBV vaccine, Spearman's rank-order correlation has been applied which revealed a strong, negative correlation between these two variables, which was statistically significant (r_s= - .648, P = .001).

Table 1: Age distribution of participants

Age in years	Frequency	Percent	Cumulative Percent
< 2.0	7	3.9	3.9
< 3.0	13	7.3	11.2
< 4.0	4	2.2	13.5
< 5.0	6	3.4	16.9
< 6.0	12	6.7	23.6
< 7.0	8	4.5	28.1
< 8.0	4	2.2	30.3
< 9.0	12	6.7	37.1
< 10.0	10	5.6	42.7
<11.0	20	11.2	53.9
<12.0	10	5.6	59.6
<13.0	6	3.4	62.9
<14.0	10	5.6	68.5
<15.0	6	3.4	71.9
<16.0	6	3.4	75.3
<17.0	12	6.7	82.0
<18.0	22	12.4	94.4
<19.0	10	5.6	100.0
Total	**178**	**100.0**	

Table 2: Groups of participants according to their age

Age (Year)	Frequency	Percent
1-6	50	28.2
7-12	62	34.8
13-18	66	37

Table 3: Percentage of immunized participants according to their age group

Age (Year)	Frequency	Mean	Percentage of immunized participants
1-6	50	64.2	88
7-12	62	31.9	74
13-18	66	11.2	31

Discussion

Despite the increasing use of HBV vaccine all over the world and improvement in the preventive plans against HBV transmission, the prevalence of hepatitis B infection is still recording astonishing records which might be attributed to many factors. One of these implicated factors is the decline of anti-HBs below the protective level with increasing duration after the last dose of HBV vaccine. The results of the current study have shown a reasonable initial response to HBV vaccine with 88% of vaccinated individuals who achieved the seroprotective level of anti-HBs. At the same time,

it was evident that anti-HBs titer was progressively declining with increasing duration after the last dose of vaccine where only 31% of participants aged 13-18 were still achieving the seroprotective titer which reflects the prominent negative correlation between serum anti-HBs titer and time. In general, there is a wide variation in the results of studies that have discussed post-vaccination anti-HBS levels. Bookstaver and colleagues, for instance, have observed around 84% of vaccinated individuals were still achieving the protective serum level of anti-HBs10 years after the last dose of the vaccine[10]. In China, various studies have shown that 90-92% of college students were stillachieving the seroprotection level of anti-HBs[11,12], with slightly higher percentage in children and adolescents[13], these results were much higher than the results of the current study for college-age group which might be explained by the many factors that can negatively affect the efficacy of the vaccine including obesity, smoking, chronic diseases, genetic factors and method of vaccine preservation[13,14] although some of these factors were taken in consideration in the current study. Francesco P. Bianchi and his colleagues have evaluated anti-HBs in medical students (aged >18 years of course) and their study has revealed that only 62% of the participants were still achieving the seroprotective level of anti-HBs at the age of medical school[9]. When compared to researches conducted in the 20th century, the substantial improvement in the prevention of HBV infection represented by increased prevalence of immunized individuals has been confirmed by many studies conducted in the last decade, unfortunately, the prevalence of seroprotection of anti-HBS Ab is relatively low in certain age groups. In 2009, a large survey has been conducted in China and involved around 82000 participants to evaluate the distribution of many HBV markers among participants; this study has detected 4-fold increase in anti-HBs in children aged 1-4 years (from 15.8% to 72.3%) and about 90% decrease in prevalence of HBs Ag in the same group compared to previous studies in 1992 which is attributed to the improvement in vaccination program[15]. The durability of protection against HBV infection in response to HBV vaccination has been retrospectively investigated in Japan by Nori Yoshioka and his colleagues who concluded that the higher initial post-vaccination anti-HBs titer, the longer the duration of protection against HBV infection. In the latter study, 93% of vaccinated individuals have become seropositive after the third dose, 54% after the second dose and only 4% after the first dose[16].Many strategies are advised for those who are initially non-responders to HBV vaccine including repetition of the standard doses, giving an additional dose, doubling the dose, intradermal administration or use of the new version of HBV vaccine with higher antigen content[17-19]. These findings will obligate two logical questions: first, is it indicated to give a booster dose of HBV vaccine at a certain time after the last dose of the primary vaccine? second, is it necessary to serially check anti-HBs to ensure the sero-protective levels in vaccinated individuals? Although there are no universal recommendations in this respect, it is suggested that there is no need for neither routine booster dose for healthy individuals nor serial evaluation of serum titer of anti-HBs as there are many shreds of evidence demonstrate that persistent concentration of serum anti-HBs at ≥10 IU/L is not mandatory for protection, as it is thought that it is the immune memory that matters[20]. The immune memory cells that are specific for HBs Ag have the ability to outlast the existence of vaccine-induced antibodies, awarding effective protection against both development of an HBs Ag carrier state and the acute disease, even in those showing declining or total disappearance of anti-HBs[21-23].

Conclusion

Seroprotective level of anti-HBs in response to primary vaccination to HBV is a highly prevalent condition that requires no confirmatory test, although the declining in the serum anti-HBs with age is very expected. Whether this declining in anti-HBs is associated with a significant increase in HBV infection or not, this requires specific investigation to determine the need for a booster dose.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Nutritional and Biological Evaluation of Low–Calorie Cake Prepared by Beeswax-Sunflower Oil Formulated Fat

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Abstract

In this study, a new proposed cake has been prepared by beeswax and sunflower oil formulated fat as completely replacing of shortening to produce a sweet with low calorie, and evaluate its impact on weight and serum lipid profile such as Total Cholesterol, Triglyceride, HDL-Cholesterol, and LDL-Cholesterol. The cakes were prepared in 75:25 ratio of beeswax and sunflower oil respectively based on weight compared with the control cakes. The study included some biological and nutritional indicators after feeding cakes to laboratory rats. Weight gain, organ weight, food efficiency ratio, and serum lipid profile were evaluated. Proposed cake had the effect of lower weight gain for Experiment group as compared with Control Groups. Accordingly, the food efficiency ratios were 3.33 and 10.86 for Experiment and Control groups respectively. The heart, kidney and spleen weights had not significantly influenced by fat replacer level, except lungs that were significantly different at $P<0.05$. No significant change was detected in the mean of organ weight with respect to body weight. The proposed cake composition had low calories indication as compared with normal cake. Namely, it created low calorie structured lipids effectually and altered the plasma cholesterol levels of experimental rats. Total Cholesterol, Triglyceride TG, and LDL values were less in Experimental Group while HDL value was the highest in the same group.

Keywords: *Low-Calorie cake (LCC); weight gain; food efficiency ratio (FER); lipid profile.*

Introduction

Obesity is one of today's most omitted health problems[(1)]. The prevalence of obesity and overweight have become worrying and increasing worldwide, thus consumer demands nowadays for low calorie foods increased to prevent diseases and obesity that caused about 3.4 million deaths worldwide in 2010 [2)].

Cake is a sweet baked food prepared from a blend of flour, sugar and other ingredients such as butter and eggs. It stands for a product that is high in fat with about 18 %, calorie where there is a need to reduce a calorie in such product in the market[(3,4)]. Therefore, there is urgent need to develop non-digestible processed fat which can substitute fat in such products and produce low calorie cake.

Fatty foods are popular in the daily diet, principally the using of solid fat such as shortening that has been widely used in bakery products. However, there are numerous benefits of fat in our diet such as giving a distinctive texture, flavor, and aroma. Excessive intake of fats is associated with intensified risk of obesity, gallbladder diseases, and several types of cancer [(5)], due to the high level of saturated fatty acids and also a presence of trans fatty acids, while solid fats may cause adversative health influences such as increased hazard of cardiovascular diseases, extraordinary cholesterol levels and coronary diseases[(6)]. The American Heart

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Association and health organization have called for reduction in total dietary fat to 30% of calories[7]. Accordingly, there is need for solid fats with low calorie to give the same properties and quality that the original fat would give.

In the theme of food science, they began to use fats which allow liquid vegetable oils to be structured with solid such as beeswax[8]. The fats were used firstly in ice cream, chocolate and spread[9]. Waxes have been widely used in structuring oils [10].

In study[11], the quality features of white button mushroom powder enhancement in sponge cake has been evaluated. Substituting flour in cakes was investigated with numerous protein-rich constituents to develop the nutritious quality of cake despite the restrictive success as it comes to sensorial tolerability. Mushroom powder has been integrated in the formula to enhance sponge cakes with the reduced post-harvest losses in mushrooms and improved nutritious status of society.

In [12], the outcomes of included dietary of grape seed cakes on performance and plasma biochemistry parameters as healthiness pointers along with some markers interrelated with inflammation and antioxidant defense in the liver of fattening-finishing pigs have been investigated. Modulatory capacity of bioactive mixtures from diverse wastes was barely studied in pigs. Low-calorie jelly puddings have been developed in study[13] by replacing milk cream by whey protein isolate or soy protein isolate, beet sugar by fructose and gelatin by non-starch polysaccharides. Physical and chemical features of low-calorie jelly desserts were determined and they had shown worthy food palatability. In study [14], carrageenan, plant fibers and starch concentration on mechanical effects and synthesis records of low-calorie dairy desserts has been investigated based on the response surface approach. Bamboo, inulin, apple, wheat, and psyllium fibers have investigated by five separate tentative designs. Diet dessert without supplementary fiber have shown greater syneresis and lessened mechanical features than regular formulation. Also, carrageenan, starch, and fibers have depicted effective roles in recompensing the observed reduction on the syneresis experiment and mechanical features of low-calorie desserts. On the other hand, starch and carrageenan have shown greater effect on dropping gel syneresis, while fiber adding has reduced the negative effect on mechanical properties resultant from the fat/ sugar exclusion of the diet preparation.

In this paper, beeswax of more than 26% of hydrocarbon and 58% of wax ester [10],has used in three different ratios with sunflower oil to make a solid fat. Also, the other goal of this study is tonutritionally and biologically evaluate the using of beeswax-sunflower oil formulated fat in (75:25 beeswax - Sunflower oil) ratioin production of low calorie cake, and to examine its impact on weight and serum lipid profile such as Total Cholesterol, TG, HDL-C, and LDL-C.

Materials and Method

Preparation of Cakes: Cakes were prepared according to the standards of[15] with some modifications. About 122gm flour, 221gm sugar, 100gm of shortening, 169gm of whole eggs, 70gm of dry milk, 10gm of baking powder, 10gm of vanilla, and 130gm of water, were used in the control cake formulation. All ingredients were gradually added to a kitchen- aid mixer and they were mixed at medium speed. The cake better was placed in a metallic baking pan with 20.4 cm of diameter and baked at 180c for 40 minutes. The same procedure were used in preparation of the experimental cake with exception of using an experimental fat formula of beeswax and sunflower oil 100 g, where they blended in a ratio based on W/W, the used ratio was (75 beeswax: 25 Sunflower oil).

Experimental Diet: The control and experimental cakes were dried and milled with addition of 1% of vitamins and minerals mixture for survival [16]. The powdered cakes were kneaded and finally they were converted into tablets by using extruding machine followed by another drying processing to become ready for feeding the rats.

Experimental Design: Fourteen male Sprague Dawley rats (albino rats) of 12 week old with initial weight ranged from 269.6 to 359.2 gm, were purchased from the School of Science Education / Biology Department / University of Sulamani, Iraq. After acclimatization for 2 days, the animals were randomly divided to two groups; each group included 7 rats and they were all housed individually in standard plastic cages. Cages were maintained in a ventilated room at 23±2 C and 50% relative humidity. They were exposed to 12 hours cycle of light and darkness. The first group is the control group with weight of 315.91 gm as average fed on a standard cake. Second group is an experimental group with weight of 316.10 gm fed on the experimental cake. Rats were provided freely with drinking water ad

libitum throughout the experiment.

Biological Assay Evaluation: Dried cakes were provided to rats daily. Food intake and body weight were recorded for each group every 2 days over the 28 days of experimental periods using a precision weighing balance. Absolute organs weight for heart, lungs, spleen, kidney, and liver as well as organ to-body weight were measured. Body weight gain and food efficiency ratio (FER) were calculated by:

Weight Gain (gm) = initial weight - Final weight

$$\text{Food Efficiency Ratio (FER)} = \frac{\text{weight gain (g)}}{\text{diet intake}} \times 100$$

Blood Collection and Serum Lipids:

At the end of the 28 daysof the experiment, rats were fasted for 12 hours, then, became anesthetized by chloroform. After opening the abdominal cavity surgically, about 1 ml of blood was taken from heart directly using the sterile syringe, of belief it's enough to conduct lipid profile analysis of the rats. The blood was placed in the gel tubes for biochemical tests. The serum levels of Triglyceride (TG), Total Cholesterol, HDL-C, LDL-C were determined using commercial kit by Auto analyzer (Cobas C 311, HITACHI) in Mahan laboratory, ISO certified from UK (ISO 15198) and (ISO 9001).

Statistical Analysis: All data in replicates were statistically analyzed by (ANOVA), using SPSS version 24 program for windows. All data were expressed as Mean ± SEM. P-value ≤ 0.05 was considered significant.

Results and Discussion

Weight Gain and Food Efficiency Ratio: Table 1 explains the results of weight gain and growth rate of both control and experimental groups. It is clear from this table that LCC positively affected to lower the weight gain from 40.84 to 14.742 g/28days, and the growth rate decreased from 1.45 to o.52 g/day. All results in table indicated that the beeswax found to be responsible for the positive effects during the period of feeding with LCC. As result of indigestibly of beeswax, the calories yielding of LCC decreased. The findings of this study agree with[17],[18].

Table 1: Results of Weight Gain and Growth Rates of Control and Experimental rats Groups

Rats Groups	Initial Weight (g)	Final Weight (g)	Weight Gain g/28 Day	Growth Rate g/Day	Weight Gain (%)/ 28 Day
Control	315.91±11.02 [a]	356.75±13.72 [a]	40.84±16.70 [a]	1.45±0.59 [a]	12.92±6.33[a]
Experimental	316.1±10.43 [a]	330.84±9.02 [a]	14.74±2.69 [a]	0.52±0.09 [a]	4.66±1.17 [a]

- Magnitudes followed by the same letter in columns are not significantly different at P<0.05 between Experimental and Control Groups.
- Growth rate (g/day) =weight gain/28 days

Table 2 showed the results of weight gain and FER of both groups. Both had a positive relation. However, FER showed reverse relation of experimental and control groups as in diet intake in comparison with control group which significantly differ at p≤0.05. Accordingly, the FER ratios were 3.33 and 10.86 for experiment and control groups respectively. The variable values of FER were probably influenced by the low digestibly of LCC which prepared by beeswax-sunflower oil formulated fat. These results are close to the value of FER ranged 11.4-17.41 of different types of bread feeding young rats reported in study [19].

Table 2: Results of Food Efficiency Ratio (FER) of Control and Experimental Rats groups

Rats Groups	Weight Gain/28(g)	Diet Intake (g)	FER
Control	40.84±16.70 [a]	376.05±7.04 [a]	10.86±4.83[a]
Experimental	14.74±2.69 [a]	442.4±12.28 [b]	3.33±0.78 [a]

Magnitudes followed by the same letter in columns are not significantly different at P<0.05 between Experimental and Control Groups.

Lipid Profile: Table 3 has shown the recorded lipid profile parameters. Evaluations amid groups have shown important variance between the control and the investigational groups. The obtained Cholesterol data were 82.56±3.71, 72.4±2.90 mg/dl for Control and Experimental Groups respectively, while the resultant Triglyceride TG were 97.58±16.95, 71.24±8.262 mg/dl for the same Groups. On the other hand, computed HDL values were 40.04±2.12, 44.15±3.44 mg/dl for Control and Experiment Groups, while for LDL, the values were 21.35±2.29, 14.27 ±1.92 mg/dl respectively. Accordingly, Cholesterol, Triglyceride TG, and LDL values are less in Experimental Group, while HDL value is higher in the same group. Based on these results, the proposed cake composition has low calories indication as compared with normal cake. Namely, it created low calorie structured lipids effectually and altered the plasma cholesterol levels of experimental rats. The finding of this study agrees with [20].

Table 3: Blood Recorded Data of Control and Experimental Rats Groups

Rats Groups	Triglyceride	Total Cholesterol	HDL-C	LDL-C
Control	97.58±16.95[a]	82.56±3.71[a]	40.04±2.12[a]	21.35±2.29[a]
Experimental	71.24±8.26[a]	72.4±2.90[b]	44.15±3.44[a]	14.27 ±1.92[b]

Organ Weights: As values, based on Tables 4-5, LCC had no effect on organ weights as compared with final weight. Statistically, no significant change was observed in the mean weights of organs (final body, liver, heart, kidney, spleen) except lungs that significantly differat P<0.05 between Experimental and Control Groups. On the other hand, no significant change is found regarding ratios of organ weight with respect to body weight as shown in Table 5. The findings of this highly agree with[21] that stated that heart, kidney and spleen weights have not significantly influenced by fat replacer level.

Table 4: Absolute body and organ weights of control and Experimental Rats Groups

Rats Groups	Final Body Weight (g)	Heart (g)	Lungs (g)	Kidney (g)	Spleen (g)	Liver (g)
Control	356.75±13.72[a]	1.41±0.00[a]	1.93±0.01[a]	2.75±0.02[a]	0.72±0.00[a]	10.00±0.01[a]
Experimental	330.99±9.02[a]	1.40±0.00[a]	1.89±0.00[b]	2.73±0.02[a]	0.71±0.00[a]	8.72±1.28[a]

Table 5: Organ weight with respect to body weight as ratios of Control and Experimental Rats Groups

Rats Groups	Heart	Lungs	Kidney	Spleen	Liver
Control	0.39±0.01[a]	0.54±0.02 [a]	0.77±0.02[a]	0.19±0.02[a]	2.82±0.11[a]
Experimental	0.42±0.01[a]	0.57±0.01[a]	0.82±0.01[a]	0.21±0.00[a]	2.63±0.07[a]

Magnitudes followed by the same letter in columns are not significantly different at P<0.05 between Experimental and Control Groups.

Conclusion

Low- calorie cake has been firstly prepared by beeswax and sunflower oil formulated fat as fully replacing of shortening in this study. Statistical studies about the effect of proposed cakes on weight and serum lipid profile such as Total Cholesterol, Triglyceride, HDL-Cholesterol, and LDL-Cholesterol by including biological and nutritional indicators after feeding

proposed cakes to laboratory rats have been presented. The cake was prepared in 75:25 ratio of beeswax and sunflower oil respectively based on weight as compared to control cake. Weight gain, organ weight Food efficiency ratio, and serum lipid profile were evaluated. Proposed cake had the effect of lower weight gain for Experiment group as compared with Control Groups. In view of that, the food efficiency ratios were 3.33 and 10.86 for Experiment and Control Groups respectively. The heart, kidney and spleen weights were not significantly influenced by fat replacer level, except lungs that had been significantly differed at $P<0.05$. No significant difference was detected in the mean of organ weight with respect to body weight. The proposed cake composition had low calories indication as compared with normal cake. Total Cholesterol, Triglyceride TG, and LDL values have been less in Experimental Group while HDL value was greater in the same group. All above findings have agreements with other related studies in this field in the literature.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Effect of an Educational Program According to the Visual Thinking in Learning the Skill (Receiving and Shooting) Handball for Students

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Abstract

The research contained several axes where it focused on the importance of the educational program and how to prepare it in a scientific manner so that it has an effective effect in the development of motor skills and the development of skill level, as well as the importance of visual thinking which has the mental capacity associated with the visual sensory aspects when there is a mutual harmony between what the learner sees Different forms and drawings, and the importance of research through the use of composite exercises auxiliary and appropriate in learning the composite skill performance (Receiving and shooting) handball.

As for the field research procedures, the researcher used the experimental method in order to be consistent with the methodology of the two-pronged (experimental and control) two-pronged and post-test methodology to suit the requirements of the research. Statistically processed using statistical bag (SPSS).

As for the presentation, analysis, and discussion of the results, the researcher unloaded the results of the pre- and post-test tests and statistically processed. The results obtained showed that there were significant differences between the pre- and post-tests of the research variables and in favor of the post-test.

Keywords: *Educational program,visual thinking, Receiving and shooting.*

Introduction

Education is an important aspect that plays an important role in the progress of peoples because it affects positively and comprehensively in the formation of a new generation, especially if it is based on advanced scientific foundations and modern, and that the program and scientific preparation accurately have an effective impact in the development of motor skills and the development of skill level, And that the learner is the focus of the educational process and that the development of abilities and capabilities is the basic goal as it requires comprehensive attention and careful in providing requirements that serve the learning process and provide the opportunity to achieve the optimal performance of the various mathematical skills that reflect the learner's ability to understand parts The path of movement or skill, and that visual thinking is a mental ability linked to the visual sensory aspects where it occurs when there is a mutual harmony between what the learner sees forms, drawings and relationships and what happens from the link and mental output depends on the vision of the drawing displayed and that the way of thinking in learners depends on the focus on development Their abilities to translate the visual language that the visual form carries into written or spoken verbal language.[1]

The game of handball is one of the most important competitive collective games that have gained wide interest and popularity due to the nature of the game and the rapid strength of the defense and attack because it contains many basic skills and complex where the performance of skills requires a high degree of accuracy and mental motivation, so it became necessary to detect One of the basic offensive skills in the game of handball skills (Receiving and shooting), where the skill of receiving the ball of the basic skills in the game of handball, so the player must be at any moment of the Match is ready to receive the ball from his teammate in any direction and any distance, the skill of the shooting

is the outcome of technical performance and plans individual or collective it represents the end of the attack with all the skills and whatever the variety of types and method of performance, it performs one purpose and is to pass the entire ball around the limits of the goal.[2]

The Study Objectives:

1. Preparing an educational program according to the visual thinking in learning some complex skills (receiving and shooting) handball for students.
2. Identify the impact of the educational program according to visual thinking in learning some of the composite skills (Receiving and shooting) handball for students.

Practical Part:

Field Research Procedures: The researcher used the experimental method in order to be consistent with the methodology of the two groups (experimental and control) with pre and posttests to suit the requirements of the research. The number of students (37) students, the sample of the research must be determined in a scientific manner accurately to be representative of the research community and determine the sample well and appropriate to the nature of the community and the study to be conducted where give results as close as possible to what exists in the community, and therefore has been the sample of the research community was (30) students from the original research community.3

Main Experiment Procedures:

Pretests: The researcher conducted the pre-tests of the sample of the students of the second stage, which was divided into two experimental and control groups on Monday 3/12/2018 for the skill of the handball ball (receiving the ball _ aiming) on the goal at 10:30 am as the test was conducted in the closed field Department of Physical Education and Sports Science, College of Education for Girls, University of Kufa.

Posttests: The research was conducted after Tuesday 22/1/2019 in the closed stadium in the Department of Physical Education and Sports Sciences / College of Education for Girls.

Statistical Means: The statistical package (SPSS) was used to analyze the results.

Results and Discussion

Presentation, analysis and discussion of research results: After the researcher unloaded the results of the pre and post tests and processed them statistically for the purpose of knowing the development of the research variables, the data were analyzed using the statistical bag (SPSS).

Presentation, analysis and discussion of pre and post test results of the handball skill test of the experimental group:

Table (1). The description and statistical reasoning of the pre- and post-test results are shown in the research variables of the experimental group

Variables	Units	Pretest		Posttest		(t) calculated	Sig.	Significance Level
		Mean	STD. EV	Mean	STD. EV			
Receiving and shooting	Grade	5	0.84	7.53	0.63	11.76	0.000	Moral

Table (1) of the description shows the statistical reasoning of the results of the pre- and post-test variables of the experimental group. The calculated value of t (11.76) and the sig value of (0.000) is smaller than the level of significance (0.05) at freedom degree (14) .This indicates a significant difference between the pre and posttests in favor of the post test.

The results showed that there were significant differences between the pre and posttests in the variables under consideration and in favor of the post tests in the experimental group. This is due to the presence of the differences in the post tests is the effect of the educational methodology followed by the researcher and what pointed out that the process of listening to the explanation of the student is associated with the pictures and film clips of the performance which leads to the link between these two senses (vision and poison) To form a clearer picture of the brain in the form of motion so that it helps to form corrective information about performance.[4]

Presentation, analysis and discussion of the results of the pre- and post-test of the handball skill of the control group:

Table (2). The description and statistical reasoning of the pre- and post-test results in the research variables for the control group

Variables	Units	Pretest		Posttest		(t) calculated	Sig.	Significance level
		Mean	STD.EV	Mean	STD.EV			
Receiving and shooting	Grade	5.06	0.70	6.73	0.59	6.16	0.000	Moral

Table (2) of the description shows the statistical reasoning of the results of the pre- and post-research variables of the control group. The calculated (t) value of (6.16) and the sig value (0.000) are smaller than the level of significance (0.05) at the degree of freedom (14).

The results showed that there were significant differences between the pre and posttests in the variables under consideration and in favor of the post tests in the control group. In addition to repetitions of exercises and continuity led to the development of technical performance of the composite skills of students that making repeated attempts and many organized and different conditions help to develop skill and participate effectively in learning and performance.[5]

Presentation, analysis and discussion of the test results (posttest) of the skills of the handball skills of the experimental and control groups:

Table (3). The description and statistical reasoning of the test results (Posttest) in the research variables of the experimental and control groups

Variables	Units	Experimental group		Control group		(t) calculated	Sig.	Significance level
		Mean	STD.EV	Mean	STD.EV			
Receiving and shooting	Grade	7.53	0.63	6.73	0.59	3.55	0.001	Moral

Table (3) of the description and statistical inference of the results of the research variables in the post-test of the experimental and control groups shows that the arithmetic mean of the composite skill test (receiving and correct) in the post-test of the experimental group is (7.53) and a standard deviation (0.63), while the arithmetic mean in the post-test of the control group. (6.73) and a standard deviation (0.59) and the calculated value of (t) of (3.55) and since the value of (sig) of (0.001) is smaller than the level of significance (0.05) at the degree of freedom (28) This indicates a significant difference between The experimental and control groups in favor of the experimental group.

Table (3) shows the results of the post-tests of the experimental and control groups of the skills of the handball as it shows the existence of significant differences between the post-tests of the two groups and for the benefit of the experimental group. This led to the development of technical performance of composite skills, where the experimental group was more developed and improved than the control group in all research variables, and this is due to motivate and encourage students to practice skills accurately,[6] which led to raise Level of skill performance, and learning and mastery of the skill and the frequent attempts and repetitions during the skill performance leads to the understanding and understanding of the skill more accurately, and that the learning process requires repeated attempts to successfully complete the skill.[7]

Conclusions

1. The inclusion of visual thinking using the visual method of the educational program has a positive impact in learning some skills composite handball.

2. The application of the educational program followed, which led to better understanding and learning skill among the members of the research sample.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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The Impact of Preventive Exercises in Terms of Electrical Activity of the Muscles of the Lower Limbs to Develop Walking and Jogging in Learning Some of the Skills of the Movements of the Ground Gymnastics Technical Students

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Abstract

The research problem lies in the difficulty of learning some of the skills of the technical gymnastics for students and this is due to many reasons, including with regard to the psychological aspect in general and the possibility of injury in particular, which leads the students to not make enough effort or try to perform skills for fear of injury. To solve this problem and facilitate the learning of some technical skills gymnastics for students, so the researcher suggested the development of preventive exercises in terms of electrical activity of the muscles of the lower limbs to develop walking and jogging in learning some of the skills of ground movements in the technical gymnastics for students. The researchers also used the approach of the two equal groups, the control group and the experimental group. The research sample was chosen randomly from the research community, and the number of (30) students, as they were divided into two equal groups (experimental, control) and by (15) students for each group.

The researchers reached the most important conclusions. There are significant differences between the posttest tests for both groups (control and experimental) and for the benefit of the experimental group in electro-electrocardiogram (EMG) indicators of the lower limbs.

Keywords: *Preventive exercises, electrical activity and lower limbs.*

Introduction

The world has witnessed a scientific development in all areas of life, including sports, through scientific planning programmed and codified, and the game of gymnastics is one of the games included in this development in the innovation of modern scientific method of training and prevention of injury risks that can affect students as a result of excessive physical effort Natural limitation and reality on individual organs and functional devices. Through the optimal use of mechanical analysis, the level of technical, physical, psychological and functional performance can be improved. Electromyography (EMG), which is an important method for studying the characteristics of the activity of the muscular system, is mainly based on recording the electrical activity of muscles during contractility, through the relationship between the work of both the nervous and muscular system and through the recording of electrical changes that occur in the muscle during systole.[1]

It is known that muscle contraction is determined by the excitation of the nervous system to the muscular system by the motor nerves that in turn deliver the excitation to the surface of the muscle and then the difference in voltage occurs on both ends of the membrane due to permeability in the membrane.

Here, the importance of research is necessary to protect students from the possibility of injury so the researcher will prepare a preventive program in terms of electrical activity of the lower limbs to develop walking and jogging in learning some of the skills of ground movement's Artistic gymnastics.[2]

The research problem lies in the difficulty of learning some of the skills of the technical gymnastics for students

and this is due to many reasons, including with regard to the psychological aspect in general and the possibility of injury in particular, which leads the students to not make enough effort or try to perform skills for fear of injury. To solve this problem and facilitate the learning of some technical skills gymnastics for students, so the researcher suggested the development of preventive exercises in terms of electrical activity of the muscles of the lower limbs to develop walking and jogging in learning some of the skills of ground movements in the technical gymnastics for students.[3]

Research Objectives:

1. Identification of biomechanical variables for the analysis of walking and jogging among students of the Faculty of Physical Education and Sports Science the third stage.
2. Identification of the variables of electrical muscle activity of the lower limbs among students of the Faculty of Physical Education and Sports Science The third stage.
3. Preparation of preventive exercises in terms of electrical muscle activity of the lower limbs to develop walking and jogging in learning some of the skills of the movements of the ground Gymnastic art students.

Research Hypotheses: Preventive exercises have a positive impact in the development of walking and jogging and some skills of the movements of the ground sample of research in the artistic gymnastics for students.

Research Methodology and Field Procedures

Research Methodology: The researcher used the experimental method to suit the nature of the problem to achieve the objectives of the research and hypotheses, as the experimental method is the real test of the relationships of cause or effect and represents the most sincere approach to solving many scientific problems in practice, as what distinguishes the exact scientific activity is the use of experience.

The researcher also used the approach of the two equal groups, the control group and the experimental group, as it must be the two groups are completely equal in all circumstances except the experimental variable that affects the experimental group.[4]

Research Community and Sample: The research community was determined by the students of the third stage in the Faculty of Physical Education and Sport Sciences University of Babylon for the academic year (2018-2019). The research sample was chosen randomly from the research community, and the number of (30) students, as they were divided into two equal groups (experimental and control) and by (15) students for each group, enter the experimental variable using (preventive exercises) permeated educational units during the preparatory section and part From the applied section in the main section as well as in the final section on the experimental group as the control group learns the usual method followed by the school and before starting to work exercises was calculated homogeneity of the sample and parity between the two groups measurements and tests as follows.

Homogenization of the Sample: In order to control the variables that affect the accuracy of the research results, the researcher used to verify the homogeneity of the research sample in the variables related to morphological measurements (length, mass, age) as shown in Table (1).

Table (1). Shows the values of morphological variables and torsion coefficient

Variables	Units	Mean	SD	Mode	Skewness
Length	Cm	155.67	1.78	165.50	0.62
Weight	Kg.	61.25	1.93	61.50	0.32
Age	Year	21.44	0	6.23	0.24

Table (1) shows that the values of the torsion coefficient are limited to (± 1), which indicates the homogeneity of the members of the research sample in these variables, the moderation of their normal distribution.

Means, tools and devices used in the research:

- Technical performance evaluation form for your technical skills.
- Measuring tape number (1).

- Electronic manual calculator (1) type (Casio) .Casio.
- Colored adhesive tape.
- Medical balance (kg) to measure weight.
- Video camera type Sony (1).
- Laptop computer type (Compact precarious 700) *hp* (1).
- German-made electric treadmill for walking and jogging analysis.
- Wooden chair (4).
- CD and DVD.
- Medical alcohol and cotton for cleaning.
- Electrical activity device EMG German-made (1).
- Stopwatch number (1).
- Balance beam number (1).
- Glove number (1).
- Artistic squishy carpet.

Technical Performance Tests for Technical Gymnastics Skills:

1. **The name of the test:** the skill of diving on the device of ground movements.[5]
   - Objective of the test: To measure the technical performance of the diving skill on the ground movement's device
   - Tools used: Sponges.
   - Performance Specifications: Upon hearing the start signal, the tested student performs the diving skill on the ground movement's device.
   - Method of registration: Each student has three attempts and the best attempt is calculated from (10) grades.
2. **Name of the test:** the skill of the Arab jump on the ground movement's device.[6]
   - Objective of the test: to measure the technical performance of the skill of the Arab jump on the ground movement's device.
   - Used tools: sponges.
   - Performance Specifications: Upon hearing the start signal, the tested student performs the Arab jump skill on the ground movement's device.
   - Method of registration: for each student tested three attempts and calculated the best attempt of (10) degrees.
3. **Electromyography test (EMG):**
   - Objective of the test: To determine the electro-physiological variable and EMG of the lower limb muscles under study.

Main Search Procedures: Pre research procedures: Pretests and special exercises used on the experimental group and then conduct the post test.

Pretests: Pre-measurements and pretest tests of the control and experimental research sample were performed on two days.

In the closed sports hall and the biomechanical laboratory of the Faculty of Physical Education and Sport Sciences at the University of Babylon, where the first day was performed physical measurements (mass, length, age) as well as physical tests for research, and on the second day were conducted tests (EMG) for lower limb muscles.

Preventive Exercises: The researcher has prepared three preventive exercises (*) after consulting the experts and specialists in a scientific manner according to the weaknesses that were diagnosed by the researcher with the supervisor through EMC tests and analysis of walking and jogging through which the muscles that need strength or characteristic were identified at speed or The EMC test with the walking and jogging analysis gives direct and clear results to the laboratory about the sample status and the problems experienced by each examined student. The duration of the curriculum was (8) weeks (2) teaching units per week (Monday, Thursday) on 25 / any (16) units of education unit duration for the training of (20-45) minutes and finished the application of the training curriculum in the history of 23/5/2109

Posttests: The researchers conducted the post-test and was in two days in the closed sports hall of the Faculty of Physical Education at the University of Babylon, at the same time and under the same conditions under which the tests were conducted before, on 27/5/2019.

Results

Table (2). Shows the mean, standard deviations and the calculated t-value for walking and running between the two pre-tests of the experimental group

Variables	Legs	Pretest		Posttest		Sig.	Type of significance
		Mean	SD	Mean	SD		
Step time	Right	0.75	0.04	0.76	0.04	0.45	Non sig.
	Left	0.83	0.05	0.74	0.02	0.021	Sig.
Attribution time	Right	72.7	2.2	70. 1	1.8	0.33	Non sig.
	Left	74.6	4.3	69.4	1.9	0.52	Non sig.
Weighted time	Right	27.3	2.2	29.9	1.8	0.041	Sig.
	Left	25.4	4.3	30.6	1.9	0.02	Sig.

Table (3). Shows the mean, the standard deviations and the value of t calculated between the pre-test of skill performance in the technical gymnastics of the control group

Skills	Pretest		Posttest		Calculated (t) value*	Type of significance
	Mean	SD	Mean	SD		
Diving on the ground movements	1.75	0.790	5.30	0.78	11.43	Non sig.
Arab jump on the ground movements	1.57	0.790	5.82	2.00	2.07	Non sig.

*The value of (t) tabular (2.04) at the degree of freedom (14) and the level of significance (0.05).

Table (4).Shows the mean, the standard deviations and the value of (t) calculated between the pre- and post-test of skill performance in the technical gymnastics of the experimental group

Skills	Pretest		Posttest		Calculated (t) value*	Type of significance
	Mean	SD	Mean	SD		
Diving on the ground movements	1.6	0.567	6.20	0.65	18.80	Sig.
Arab jump on the ground movements	3.75	0.438	6.71	4.23	2.14	Sig.

*The value of (t) tabular (2.04) at the degree of freedom (14) and the level of significance (0.05).

Table (5). Shows the mean, the standard deviations and the value of (t) calculated between the post-tests of the control and experimental research groups of the researched skills

Skills	Control group		Experimental group		Calculated (t) value*	Type of significance
	Mean	SD	Mean	SD		
Diving on the ground movements	5.30	0.78	6.20	0.65	3.34	Sig.
Arab jump on the ground movements	5.82	2.00	6.71	4.23	5.21	Sig.

*Tabular value (t) (2.14) at freedom degree (28) and significance level (0.05).

Discussions

From Table (5) shows that there are significant statistical differences between the pre and posttests of members of the experimental group in the performance of gymnastic skills under research. The researcher attributes this to the preventive exercises applied to the members of the experimental group, which includes exercises added to educational alternatives, which increased the information received by the learner. As well as the good reception, organization, storage and retrieval, which

increased the speed of acquisition of movement and this is consistent with the views of some (receiving information on the learning environment is optimized by the existence of a psychological atmosphere appropriate to the learning environment). [7]The researchers attributes statistically significant differences between the pre and posttests of the experimental group in learning the skill of diving on the ground movement's device to preventive exercises by increasing the ability to improve the reaction of the glove and the leg joint and overcome the external forces affecting the body in flight such as gravity. And control the position of the body in the case of flight that there is a very light flexion of the hip, and arms are extended to the top and head between the arms and end the flight period when the palms touch the ground and begin the process of rolling on the back.[8]

The researcher attributes the statistically significant differences between the pre and posttests of the experimental group in learning the skill of the Arab jump on the ground movements device to preventive exercises to increase the ability of the student to increase the sense of pushing hands and the performance of the jump from standing and running with emphasis on interest in strong hand push Leave the ground recently.[9]

During what was exposed to the results of the post-test of the two research groups and the existence of differences between the two groups and for the benefit of the experimental group, the researcher attributes this reason to the fact that the experimental group has undergone preventive exercises, which was prepared to teach students the skills of technical gymnastics, as the group was without a goal achieved only in the pre-test and then Preventive exercise and post-test, without a goal you seek to achieve, only requires the student to exert maximum effort in the performance of skills, he pointed out that practice without aim such as moving objects in the vacuum, so we do not know where the starting point and what is the horizon of the end.[10] This to develop to the number of educational units scheduled within the preventive exercises and the number of appropriate repetitions during the educational unit and take advantage of its organization to increase the learning of skills and the application of appropriate exercises to the degree of difficulty in skills and take into account the level of the age of the learner according to the capabilities of learners, in addition to the process of error correction at the first and away from giving exercises Difficult because it may not take into account the individual differences between learners, as the teacher adopted the use of multiple method and various exercises to increase the opportunity to have fun and participate in the performance of motor skills, as this improvement The one who got the control group may be due to the exercise of preventive practice and the content of educational units, the exercises and correct errors, guidance and remodeling skills affect gymnastic learn and improve skill performance and form.[11]

As well as cultivating confidence in the same student by praising some of the movements that have done well, the feedback from the basics of learning and its existence is essential to improve the level of the learner, and believes that feedback shows that it is the strongest variable and controlling performance, and learning has turned out to be There would be no improvement in performance without them, which showed an evolution of the research sample, but it is less difference than the total experimental.[12]

Conclusions

1. There are significant differences between the post tests for both groups (control and experimental) and for the benefit of the experimental group in the electromyography (EMG) indicators of the lower limbs.
2. The emergence of a positive development between the pre and posttests in the skill performance and in favor of the post tests for the two control groups and experimental.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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A Surveillance of Varicella Zostervirus among School-age Children in Al-Diwaniyah Governorate

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Abstract

Background: Chickenpox is the primary infection of *Varicella-Zoster Virus*. It is usually a childhood infection providing life-long immunity. High-risk group of individuals is more likely to develop serious complications. The aim of current study was to find out the prevalence rate of chickenpox infection caused by *Varicella-Zoster Virus*among school-age children in Al-Diwaniyah Governorate.

Method: A total of 4545 children with an age range of 6 to 10 years were enrolled and data about those children obtained form 10 primary schools in Al-Diwaniyah governorate in the Mid-Euphrates region of Iraq. Informationabout age, gender and residency about each child were introduced into an excel spread sheet.Skin crusted lesion was taken for purpose of analysis.

Results: Infection documented in 800 out of 4545 children making the prevalence rate (17.6 %). No significant difference was obtained of VZV infection with respect to age and gender. The mean age of the 43 children selected was 8.44 ±1.65 years and the age range was 6 – 10 years. The study sample included 23 male children (53.5 %) and 20 female children (46.5 %). The slight difference in male proportion from that of female proportion was statistically insignificant ($P = 0.67$).

Conclusion: The most prevalent VZV genotype in Diwanyia governorate was B genetic subtype (wild type) than others. So, it is recommended to give an attention to this genotype in the further studies.

Keywords: *Varicella-Zoster virus, school-age children, chickenpox, genotype.*

Introduction

Varicella zoster virus (VZV) causes a primary infection known as varicella (chicken pox). The virus then migrates from the skin lesions *via* nerve axons and, probably also by viraemic spread, to spinal and cranial sensory ganglia where it becomes dormant. Later in life, in some individuals the virus is reactivated (usually within a single ganglion) to cause a secondary infection known as herpes zoster (HZ; shingles). Individuals with HZ can transmit VZV to their seronegative contacts, who may develop varicella, but not HZ. Thehousehold transmission rate of HZ (to cause varicella) is 15%, making it significantly less contagious than varicella but nevertheless of relevance to at-risk contacts [(1)].

The estimated average overall incidence of HZ is about 3.4–4.82 per 1000 person years which increases to more than 11 per 1000 person years in those aged at least 80 years. HZ-associated mortality is rare, with reported yearly incidence ranging from 0 to 0.47 per 100,000 persons, and the majority of deaths occur in those aged at least 60 years[(2)].

Varicella zoster virus (VZV), which is a human alphaherpesvirus of the genus *Varicellovirus*, causes

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varicella (also known as chickenpox) and zoster (also known as shingles) [3].

The primary infection with VZV is varicella, commonly known as chickenpox. Varicella is highly contagious; it is most commonly seen in children under the age of 10 years in countries where live attenuated varicella vaccine is not routinely administered[4].

The infants of women with varicella in the first 20 weeks of pregnancy are at about 2% risk of developing the congenital varicella syndrome. These infants often have a variety of severe abnormalities of their brain, eyes, extremities and skin and most of them succumb in infancy or early childhood. They frequently experience recurrent VZV reactivation and may have multiple cases of clinical zoster. Fortunately, the syndrome is unusual in that only about 2% of women who develop varicella in pregnancy give birth to an infant with the congenital varicella syndrome [1].

The aim of current study was to find the occurrence of VZV in primary school children in Al-Diwaniyahgovernorate.

Materials and Method

Out of the many primary schools in Al-Diwaniyah governorate, 10 schools were randomly selectedincluding rural and urban areas. A total of 4545 children were enrolled with an age range of 6 to 10 years, 800 of them were diagnosed clinically to have VZV infection, then information about age, gender and residency about each child were introduced into an excel spread sheet.Skin crusted lesion was taken for purpose of analysis. The samples of crusted lesions were obtained by crust lever then transferred into a tube (Texwipe'sAbsorbond® Swab) which is made of polyester (hydroentangled) nonwoven material. Then, samples transferred into freeze at -20°C. PCR technique was performed for direct detection of *Varicella Zoster Virus* (VZV) based on amplification of major capsid protein gene in VZV from skin crusted lesions samples. This technique was done according to company instructions (Table 1).

Table (1) The PCR detection primers with their sequences and amplicon size

Primers	Sequence (5'-3')		Amplicon
Mcp	F	TGACAAATGCTAGGCGGGTT	520bp
	R	CGACGCAACGATTCGGTAAC	

Viral DNA was extracted from transport media of skin lesions scrap samples by using Genomic DNA mini kit extraction tissue, and done according to company instructions. PCR master mixwas prepared by using (AccuPower PCR PreMix Kit) and this master mix done according to company instructions.

After that, these PCR master mix components, mentioned above, were placed in standard AccuPower PCR PreMix Kit thatwas containing all other components needed for PCR reaction. Then, all the PCR tubes transferred into Exispin vortex centrifuge at 3000rpm for 3 minutes, then placed in PCR Thermocycler (Mygene. Bioneer. Korea).

PCR thermocycler conditions were done by using conventional PCR thermocycler system. The PCR products were analyzed by agarose gel electrophoresis.

Statistical Analysis: Data were summarized, analysed and presented using two software programs;the statistical package for social sciences (SPSS version 23) and Microsoft Office Excel 2010. The level of significance was considered significant at $P< 0.05$ and highly significant at $P< 0.01$.

Results and Discussion

In the present study, infection was documented clinically in 800 out of 4545 children making the prevalence rate (17.6 %) as shown in Figure (1).

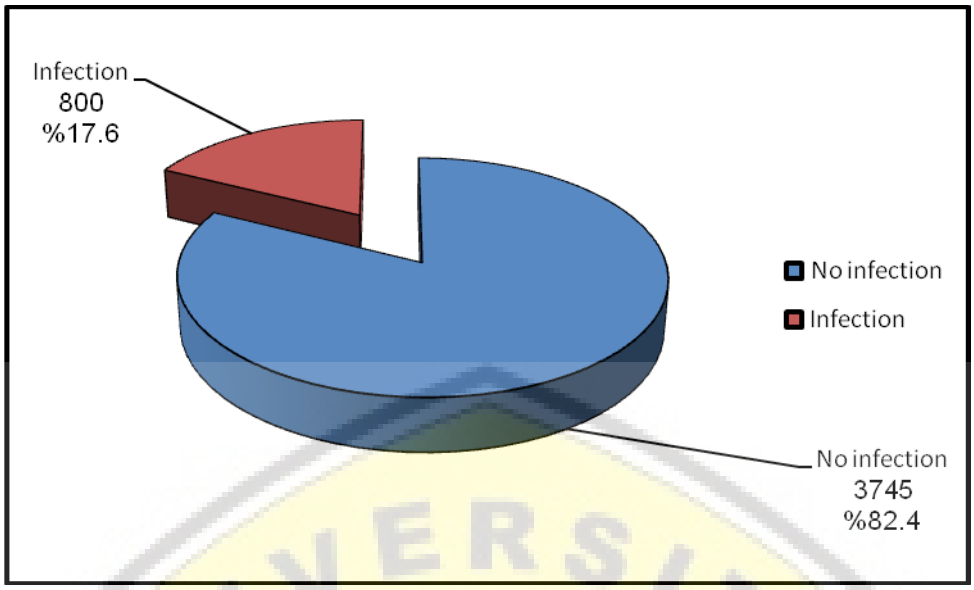

Figure 1: Pie chart showing the prevalence rate of Varicella Zoster Virus (VZV) infection among children in 10 primary schools in Al-Diwaniyah province (Mid-Euphrates region, Iraq)

Schools were arranged according to prevalence rate so that the highest rate (27.2%) was seen in school number one and the lowest prevalence rate (6.2%) was observed in school number 10. So far, the prevalence rate of VZV infection rate ranged from 6.2 % to 27.2 %.

According to residency, the prevalence rate of VZV infection in urban areas was 16.5 % and in rural areas was 18.1%. Despite some differences in the prevalence rate between rural and urban areas, the difference was statistically not significant ($P = 0.207$; Table 2).

Table (2) Association between child residency and prevalence rate VZV infection

Infection with VZV according to clinical findings	Total n = 4545	Urban n = 1299	Rural n = 3246	χ^2	P *
Positive, *n* (%)	800(17.6 %)	214(16.5 %)	586(18.1 %)	1.594	0.207 NS
Negative, *n* (%)	3745(82.4 %)	1085(83.5 %)	2660(81.9 %)		

n: number of cases; *: according to Chi-squared test; NS: not significant at $P \leq 0.05$

According to gender, the prevalence rate of VZV infection in male children was 17.4 % and that of female gender was 18.0 %. Despite some differences in the prevalence rate between male and female children, the difference was statistically not significant ($P = 0.600$; Table 3).

Table 3: Association between child gender and prevalence rate VZV infection

Infection with VZV according to clinical findings	Total n = 4545	Male n = 2787	Female n = 1758	χ^2	P *
Positive, *n* (%)	800(17.6 %)	484(17.4 %)	316(18.0 %)	0.275	0.600 NS
Negative, *n* (%)	3745(82.4 %)	2303(82.6 %)	1442(82.0 %)		

n: number of cases; *: according to Chi-squared test; NS: not significant at $P \leq 0.05$

Out of 800 children with clinical manifestations of VZV infection, 43 were selected normally for the purpose of molecular diagnosis and identifying genetic strains. Conventional PCR method (Figure 2) showed that all the 43 children were positive for VZV. PCR product analysis for major capsid protein (*mcp*) gene in *varicella-zoster virus*

Figure 2: Agarose gel electrophoresis image that showed PCR product analysis for major capsid protein (mcp) gene in varicella-zoster virus. M (Marker ladder 2000-100bp), Lanes (1-10) some positive varicella-zoster virus isolates at 520bp PCR product size.

The mean age of the 43 children selected for molecular study was 8.44 ±1.65 years and the age range was 6–11 years. Also, the distribution of children according to one-year age interval was also shown in Figure (3).

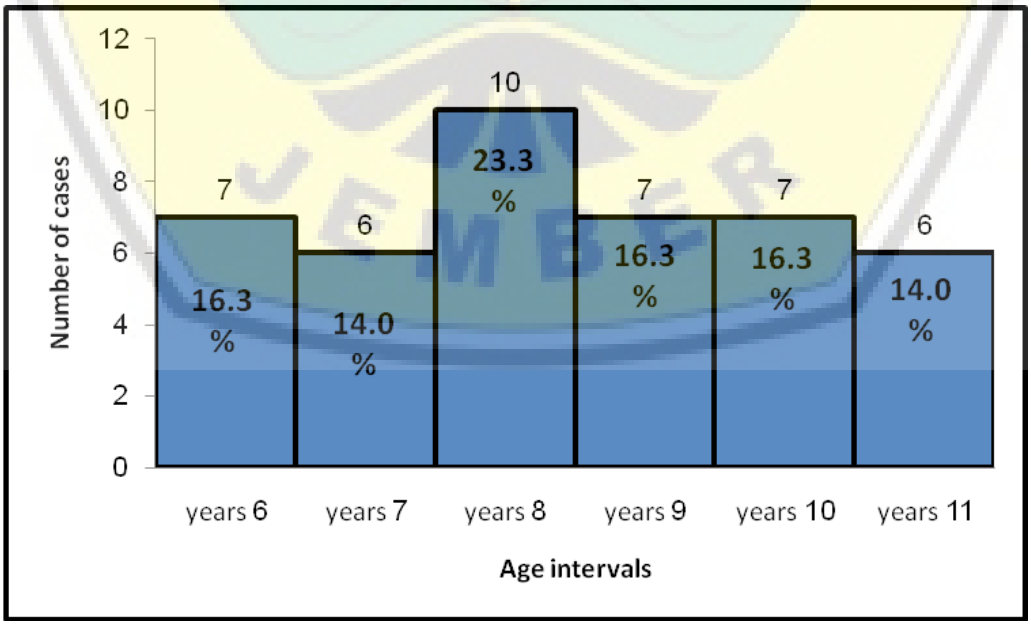

Figure 3: Histogram showing the distributionof children infected with VZV according to one-year age intervals.

Varicella-zoster virus (VZV) is a pathogenic human alpha-herpesvirus that causes chickenpox (varicella) as a primary infection, which usually occurs in children in locales where vaccination is not practiced [5]. Following the primary infection, this neurotropic virus becomes latent, primarily in neurons in peripheral autonomic ganglia throughout the entire neuroaxis including dorsal root ganglia (DRG), cranial nerve ganglia such as trigeminal ganglia (TG), and autonomic ganglia including those in the enteric nervous system [6]. Up to decades later, latent VZV may reactivate, either spontaneously or following one or more of a variety of triggering factors to cause herpes zoster (shingles), which usually appears as a painful or pruritic cutaneous vesicular eruption that occurs in a characteristic dermatomal distribution [1]. This viral reactivation becomes more frequent with increased age of the human host, because of diminished cell-mediated immunity to the virus in such individuals[7]. Other specific triggers for viral reactivation include immunosuppression from disease or drugs, trauma, X-ray irradiation, infection, and malignancy [1]. While the main and most important complication of herpes zoster is postherpetic neuralgia (PHN), it has been increasingly recognized over the last decade that VZV reactivation causes a variety of acute, subacuteand chronic neurological syndromes, so its clinical manifestations are protean [7]. The reality of subclinical reactivation was demonstrated when it was determined that one-third of astronauts developed reactivation of VZV transiently during space travel. The diagnosis was made by finding VZV DNA in saliva; the astronauts had no symptoms of zoster and the viral DNA disappeared within a few weeks after return to Earth [8]. Importantly, it is very rare to isolate infectious VZV from saliva of patients with active or subclinical VZV infections [9]. Since the introduction of widespread childhood varicella vaccination, no impact has been observed on the incidence or age distribution of HZ. Other studies [10]have reportedan increasing trend in the general population as well as in immune-compromised populations, but this trend preceded the implementation of childhood varicella vaccination (Long-term surveillance will be necessary to establish if there will be an increased incidence of HZ [11]. Further analysis of viruses from around the world confirmed that the *Bgl*1-positive genotype was present in 100% of 100 viruses collected from different countries in Africa, East Asiaand the Indian subcontinent, but accounted for <20% of viruses collected in Europe, the United States and other countries inhabited by Europeans.A prospective study of >400 patients presenting with clinical zoster allowed us to type VZV from 200 white British-born subjects aged 5–98 years[12].

Conclusion: The most prevalent VZV genotype in Diwanyia governorate was B genetic subtype (wild type) than others. So, it is recommended to give an attention to this genotype in the further studies.

Ethical Clearance: The research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: Self-funding.

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Molecular Analysis of Varicella Zoster Virus among School-age children in Al-Diwaniyah Governorate

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Abstract

Background: Varicella-Zoster virus (VZV) is one of the human herpes viruses (HHVs); its official name known as (Human Herpes Virus -3) HHV-3, a member of DNA-containing Herpesviridae family. VZV causes varicella (chickenpox) as a primary infection and herpes zoster (HZ) after the reactivation of a latent VZV. The aim of the present study was to figure out the genetic strains of *Varicella Zoster Virus* (VZV) that are common in the Middle district region of Iraq.

Method: A total of 43 samples selected randomly for molecular diagnosis and identifying genetic strains in laboratory. Conventional PCRshowed that all the 43 children were positive for VZV.

Results: Three single nucleotide polymorphism (SNP) alleles were estimated and these were ORF34, ORF54 and ORF62. All the cases were positive for ORF34 (100.0 %) and the number of cases that were positive for ORF54 were 31 out 43 (72.1 %), whereasnone of the cases positive for ORF62 (0.0%). Accordingly, virus genotype strains were identified. Cases positive for ORF34 and ORF54 SNPs were considered genotype B, whereas cases positive for ORF34 only were labeled as genotype A. However, no case was labeled as genotype C (ORF62).

Conclusion: The most prevalent VZV genotype in AL-Diwanyiah region was B (ORF34 & ORF54) genetic subtype (wild type) accounting for 31 out of 43 (72.1 %), whereasthe A genetic subtype accounted for 12 out of 43 (27.9 %). Genotypes A and B were neither correlated significantly to age nor to gender of children.

Keywords: *Varicella-Zoster virus, school-age children, genotyping, PCR. Iraq.*

Introduction

Varicella-Zoster virus (VZV) is one of the human herpes viruses (HHVs); its official name known as (Human Herpes Virus -3) HHV-3, a member of DNA-containing Herpesviridae family. VZV causes varicella (chickenpox) as a primary infection and herpes zoster (HZ) after the reactivation of a latent VZV. Varicella is a childhood illness with highest incidence between 1 and 9 years of age, characterized by fever and a generalized pruritic vesicular rash. Varicella is a worldwide infection more prevalent in temperate climates than tropical onesand often occurs in late winter and spring seasons. Furthermore, varicella is transmitted by respiratory aerosols from infected individuals and by direct contact with skin lesions of individuals affected by VZV.

The VZV genome was originally reported to encode 65 unique viral genes, three of which are located in the duplicated IRS/TRS region[(1)]. Four additional VZV genes have since been identified including ORF0[(2)], ORF9A[(3)], ORF33.5[(4)] and the newly discovered VZV latency-associated transcript (VLT) [(1)]. An under appreciated feature of VZV is that transcription of

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several genes, including ORF0, ORF42/45, ORF50, and VLT, requires the host-splicing machinery to remove introns from pre-mRNA and have also shown evidence of alternative splicing resulting in the synthesis of alternative proteins[5]. It, thus, seems likely that the full transcriptional potential of VZV has yet to be revealed and we predict that the latest technological advances (e.g., full length sequencing of native RNA) will yield further novel discoveries. It is also worth noting that the encoding of additional RNA types, including microRNAs and small non-coding RNAs, is still an area of active study with contrasting results [6]. The aim of present study was toconfirm the identification of major capsid protein gene of Varicella-Zoster virus by using conventional polymerase chain reaction (PCR) and genotyping of Varicella Zoster Virus of ORF34, ORF54 and ORF62 in Chickenpox patients using Restriction Fragment Length Polymorphism (RFLP) Technique.

Materials and Method

Out of the many primary schools in AL-Diwaniyah governorate, 10 schools were randomly selected from rural and urban areas. A total of 4545 children were enrolled with an age range of 6 to 10 years, 800 of them were diagnosed clinically to have VZV infection. In addition, information about age, gender and residency about each child was introduced into an excel spread sheet. After that, 43 children were selected for genetic assessment of the VZV.Skin crusted lesion was taken for purpose of analysis. The samples of crusted lesions obtained by crust lever then transferred into a tube (Texwipe'sAbsorbond® Swab) which is made of polyester (hydroentangled) nonwoven material. Then samples transferred into freeze at -20°C.

Polymerase Chain Reaction (PCR): PCR technique was performed for direct detection of Varicella Zoster Virus (VZV) based on amplification of major capsid protein(mcp) gene (Table 1).

Table (1): PCR detection primers with their sequence and amplicon size

Primers	Sequence (5'-3')		Amplicon
mcp	F	TGACAAATGCTAGGCGGGTT	520bp
	R	CGACGCAACGATTCGGTAAC	

Viral DNA was extracted from transport media of skin lesions scrap samples by using Genomic DNA mini kit extraction tissueand done according to company instructions .

The extracted DNA was checked by using Nanodrop spectrophotometer (THERMO. USA), that check and measurepurity of DNA through reading absorbance in at (260/280nm). PCR master mix was prepared by using (AccuPower PCR PreMix Kit) and this master mix done according to company's instructions.

After that, these PCR master mix components, mentioned above, were placed in standard AccuPower PCR PreMix Kit containing all other components needed for PCR reaction. Then, all PCR tubes were transferred into Exispin vortex centrifuge at 3000rpm for 3 minutesthen placed in PCR Thermocycler (Mygene. Bioneer. Korea).

PCR thermocycler conditions were done by using convential PCR thermocycler system. The PCR products were analyzed by agarose gel electrophoresis and visualized by using UV Transilluminator.

RFLP-PCR Genotyping Technique: RFLP-PCR technique was performed for genotyping positive Varicella Zoster Virus (VZV) in direct PCR. VZV genotyping depends on amplification of ORF54, ORF34 and ORF62(Table 2). RFLP-PCR master mix was prepared by using (AccuPowerPCRPreMix Kit) and this master mix done according to company's instructions.

Table (2): RFLP-PCR genotyping primers with their sequence and amplicon size

Primers	Sequence (5'-3')		Amplicon
ORF54	F	CGTAATGCATAACAGGCCAACAC	-
	R	AAACCTGGCGTCAAACATTACA	
ORF38	F	AAGTTTCAGCCAACGTGCCAATAAA	-
	R	AGACGCGCTTAACGGAAGTAACG	
ORF62	F	TTCCCACCGCGGCACAAACA	-
	R	GGTTGCTGGTGTTGGACGCG	

After that, these PCR master mix components, mentioned in Table (2), were placed in standard AccuPower PCR PreMix Kit .Then, all the PCR tubes were transferred into Exispin vortex centrifuge at 3000rpm for 3 minutes. Then, placed in PCR Thermocycler (Mygene. Korea). PCR thermocycler conditions were done for each gene independent .

RFLP-PCR mix was prepared by using BglI, PstI, and SmaI restriction enzymes for ORF54, ORF34 and ORF62, respectively, and this master mix done independently according to company's instructions.

After that, this master mix was placed in Exispin vortex centrifuge at 3000rpm for 2 minutesthen transferred into incubation at 37°C for overnight. After that, RFLP-PCR product was analyzed by 3% agarose gel electrophoresis method mentioned in PCR product analysis.

Statistical Analysis: Data were summarized, analysed and presented using two software programs; the statistical package of social sciences (SPSS version 23) and Microsoft Office Excel 2010. The level of significance was considered at $P < 0.05$ and highly significant at $P < 0.01$.

Results and Discussion

Molecular and genetic analysis: Three single nucleotide polymorphism (SNP) alleles were estimated. All the cases were positive for ORF34 (100.0 %). The number of cases positive for ORF54 was 31 out 43 (72.1 %), whereasnone of the cases were positive for ORF62 (0.0%) (Figure 1).

Accordingly, virus genotype strains were identified. Cases positive for ORF34 and ORF54 SNPs were considered genotype B, whereas cases positive for ORF34 only were labeled as genotype A (Figure 1).

The correlation between VZV gene SNP alleles with age and gender of children: These correlations were not possible for both ORF34 and ORF62 since ORF34 was positive in all cases and ORF62 was negative in all cases. Therefore, we linked ORF34 only to age and gender of infected children.

There was no significant association between age of child and ORF54 SNP allele frequency ($P = 0.951$; Figure 1). In addition, the association between ORF54 and gender of infected children was non-significant ($P = 0.078$).Genotypes A and B were also correlated significantly neither to age nor to gender of children.

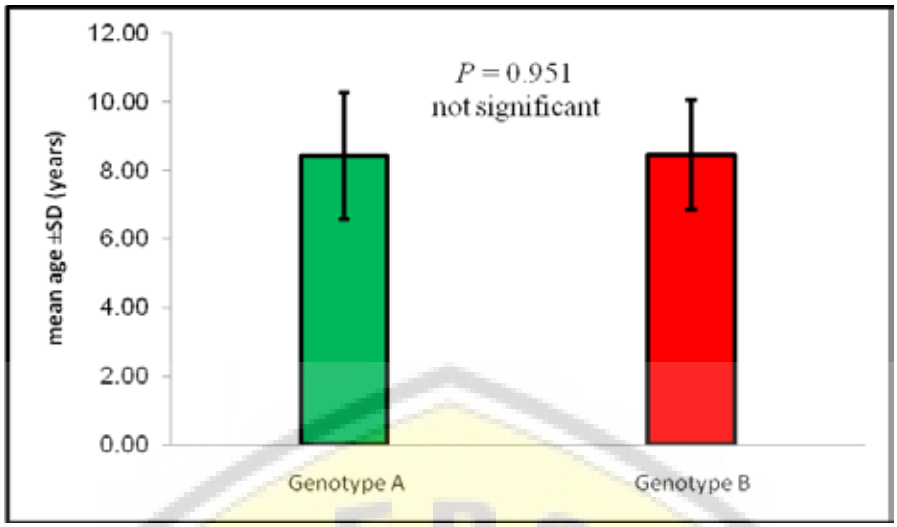

Figure 1: Comparison of mean age according to VZV genotype (A versus B)

PCR product analysis for major capsid protein (mcp) gene in positive varicella-zoster virus isolates at 520bp PCR product size (Figure 2).

Figure 2: Agarose gel electrophoresis image showing PCR product analysis for major capsid protein (mcp) gene in varicella-zoster virus. M: Marker ladder 2000-100bp. Lanes (1-10): some positive varicella-zoster virus isolates at 520bp PCR product size.

Genotyping of Varicella-zoster virus by RFLP-PCR: Figure (3) showed PCR product genotyping analysis for ORF54in varicella-zoster virus. The positive ORF54 varicella-zoster virus isolates gave 497bp PCR product size.

Figure 3: Agarose gel electrophoresis image showing PCR product genotyping analysis for ORF54in varicella-zoster virus. M: Marker ladder 2000-100bp). Lanes (1-10): some positive ORF54varicella-zoster virus isolates at 497bp PCR product size.

Figure (4) showed RFLP-PCR product genotyping analysis for ORF34in varicella-zoster virus. The positive ORF34varicella-zoster virus isolates gave 647bp PCR product size.

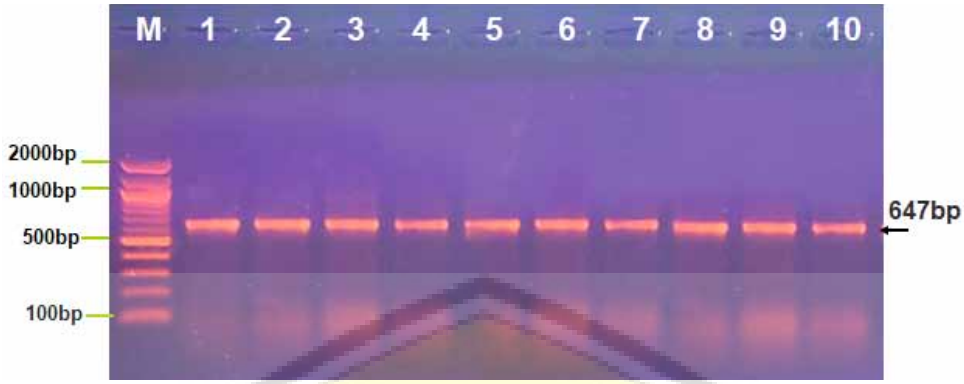

Figure 4: Agarose gel electrophoresis image showing PCR product genotyping analysis for ORF34in varicella-zoster virus. M: Marker ladder 2000-100bp). Lanes (1-10): some positive ORF34 varicella-zoster virus isolates at 647bp PCR product size.

VZV encodes at least five transcriptional regulatory proteins specified by four putative IE genes (ORF4, ORF61, ORF62 and ORF63) and, one L gene, ORF10. All except the ORF61 protein (IE61) are part of the VZV virion[7]. Our understanding of the transcriptional regulation of VZV genes remains incomplete, in part due to the high cell-associated nature of VZV that precludes synchronized infections using cell-free viruses. The dominant transcriptional regulator and possibly only true immediate-early protein encoded by Varicella virus is homologous to VZV IE62 [8,9]. Consistent with this idea, the VZV IE62 major viral trans-activator protein can activate all three kinetic classes of VZV genes in the absence of other viral proteins, including all IE genes (ORF4, ORF61, ORF62, and ORF63), while IE4, IE61 and IE63 either do not or minimally stimulate the ORF61 promoter [10,11]. Host transcription factors, either by themselves or through interactions with viral transcriptional regulatory proteins, also contribute to viral gene expression [11]. VZV virion proteins, delivered into newly infected cells upon entry, are not absolutely required to initiate VZV gene expression, as evidenced by the resulting VZV replication upon transfection of cells with viral DNA [12]. Notably, near identical VZV transcriptomes are detected during productive infection of diverse cell types, including neurons. The latter suggested a prominent role for either commonly expressed cellular transcription factors or viral proteins in coordinating VZV gene expression [13,14,15].

Ethical Clearance: The research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

Funding: Self-funding.

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Repeat the Exercise Effect Tactical Sentences in the Evolution of Some Indicators and Performance Sustainability of Specialized School Handball Players

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Abstract

The importance of research in preparation of repeat exercises and testing Tactical sentences on specialized school players handball in Karbala province to develop some indicators and bear performance, this study aimed to identify the impact of repeat exercises Tactical sentences in the evolution of some indicators and bear Performance specialist school handball players, as well as identify the differences between experimental groups and priority control in the evolution of these variables, we used experimental design with experimental groups and control subjects, researchers identified a community search specialist school in handball players Karbala reconstruction (14-15) of the year (21) a player without goalkeepers, was chosen (16) players randomly sampled randomly search and been equally into two groups and pilot officer with 8 players per group, the researchers found that exercise repeated sentences Tactical has had a positive impact on the evolution of some indicators and carrying players performance specialist school handball, as well as training by repeating sentences Tactical payoff is better than traditional training in the evolution of search variables for the players.

Keywords: *Exercise, Tactical sentences and performance sustainability.*

Introduction

The word Tactical used in many areas of life such as war, politics, games, sports training tactics in General Tactical playing handball. We can say that Tactical are those maneuvers and dispositions and moves by players in defense and attack by match or are basic method and techniques of individual or collective that can be used during the attack and defense with the ball and without it to direct control on the happenings Play and thus win the game. The handball closely and directly (Physiology) the science of great importance in the process of evolution in the field of athletic training, as well as to cardiovascular indicators and developed its direct role sports have big and influential in sports level and therefore will result in this evolution. Good performance contributes to win the game, as the sophistication level of the player, whether physical or skill development or plans related to the adaptation of functional devices for cardiac indicators are the most important of these directories you can infer how evolution as a result of sports training.[1]

The researchers learned about the scientific sources of sports training, as well as by observing and following up the various training processes. The researchers were one of the former players and coaches of the handball. They noticed that there is little use of tactical training in clear sentences for the young age groups. Cardiac indicators, which have a clear impact on the performance of the performance and thus all work to develop all the physical abilities, mobility and skill in the basic handball. Therefore, the researchers considered the use of repetitive exercises in the development of some cardiac effects and performance of the players of the school specialized handball, may this research help coaches in training their players in the future.[2]

Objectives of Research:

1. Identifying the impact of repeat exercises Tactical sentences in the evolution of some indicators and performance sustainability of specialized school handball players.

2. Identify the differences between experimental groups and priority control in the evolution of some indicators and performance sustainability of research sample members.

Research Methodology and Field Procedures

Research Methodology: We used experimental design with experimental groups and control to fit it to the nature of the problem.

Research community and sample: Researchers identified a community search specialist school players handball in Karbala reconstruction (14-15) of the year (21) a player without goalkeepers, was chosen (16) players randomly sampled randomly search and been equally into two groups and pilot officer in reality (8) players each A group, use the first pilot group repeat exercises Tactical sentences, and the second set of exercises for your coach, and was the work of harmonization and equivalence of sample members search for both groups.

Method, tools and devices used in research:

- Tests and measurements.
- The note.
- Whistle type (FOX) number (2).
- Handball (12) a stake in number (12) measuring tape.
- My echo type SIEMENS-ACUSON SC2000 stopwatch type (SEWAN) number (3). Calculator HP LENOVO type number (1).

Procedures for field research:

Characterization tests:

First test, measure cardiovascular indicators:[3]

Objective of the test: measurement of cardiac indicators.

Devices and instruments: Echo device, medical cotton, gel material.

Performance description: These measurements were performed using an ultrasound scanner (Echocardiogram) by a specialist doctor for this purpose.

Test Two, Performance endurance test:[4]

Purpose of the test: carrying the defensive and offensive performance:

The tools used: the number of (12) - legal hand balls number (6) - stopwatch number (2).

Performance mode: The player stands on the line (6 m), and when giving the starting signal, the defensive movements between the plastic cones between the line (6 m) and line (9 m) three times, and then proceed to a flash attack in the other half of the stadium, The previous performance between the line (6 m) and the line (9 m), and then take a handball placed on the line (6 m) and lead the pitcher of the ball from the rapid running up to the line (9 m) in the other half of the pitch to score from outside the goal and performance for two consecutive cycles non-stop .

Registration: Calculates the performance time from the moment the start signal to the moment of leaving the ball to the player during the correction end of the second session.

Pilot Study: The researchers conducted their exploratory experiment on Thursday and Friday, 20-21/12/2018 on a sample selected from the research community of (6) players.

Pre Test: The pre-test of the research sample was conducted on Saturday and Sunday (29-30/12/2018) on the gym and the Echo laboratory.

The Main Experience: After the completion of the pre tests, the researchers introduced the exercises by repeating the tactical sentences they prepared, in the training program dedicated to the research sample at the beginning of the main section of the training unit and then the main part is completed together with the same exercises of the coach, and will be as follows:

1. The date of starting the exercise on Thursday (3/1/2019).
2. Exercises were applied in the special numbers stage.
3. The duration of the experiment (8) weeks distributed over (24) training units at the rate of three units per week.
4. A special trainer has been assigned to each group who are given special exercises scheduled for them at the beginning of the main section and the gymnasium on Saturdays, Mondays and Thursdays. At the same time, after the completion of the special exercises, they are merged again to complete the training unit under the supervision of their instructor.

5. The researchers determined the intensity of exercise between (80-90%).
6. The researchers used high-intensity infant training.
7. The date of the end of the experiment on Monday, 25/2/2019.

Post-test: The post-test was conducted on Thursday and Friday (28/2-1/3/2019) on the gym and the Echo laboratory, taking into account the same conditions and conditions in the pre test as possible.

Results

View and analyze the results and discuss them: This section contains the presentation, analysis and discussion of the results obtained from the research sample, after the data were processed statistically.

Table (1). Shows the mean, standard deviations, the calculated value (t), and the level and type of significance of the control group in the pre and post tests

Tests	Units	Pretest		Posttest		(t) calculated	Level of significance	Type of significance
		Mean	SD	Mean	SD			
Volume of cardiac output	Liter	5.15	0.05	5.30	0.04	8.302	0.000	Sig.
Heart rate	Blow/Min	74.50	1.60	73.88	1.25	3.416	0.011	Sig.
Single-shot blood measurement	Cm^3	73.88	2.36	75.25	1.67	4.245	0.004	Sig.
Endurance performance	A second	55.45	0.83	50.62	0.53	16.381	0.000	Sig.

The results showed that the computational values of the variables (cardiac size and single-stroke blood measurement) were higher in the post-test than in the pre-test. There was a significant difference between the tests and for the post-test, the higher the mean, the better.

As for the variables (heart rate and performance tolerance), the value of the arithmetic mean was smaller in the post-pre test. There was a significant change between the two tests and for the post-benefit, since these variables have an inverse value the lower the arithmetic mean the better the level, The mean levels were less than the significance level (0.05) for all the variables of the research, which indicates the existence of significant differences between the two tests.[5]

Table (2). Shows the computational, standard deviations, the calculated value (t), and the level and type of significance of the experimental group in the pre and post tests

Tests	Units	Pretest		Posttest		(t) calculated	Level of significance	Type of significance
		Mean	SD	Mean	SD			
Volume of cardiac output	Liter	5.15	0.04	5.45	0.04	14.341	0.000	Sig.
Heart rate	Blow/Min	74.50	1.41	69.88	1.25	10.044	0.000	Sig.
Single-shot blood measurement	Cm^3	74.25	1.28	79.88	1.13	8.275	0.000	Sig.
Endurance performance	A second	55.28	0.90	47.88	1.60	9.299	0.000	Sig.

The results showed that the computational values of the variables (cardiac size and single-stroke blood measurement) were higher in the post-test than in the pre-test. There was a significant difference between the tests and for the post-test, the higher the mean, the better.

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Discuss the results of the tests in the pre and post measurement of the two research groups: The researchers attributed the cause of the development to the members of the two groups that the physical effort that is exposed to the members of this group, which constitutes the daily training load and various goals, but directly affects the development of performance of players and thus affect the adaptation of these devices to enhance the development of their performance, Many studies have unanimously agreed that training in an organized manner works to develop physical variables.[7]

And the training is organized by adopting the correct training rules and in accordance with the level of the technical player and the age of training and time is working to develop well and regularly. "The number of repetitions of the performance of skill and plan accurately in each exercise, as well as repeated in the following training units and fit this number with the Sunni stages for players and their level of performance".[8]The researchers also attribute the evolution of all cardiac functions to the continuous training process, as training has a clear effect on the rate of heart rate at rest.

Some studies have confirmed that continuous and regular training leads to a slowdown in heart rate and resting time for players. Other studies added that "exercise improves the functional capacity of the heart and develops the adequacy of oxygen transmission, and the process of oxygen transmission here is the result of the volume of blood paid in each blow, and through which the blood reaches the muscles to do its work to the fullest."[9]

Results

Table (3). Showing significant differences between the results of tests for measuring the dimensional control and experimental groups

Tests	Units	Control Group		Experimental Group		(t) value	Level of significance	Morality of differences
		Mean	SD	Mean	SD			
Volume of cardiac output	Liter	5.30	0.04	5.45	0.04	7.111	0.000	Sig.
Heart rate	Blow/Min	73.88	1.25	69.88	1.25	6.418	0.000	Sig.
Single-shot blood measurement	Cm 3	75.25	1.67	79.88	1.13	6.497	0.000	Sig.
Endurance performance	A second	50.62	0.53	47.88	1.60	4.610	0.000	Sig.

When reviewing the results of the tests, it is clear that there are significant differences between the measurement of the post tests and the interest of the experimental group since the values of the level of significance were less than the level of error (0.05) and this is consistent with the second hypothesis of the research.

Discussing the results of measuring the post tests of the two research groups: The researchers attribute the reason for the superiority of the experimental group on the control group to the effect of repetitive and continuous tactical exercises, which was carried out by this group, which led to its impact on the physical, emotional and mental, as these positions engines to create a state of positive thinking, The behavior of the player and increase self-confidence and the ability to control his actions in situations that provoke reactions, and this is confirmed that "the control of the emotions and emotions of man and control indicates emotional maturity".[10]

The researchers also attributed the development of the experimental group to the use of new exercises that were not trained by the players, which led to the development of the abilities of the players, and this was

confirmed that the level of sports performance increases quickly when the implementation of new exercises unfamiliar to the athlete. In this context, the trainers of the training process must use new training and strategies to keep abreast of the great development that the world is witnessing in this game, including the tactical training of the young age groups, in order to perform the required role in the games, whether physically, skillfully, psychologically or tactically."[10] The use of exercises that are consistent with the nature of their performance with the general shape of the performance of specialized skills leads to better results in the acquisition of physical variables.[11]

The closer the exercise circumstance is to the match, the more useful and effective the player will achieve the goals of reaching the level of the match," said Mufti Ibrahim.

In addition, this type of exercise is based on the utilization of physical and skill gains within a single performance, which is very similar to the requirements of the effective motor performance in the games. Thus, these exercises significantly improve the efficiency of the work of the functional apparatus, Good that the physical performance skill (composite) improves the work of the heart and circulation and internal organs of the body as a whole, as the development of muscles in a consistent way and paves the way to acquire skills and movements and the ability to economize in physical effort and applies to a large extent on the sport yen and youth.[12]

The repetition of the tactical exercises imposed the reality that the performance of the performance in the performance of special endurance and this helped improve the efficiency of the heart and functions, and Sharkey points out that the endurance exercises and endurance, especially in the loads of less than the maximum, lead to reduced heart rate in the case of rest, And to increase the size of the heart attack. An increase in the size of the heart leads to increased contractile strength, resulting in an increase in blood volume from the heart during contractions.

Conclusions

1. Exercise repetition of the tactical sentences had a positive impact in the development of some heart indicators and performance of the players of the school specialized handball.
2. Training repetition of tactical sentences better than the usual training practiced by the coach in the development of some heart indicators and performance of the players of the school specialized handball.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

Conflict of Interest: The authors declare that they have no conflict of interest.

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Molecular and Biochemical Characterizations of *Staphylococcusaureus* ß-Lactamase Recovered from Iraqi Patients with UTI

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Abstract

A total of 126 samples (wound, urine) were collected and only sixty one isolates were detected phenotypicallyas *Staphylococcusaureus.* All *Staphylococcusaureus* isolates were screened for their ability to produce β-lactamase. The best isolates for produce β-lactamase was RU57 isolated from urine with activity 134.5 U/ml. Molecular identification for *bla Z* was donefor the highest 12activities of the β-lactamaseand only 10 isolates were found to be chromosomal origin *bla Z* andothersplasmid origin.β-lactamase was partially purified by ion exchange chromatography in CM cellulose column, the Overall purification fold was 1.65 with 52% yield for wash step and 4.8 with 26% yield for elution step. The maximum enzyme activity was recorded at pH 7.0 and 37° C, while the maximum enzyme stability was recorded at pH range from 6-7.5 and temperature degree ranged from 25-40°C. A phylogenetic tree was used To elucidate the diversity and evolutionary of chromosomally-located *blaZ*, of *S.s aureus* isolates RU57 from Iraqi patients with others from different country and the results showed that *blaZ* was have similarity 100% with China, France, South Korea,United Kingdom, and Brazil. The sequence of *blaZ*was differsfrom *blaZ* of Australia, Japan and USA. Today therapeutic control of ß-lactamase-producing bacteria has been a major clinical problem.

Keywords: *ß-lactamase, bla Z, Staphylococcus .aureus, polymerase chain reaction, resistance genes.*

Introduction

Staphylococcus belongs to the low GC content division of Gram positive bacteria. Three species, *S. aureus*, *S. epidermidis*, and *S.saprophyticus*, are recognized as both a commensal bacterium and a opportunistic human pathogen on host skin [(1)]. Multiple studies have now documented the prevalence, prognosis, and outcome of *Staphylococcus aureus* bacteremia in industrialized guregions of the world[(2,3)]. Many strains of *Staphylococci* are secrete a group of enzymes and cytotoxins such as nucleases, proteases, lipases, hyaluronidase, and collagenase [(4)]. The main function of these enzymes may be to convert local host tissues into nutrients required for bacterial growth. ß-lactamase and penicillin-binding proteins are enzymes located in the cytoplasmic membrane and responsible for penicillins and cephalosporins resistance [(5)]. Other enzyme such as protease, lipase, and hyaluronidase, that destroy tissue and may aid the spread of infection to other tissues. Coagulase, an enzyme Its contributed to the virulence of bacteria [(6)].The *blaZ* has also been identified as the cause of penicillin resistance among Staphylococci[(7,8)]. Today, *S. aureus* has develop resistant to many commonly used antibiotics. The best-known mechanism of bacterial resistanceis resistance to β-lactam group, such resistance may be chromosomally or plasmid-mediated or may be constitutive or inductive. The aim of this research to identify and characterization of β-lactamase isolated from Iraqi clinical samples at molecular and biochemical levels.

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Materials and Method

Samples Collection: A total of 126 samples (wound and urine) were collected, from the Ear-Nose-Throat

(ENT) consultant Unit at Al-Kindy teaching Hospital and Al-Yarmouk Teaching Hospital in Baghdad city from February to March, 2017. The samples obtained from subjects of various ages, gender and infection sites, were transferred to the laboratory for analysis.

Diagnosis of Staphylococcus aureus:

Microscopic examination[9]: All isolates were subjected to Gram staining technique and only Gram (+ve) coccus cells grouped mainly in clusters were considered as belonging to *Staphylococcus sp.*

Morphological Examination[10]: Each of the suspected bacterial isolates was streaked on mannitol salt agar and incubated at 37°C for 24 h. After incubation. The colour and texture of the colonies are observed.

Biochemical tests[11]: Standard microbiological procedures were used for the identification of *S. aureus*.

Microbiologic Procedure: In vitro antimicrobial susceptibility testing was done by disc diffusion method using the penicillin Gand interpreted according to the Clinical and Laboratory Standards Institute (CLSI 2008)[12]

PCR amplification for Staphylococcus aureus: DNA was extracted as previously described [13]. Polymerase chain reaction for detection of genes *bla Z* was carried out using the following primers: 5'CAAAGATGATATAGTTGCTTATTCTCC-3',5'TGCTTGACCACTTTTATCAGC - 3'respectively. Amplification cycles for *bla Z* was done according to Coelho et al. [14] considering 35 cycles of 94ºC for 30s, 56ºC for 30 sec, 72ºC for 1 min. with a final extension at 72ºC for 7 mins. The amplicons were evaluated by agarose gel electrophoresis followed by staining in ethidium bromide (0.5mg/mL), visualized on UV transilluminator and documented by the program Quanti One (BioRad) using molecular weight markers of 1000 bp.

Sequence Homology and Phylogenetic Analysis: The Sequencing of PCR product was performed by national instrumentation center for environmental management using BLAST system.Phylogenetic tree was constructed using the program Neighbor-Joining in the same software.

Protein determination[15]: Protein concentration was determined by Bradford using BSAas standard.

Determination of β-Lactamase activity:

Quantitative determining of ß-Lactamase activity: β-Lactamase was detected by measuring the enzyme activity according to a micro-iodometric assay at 620 nm[16].

International Unit (IU): the amount of enzyme needed to hydrolyzed 1µmole of penicillin G per minute at 25ºC and PH 7.0.

$$\text{Enzyme activity} = \text{U/ml} = \frac{\Delta E \times 121.9}{\Delta t \times 1}$$

Enzyme purification: The purification was carried out at 4°C on the cell lysate according to Hedberget al. (1995).

Dialysis of crude enzyme: The crude enzyme put in dialysis tube with 10000MW cutoff against, after dialysis, the enzyme after concentrated by sucrose use for purification by ion exchange chromatography.

Purification by ion exchange chromatography: The dialyzed β-Lactamase was further purified by ion exchange chromatography technique using CMC-Cellulose column (1.57X15 cm) which prepared according to[17].

Characterization of purified β-lactamase.

Determination of the optimal temperature for β-lactamase activity and stability: ß-lactamase activity was determined after incubation of substrate at different temperatures (25,30,37,40,45, 50ºC) for 30min. for determine enzyme stability the enzyme was transferred into ice bath.

Determination of the optimum pH for β-lactamase activity and stability: This can be achieved by using acetate buffer, phosphate buffer and tris buffer. pH was adjusted in each one, penicillin Gwas added to buffer solution at different pH values(4-9) the activity of β-lactamase was assayed.

Results and Discussion

Total of 61 isolates were identified as *S. aureus* depended on the morphological features and biochemical test. Only 49 isolates from Urine and wound isolates were positive for production of β-lactamase by inhibition zone for Penicillin Gand edges around the penicillin G disk ((inhibitor standard) and according to disk diffusion method (Oxoid, Basingstoke, England) and as shown in

table (1). The test was defined as negative when thefuzzy edge like a beach and as positive when the edge was sharp like a cliff[18].

Table 1: Highest ten S. aureus isolates of positive β-lactamase

No.	No. Isolates	Inhibition Zone (mm)	Enzyme Activity
1	RW14	23	19.3U/ml
2	RW21	21	80.3U/ml
3	RW 34	20	97.5U/ml
4	RW35	23	70.4U/ml
5	RW36	20	57.5U/ml
6	RU44	19	55.8U/ml
7	RW47	22	61.5U/ml
8	RU51	21	90.2U/ml
9	RU52	22	62.4U/ml
10	RU57	20	134U/ml
11	RU59	21	89.3U/ml
12	RU60	22	4.59U/ml

The β-lactamase positive *S. aureus* isolates recovered from the urine and wound samples were screened for *bla Z*gene. The result was shown the *bla Z* was approximately 421 bp in length. The optimum temperature for amplifying this gene was 56°C. However, a large inhibition halo did not rule out the presence of the *blaZ* gene, as also noted by Feghaly[19]. This result was agreed with Ferreira[20] how mentioned that the *bla Z* 421bp in *S.aureus. ATCC 29213.* Other study had shown the PCR product of the *blaZ* geneisolated from isolates from Australia was 326 bp[21]. Recently, many studies carried out in different countries describing the characteristics of ß-lactamase gene from different bacteria types,since there results were seem to be geographical variations in the occurrence of different β-lactamase gene, including *E. coli* and,*P. mirabilis*, and *E. Aero* genes[22].As shown in fig. 1, some of the isolates were shown negatives amplicons, indicating that, the *bla Z* genes were not contained in the genomic of these isolates or these isolates may contain other resistance gene but not expressed as reported byJoseph[8].

Figure 1: Agarose gel electrophoresis of the amplified bla Z gene of RU57 on (1%) agarose under UV (1.15 h. and 110 Volts)

Sequence Homology: We performed genome analysis on the *bla Z* gene of different *S. aureus* isolates (3 isolated from wounds and 3 isolated from urine) in comparison with that of *S. aureus* strain by using inverse PCR-based sequencing analysis. The results shown that two genomic structures of *S. aureus* isolated from wounds, was 100% similar to the genomic structure that was found in the chromosomal region encoded to *bla Z* geneand the remaining isolated shown the difference in the *bla Z* gene in one nucleotide (Table 2). The *bla*

Z gene of *S. aureus* of 3 urine samples have shown single nucleotide changes in three analyzed isolates such change known as Missense and lead to change the amino acid which β-lactamase consist from it. Such Type ofamino acid substitution in β-lactamase is considered Trans version because both amino acids are from the same group

Table 2: Sequencing analysis of bla Z gene

Identities	Predicted Effect	Amino Acid Change	Nucleotide Change	Nucleotide	Sample
99%	Missense	Serine > Arginine	AGT > AGG	T > G	57
99%	Missense	Glycine > Valine	GGT > GTT	G > T	
100%	Missense	Serine > Arginine	AGT > AGG	T > G	

Phylogenetic Analysis: The *blaZ* genes encode enzymes of the β-lactamase of Staphylococci. The *blaZ* genes of the *S. aureus* species group formed a separate cluster from the other S. According to the phylogenetic analysis the evolutionary relationship among the group of *S. aureus*. *thebla Z* genes*of RU57*in the tree was occurred on the same line with others bla Z genes isolated from *S.aureus* from China, South Korea, United Kingdom and Brazil.

Partial purification of β-lactamase: Partial purification which was produced by the locally isolated *S.aureus*. R57 isolated was partial purified through purification steps. These include the dialysis of crud and concentration by sucrose and ion exchange chromatography Carboxyl methyl cellulose (CMC Cellulose) as follow: Results indicated in figure (2) showed that there are two peaks appeared in washing step, while two protein peaks appeared by the gradient concentration of sodium chloride. All these four protein peaks were detected by measuring the absorbance at 280 nm. Result showed peak in washed protein after concentration by sucrose 57.2 U/ml, while peaks eluted proteins after concentration by sucrose 36.33 U/ml. The results were shown that there are two forms of enzyme (isozymes) which were appeared through the separation techniques. The purification fold of this experiment was 10.83 and the yield was 64.69%.

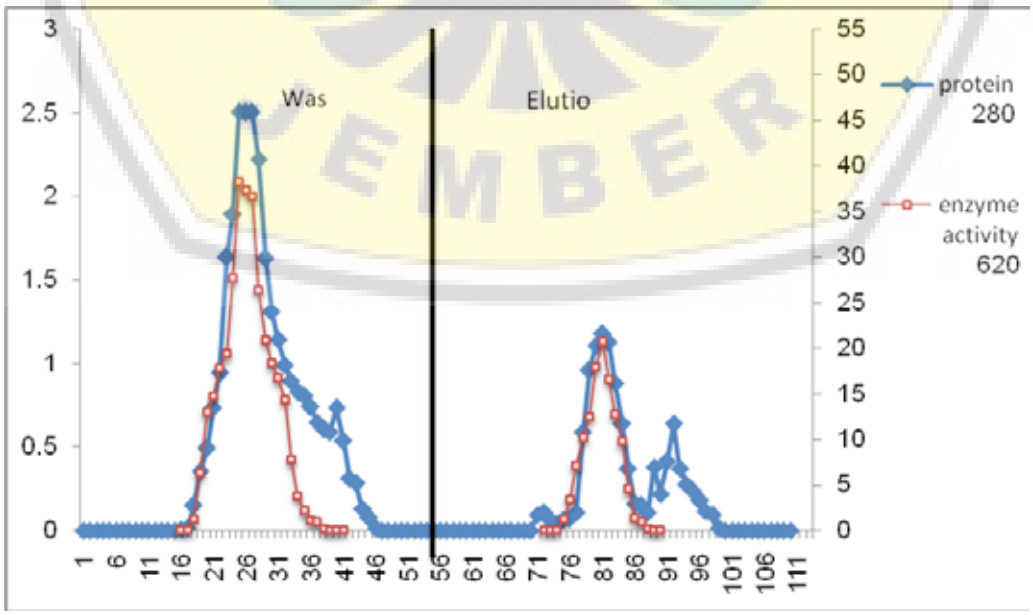

Figure 2: Purification of βlactamase from RU57 by CMC Cellulose

Effect of temperatureand pH on the activity and stability of β-lactamase: The effect of temperature on β-lactamase activity was studied by performing the enzymatic reaction at different temperatures in the range 25 – 50°C. The purified β-lactamase was shown good stability and retained about 100% of its initial activity after incubation for 30 min from range 25-40 °C, and then the activity was decreased with increasing the degree of temperature and lost more than 70% of its activity 40°C, (Fig.3). These results were disagreed with [25] that it was shown the optimum temperature for enzyme activity was found to be 30°C. Other study shown an optimal temperature of β-lactamase isolated from local isolate from asopharyngeal region of healthy individuals from Basra city, at25, 30,and35°C[26]. Results showed that the highest ß-lactamase activity was 4.9 ± 0.17 and at 37 °C. The statistical analysis also illustrated that there was significant difference between the activity and stability at different degrees of temperature ($p<0.01$).

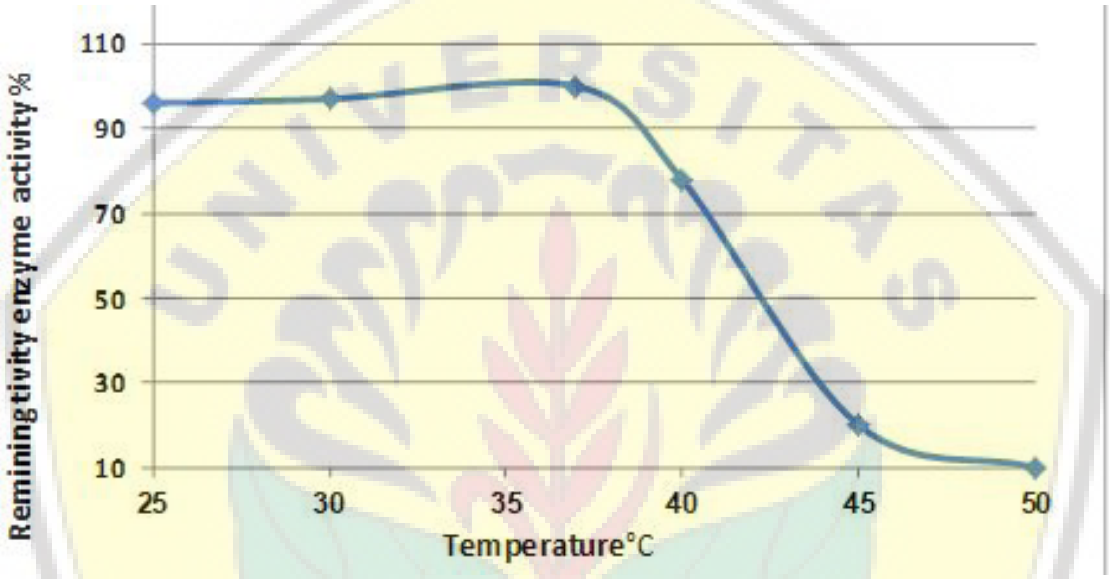

Figure 3: Thermal stability of β-lactamase purified from RU57.

β-lactamase was found to beactivein the pH range 4.0–9.0 at 37°C. The maximum activity was shown 4.3 ± 0.16 and recorded at pH 7.0 (Fig.4A). Any further increase resulted in the loss of β-lactamase activity due to the alteration in the ionization of groups responsible for substrate binding. pHcan have an effect on the ionization state of the acidic or basic amino acid group. Basic amino acids have amine functional groups in their side chains, acidic amino acids have carboxyl functional groups in their side chains. If the state of ionization of amino acids in a protein is altered, then the ionic linkages that help to determine the 3-D shape of the protein can also be altered and lead to a change of protein recognition.At alkalin pH (8, 9) and the low acidity(4,5)of the reaction media would result in the denaturation of the enzyme or decrease in it reaction rates [25,26]. This was consistent with the behavior of other β-lactamase from *S. aureus* isolated from Lebanese Community[26]. However, the enzyme was stable at pH range from 5-7, only 50%and 20% of optimum activity β-lactamase was retainedat pH 8,pH 9 respectively (Fig.4B). The influence of pH on enzyme stability was significantly differentat ($p<0.01$) and these different were related to the effect of pH on the enzyme structure. This leads to the denaturation of enzyme molecular or to change in the ionic state of the active site, as well as it effect on secondary and tertiary enzyme structure which lose the activity.

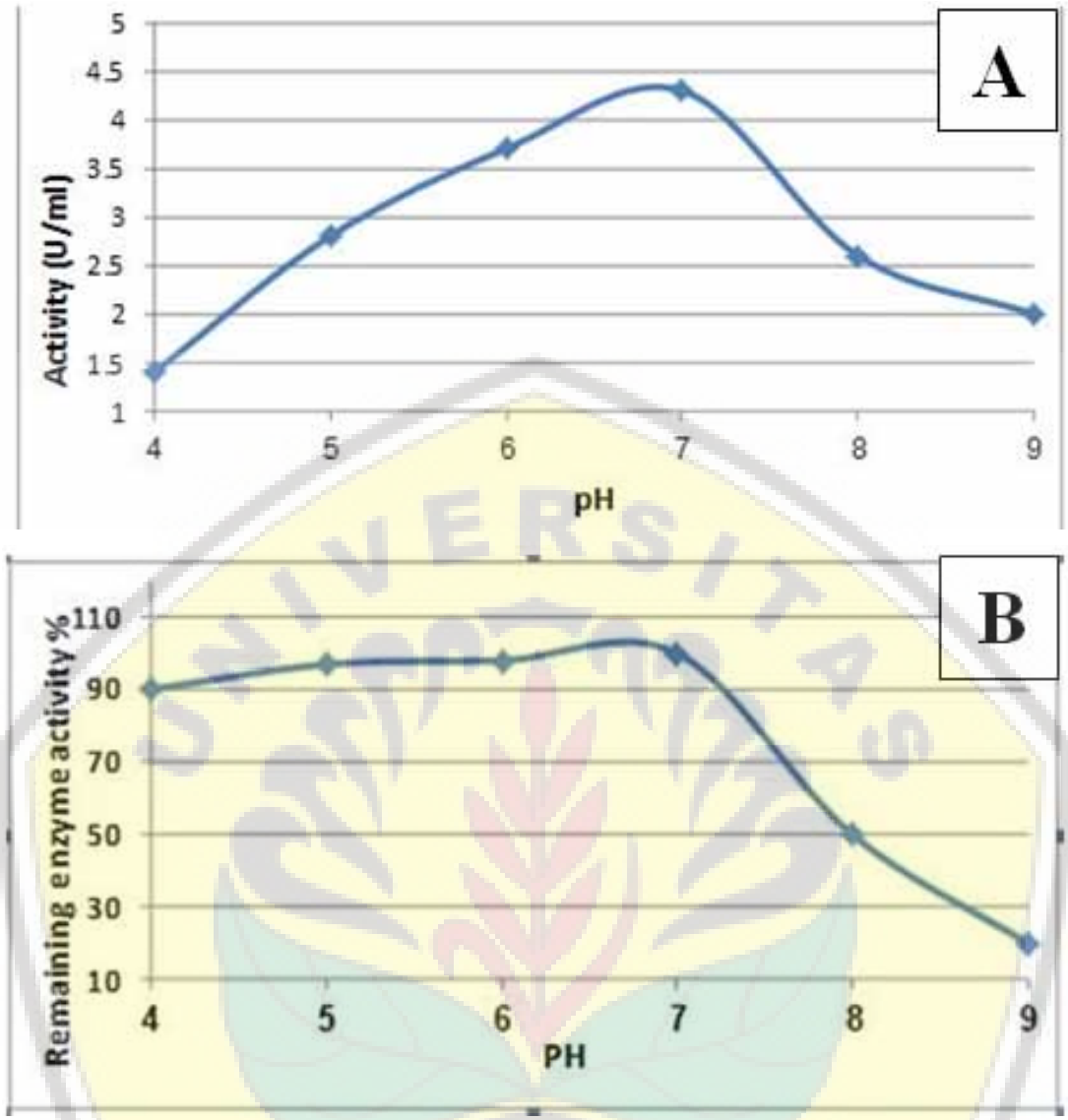

Figure 4: A: Optimum pH for β-lactamase activity purified RU57. B: Stability of purified β-lactamase from RU57

Conclusions

S. aureus isolates are different in their ability to produced β-lactamase. The local isolate RU57 which isolate from urine had the highest β-lactamase activity. The bla Z of β-lactamase which isolated from local *S. aureus* isolates was similar to that found in china, France, South Korea, United Kingdom, Brazil according to sequencing and phylogenetic tree analysisβ-lactamase was partially purified by concentrated using sucrose and ion exchange chromatography. The optimum temperature and pH for β-lactamase activity were 37°C and 7respectively. The optimum temperature and pH for β-lactamase stability were range from 25-40°C and 6-7.5 respectively

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Non-Operative Management of Acute Appendicitis in Al-Hilla Teaching Hospital

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Abstract

A one-year study that had been performed in the Emergency Department of Al-Hilla Teaching Hospital that tries to spot the light on the feasibility of non-operative treatment of acute appendicitis and the pros and cons of this modality of treatment. It has been used and widely-accepted for many decades far appendicular masses but its use is considerably new for other presentations of acute appendicitis.

Keywords: *Hilla; Acute Appendicitis ; Non-Operative Management.*

Introduction

Appendectomy is one of the most commonly performed emergency surgeries as 500,000 appendectomies are performed in the UK each year [(1)] and it has been accepted as the best treatment option for acute appendicitis since 1886[(2)]. Many of the patients that are operated on for acute appendicitis can be spared the risk of surgery and its complications by treating them non-operatively and this was advocated for "appendicular mass" by Ochsner in 1901[(3)]. Some authors indicate that as with other intra-abdominal pathologies eg. salpingitis, diverticulitis and entero-colitis, an infectious etiology and treatment by antibiotics alone can be assigned for acute appendicitis[(4)]. The reluctance to rely on conservative treatment is attributed by many surgeons to the risk of perforation which carries a high mortality rate[(5)] and missing the real diagnosis due to the lack of surgical exploration and pathological examination[(6)]. Complicated acute appendicitis which is defined as perforation, appendicolith, abscess or a suspicion of tumor requires emergency appendectomy except for abscess which is initially treated by drainage and antibiotics[(7)].

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Materials and Method

Seventy seven patients who visited the emergency department of Al-Hilla Teaching Hospital during the period between October 2012 and October 2013 were divided into two groups that were statistically-matched regarding age, sex and clinical features (Table 1). The 1st group was managed non-operatively by using only antibiotics (cefotaxime 1 gm i.v.b.d. and metronidazole 500mg t.d.s. for 2 days followed by cefixime orally 400mg once daily and metronidazole 500mg t.d.s for another 3 days). Proper consent had been taken and after thorough explanation, the patients were offered the choice between the two forms of treatment and they were told of their right to withdraw at any time and have surgery performed. Thirty of the patients chose non-operative treatment and 47 surgeries. The outcome of the two groups (regarding hospital stay, return to normal activities and complications rate) was compared. The recurrence rate following non-operative treatment was also studied in a 30 days follow up period and the patients were told to come to hospital in case of any new event and to call in case of emergency.

Exclusion Criteria were:

1. Patients > 60 years < 18 years.
2. Collection or perforation of appendix on ultrasound.
3. Faecolith.
4. Immuno-compromised and diabetic patients.

The diagnosis of acute appendicitis depended on the Modified Alvarado Score (>7) (Table 2) and abdominal ultrasound examination. All of the patients were admitted to hospital and thoroughly monitored. In case of any failure of response or deterioration, appendectomy was performed.

Statistical analysis was carried out using SPSS version 20. Continuous variables were presented as (Means ± SD). Independent sample t-test was used to compare means between two groups. Categorical variables were presented as frequencies and percentages. Pearson's chi square (X^2) and Fisher-exact tests were used to find the association between categorical variables. A *p*-value of ≤ 0.05 was considered as significant.

Table 1: Demographics

	Non-operative management	Operative group	P value
Mean age in years	10	12	0.46
Female, number (%)	12(39.9)	12(25.5)	0.18
Average duration of pain in hours	13	14	0.52
White blood cell count/ml average	12700	13200	0.33

Table 2: Modified Alvarado Score[8]

Symptoms	Score
Migratory right iliac fossa pain	1
Nausea and vomiting	1
Anorexia	1
Tenderness in right iliac fossa	2
Rebound tenderness	1
Fever	1
Increased white blood cell count	2
Total	**9**

Results

Non-operative management was successful in 93% (n= 28/30), thirty days following the initial presentation. Only two of the 3 failures required appendectomy during the initial presentation and the 3rd presented with recurrent abdominal pain that required an appendectomy 16 days after leaving hospital. None of the 3 had perforation or gangrene of the appendix. The non-operative group had fewer disability days (4 versus 17, P < 0.0001) and had returned to work significantly earlier (three versus five days, P= 0.008).

Compared to surgery group, average hospital- stay length was significantly longer in the non-operative group 38 versus 20 hour (Table 3).

Two (6.7%) developed antibiotics-related gastroenteritis.

Average cost for the non-operative treatment group was 80 USD/patient and 250 USD/patient for the operation group.

Table 3: Outcome after one month of treatment

	Non-operative Management	Operation Group	P value
Hospital stay duration in hours, average (Range)	38(31.0-42.0)	20.0(16-34)	< 0.0001
Return to normal activity in hours average (Range)	30(2.5-6.5)	16.5 (9- 21)	< 0.0001

Discussion

Non-operative management is certainly the preferred option for any pathology because it would spare the patient the risks of surgery. The 1st concern when adopting such treatment for acute appendicitis would be recurrence and failure. The success rate in the current study was 93% which was very encouraging. A Taiwanese study shows a similar recurrence rate of 5.1% after the initial hospital admission and of these, 85.8% managed to recover with another non-operative treatment session(9). Other studies give recurrence rates that range between 5 and 37%[10,11].

The main advantages of non-operative management were the disability days which was a significant (3 vs 17, p< 0.0001)and the fast return to work (3 vs 5 days, p=0.008). Balzarotti and colleagues found higher rate of complications in the urgent appendectomy group and longer hospital stay in the antibiotics group[12].

Another concern was the complications of perforation and gangrene following the adoption of the non-operative management which did not happen in any of the 3 patients which had a recurrence after the initial conservative trial. Stahlfeld and colleagues found no significant difference in the outcome of the patients who underwent surgery before or after 10 hours. Also, Yardeni and colleagues concluded that delaying surgery up to 24 hours did not significantly affect the complication rate [13]. On the other hand some other studies demonstrate reduced morbidity when doing early appendectomy compared with non-operative treatment with or without interval appendectomy[14].

Another issue was missing the real diagnosis after conservative management which might have been cancer or Crohn's disease[15] due to the lack of surgical exploration and pathological examination[6] but depending on the Modified Alvarado Score which has a PPV of 80.7% and negative appendectomy rate of 11.3%[16] and abdominal ultrasound examination which has a high sensitivity rate (86-100%), specificity of (80-100%) and accuracy of (91-93%) [15], this can be highly-reduced. Hospitals with better facilities can also use CT scans and inflammatory markers(C reactive protein has the highest sensitivity rate 100%)[17]. CT scan is more accurate than ultrasound examination for perforated acute appendicitis but is not always available and carries radiation hazards[18].

All of the patients in the surgery group had been treated by the classical open appendectomy method. Some studies state that doing laparoscopic appendectomy would decrease the hospital stay, wound infection and intestinal obstruction[19].

The average cost for the non-operative group was 80 USD/patient and 250USD/patient in the surgery group (keeping in mind the hospital stay and the missed work days) while a study in Europe showed saving of 2545 Euros/patient favoring the non-operative management group[7].

Conclusion

Non-operative treatment of acute appendicitis is more efficient with less disability days and economic but require a bit longer stay at the hospital.

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Therapeutic Method for the Use of Some Psychotropic Substances in Athletes

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Abstract

These days, there are many of these dangers in which the person puts himself in that destroys himself and his health, and leads himself to death. The habits of misconduct and bad behaviors of some players in the use of psychotropic substances take their taxes from the lives of individuals, as they affect the body and lead to the incidence of many serious diseases, including psychiatric diseases and physical diseases, which are dangerous in the increase in recent years spread in the human societies developed from them And the development of both as the increase in the number of players with addiction to psychotropic substances and sedatives and smoking is increasing and is a great loss to society, and that such individuals fall within the productive and public groups in society, and their injury leads to social and psychological condition disorder, which made this case of social, psychological, health and humanitarian problem worthy of study and attention. Hence the importance of the study in the construction of a measure of the therapeutic method of psychologically influential substances among athletes in the field of sports and then help them to quit and reduce their negative impact on them and maintain their physical and psychological health.

Keywords: *athletes; psychotropic substances; Therapeutic.*

Introduction

Genetic factors: Researchers believe that there is a link between addiction of parents and the occurrence of their children as well, and many studies support this view (e.g. genetic theory), but so far there is no conclusive proof and definitive evidence[(1-9)].

1. The personality of the addict: psychologists see that drug abuse may be an alternative to avoid deprivation and frustration, and that the compensatory activity to restore the balance between disability on one hand and achievement and work on the other these psychological characteristics that push the person to the area of dealing in search of balance aimed at identifying Features confirmed by many studies, about the personality of the abusers.
2. Failure to study: The failure in education is one of the most important reasons that support the move of adolescents and young people towards the doors of deviation, the most important drug abuse, because of the psychological effects of young people and the sense of failure and lack of value, especially if accompanied by the pressure of parents, and negative ratings of personality, compared to school failure, which alienates him from the house in search of social support found in the companions may encourage him to engage in activities such as diversion, for example, and presented Mustafa Suif model to explain the relationship between the failure in school and drug abuse. And the explanation of the relationship between academic failure and the use of drugs and others that the failure of the school, and the accompanying frustration, and resentment coming from the family leads to the aversion of the failed student of the educational situation, which leads to the experience of alternative activities to

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relieve the sense of psychological tension, and these activities include skipping school, The commission of perverse activities, or the use of drugs, the abuse of natural drugs in turn increases the failure of the study, so the relationship between the failure of the study, and the use of drugs is in the form of a vicious cycle or movement in a circular track does not stop.

3. Psychiatric and physical diseases: These are conditions in which the patient has to deal with some types of drugs, but repeated use without medical supervision can result in the use of these drugs for a purpose other than to cure, which sign the owner in the focus of abuse. Therefore, it is not possible to determine the existence of a specific personal element that can lead to abuse, but the combination of these characteristics and personal motives can be expected to be in the possession of drugs[10-15].

Thus, the abuse of psychotropic substances, of any kind, is a material of great danger, direct and indirect damage to the human society in general and to athletes in particular and the damage these materials leave on the individual athlete. Therefore, solutions to this problem must be found through the use of some therapeutic method to abuse substances Psychologically Affective.

Methodology

The researcher used the descriptive method of the survey method because it is more appropriate to the nature of the problem and to achieve the research objectives. Thus, the sample of the research was chosen in a deliberate manner, which consisted of (300) players of clubs in the southern region and for individual and team games within the research community. The sample of the research was distributed for the construction and design of the scale and its application to the initial application sample, the construction sample and the application sample. The researcher used the following method to get the data needed: the International Information Network (Internet), personal interviews, Arab and foreign sources

The researcher tried to formulate the paragraphs for the scale, the researcher also tried to take into account the ease and clarity of its content and the difference of individuals in the interpretation and shortness then the number of paragraphs was;[16-20] paragraphs as initial and then the presentation of the paragraphs of the scale on the arbitrators, correcting the paragraphs for the scale, and finished preparing the meter in its final form, when the scale Ready for Application, The researcher conducted the exploratory experiment

The purpose of this experiment is to apply the scale (the measure of therapeutic method for psychotropic substances to athletes) in its final form with a view to analyzing the paragraphs statistically. “This process includes the detection of the level of difficulty of the paragraph and the strength of the discrimination of the paragraph and the effectiveness of alternatives in the test paragraphs”. In order to achieve thisA measure of the therapeutic method for the use of psychotropic substances in athletes was applied to the building sample of (180) players. After the completion of the process of distributing the forms and answering them, each form was checked to verify the answer and the required form.

The distinguishing force of the paragraphs in the statistical analysis of paragraphs was extracted, in light of which, the paragraphs that were able to distinguish between individuals with high scores and low scoreswere found.

After the completion of all the requirements and procedures of the design of the scale, the scale is ready to be applied and consists of [20] paragraphs, where the researcher applied the standard in its final form on the sample of the application (150) players. After analyzing the responses of the research sample, the data was collected in a special form. The researcher used SPSS for statistical information and Excel

Results and Discussion

Showing, analyzing and discussion of the educational method: The table shows that there are significant differences between the responses at the level of (0.01) for the educational method and for the answer (fully agree) in the two paragraphs (7.2) with the value of Ca^2calculated (178.246), (22.908) respectively, and the differences were significant at the level of significance (0.01) and for the answer (agree) in the paragraphs of the sequence (13,9,1) where the value of $Ca^2$was (19.068), (43.899), (63.802) respectively, and the differences were significant at the level of significance (0.05), (21.5) and (251.676) respectively, while the differences were significant at the level of (0.01) and in favor of the answer (do not agree) in paragraphs Tuberculosis (11,10,8,6,4,3), with the value of the calculated Ca^2 (67.787), (56.290), (74.478) (121.556) (76.362), (60.831), respectively.

Table (1): The score (Ca^2 Calculated) shows the responses in the educational method

Paragraphs	Totally Disagree	Disagree	Slightly Disagree	Agree	Totally Agree	Ca^2 Score	Level of significance
I change some of your daily habits.	78	82	63	116	75	19.068	0.001
Stay as far as possible from the places you are used to.	27	38	108	65	176	178.246	0.000
I reward myself for every day without abuse.	31	136	75	83	89	67.787	0.000
Spend money on useful stuff	68	120	114	74	38	56.290	0.000
Better pay the money for the needy	36	50	196	47	85	209.744	0.000
I feel that I sleep more than usual as a result of taking off	72	120	111	90	21	74.478	0.000
I seek to gradually stabilize my psychological mood	50	97	71	95	101	22.908	0.000
I try to walk in open places and breathe pure air	30	163	77	89	55	121.556	0.000
I think a lot about the advantages of taking off	56	56	72	117	113	43.899	0.000
Take-off brings health benefits to me and my surroundings	45	146	93	74	56	76.362	0.000
I smoke and drink alcohol without my father's knowledge	49	137	91	84	53	60.831	0.000
It makes me take off the pleasure of life	37	70	208	68	31	251.676	0.000
Be sure to eat on time	61	80	69	146	58	63.802	0.000

Table (2): The measured score (Ca^2) shows the responses in the psychological method

Paragraphs	Totally Disagree	Disagree	Slightly Disagree	Agree	Totally Agree	Ca^2 Score	Level of significance
Always look for a clean environment	32	43	49	124	166	168.198	0.000
use my free time in my favorite places of entertainment	31	38	50	86	209	262.111	0.000
I try to keep my hands doing something useful.	28	37	57	95	197	228.947	0.000
I am able to cope with the anxiety that sometimes afflicts me	44	72	100	118	80	38.222	0.000
I try to control my nerves in the early days of taking off	48	94	128	76	68	44.019	0.000
Keep myself busy with anything when I have the desire to use drugs	67	109	98	97	43	35.662	0.000
I prefer using of chewing gum or anything else is most of the time	36	47	75	106	150	103.705	0.000
Many patients are encouraged to observe diseases resulting from the abuse of drugs	27	44	50	110	183	198.971	0.000
I care about my mental health	69	48	38	47	212	258.246	0.000
Be quiet	119	81	102	41	71	43.101	0.000
I deal with my friends transparently	64	29	44	70	207	245.686	0.000

The table shows that there are significant differences between the responses at the level of (0.01) for the psychological method and for the answer (fully agree) in the paragraphs (24, 22, 21, 20, 16, 15, 14) with the value of Ca^2equals (168.198), (262.111), (228.947), (103.705) (198.971), (258.246) and (245.686) respectively. The differences were significant at the level of (0.01) and for the answer (agreed) in the sequence (17) the difference was significant at the level of significance of (0.01) and in favor of the answer (somewhat agree) in paragraph (18). The calculated value of Ca^2 was (44,019) and (43.101) respectively, And in favor of an answer (do not agree) in the paragraph Concatenate (19), with the value of the calculated Ca^2 (35.662) and the difference was significant at the level (0.01) in favor of an answer (never agree) in paragraph sequence (23).

The psychological approach used to treat players of clubs to stop psychologically exploiting substances is a good and effective method that is related to the culture of societies, understands and agrees with their beliefs, religion and values, supports the human view of life, and the mentor or therapist to be aware of the specificities of culture of the person responsible for the process of treatment and his values and culture and the psychological aspect is one of the most important cultural values. There is a difference between the psychological method and the educational method. The educational method is the method in which the education of the person and guidance, often is one-sided, which is as we hear in educational and psychological programs on radio and television, for example. The educational and psychological preaching aims at collecting and directing organized information only. As for the psychological method, it is concerned with the formation of an integrated psychological state in which the behavior is consistent and integrated with the beliefs of the guide. This leads to harmony of personality and happiness and leads to mental health through the avoidance of psychotropic substances and the things that Damaging the players

The researcher thinks that the choice of psychological method or psychological guide in helping players to take off psychotropic substances

Table (3): (Calculated T) shows the relationship between the theoretical and the arithmetic mean of the measure of therapeutic method

Measurement Paragraphs No.	Theoretical mean	arithmetic mean	Standard deviation	Calculated T	Level of significance
24	30.000	33.504	6.077	8.895	0.000

The table shows that the number of paragraphs after the therapeutic method scale is (24) paragraphs, the theoretical mean (30.000), while the mean of the research sample (33.504) and the standard deviation (6.077), and (calculated) between the theoretical and the arithmetic mean of the research sample (8.895) with level of significance (0.000), indicating its significance at the level of significance (0.01). This means that there is a significant difference between the therapeutic method and for the mean of the calculation of the research sample, which means that the therapeutic method used on the players to stop taking psychotropic substances and solve the problem of abuse as psychologically And behavior possible.

The researcher attributed this to the psychological trends of the personality of the abuser, who tend to pretend and show off and run behind personal adventures and love of experimentation and all of what is forbidden desirable, and the appeal of the new, and exciting in everything. In his study of the personality traits of smokers, Muhammad Khalil notes that they are rebellious against standards and social values in an attempt to assert themselves, and that they conform to the standards of the group of comrades, which they create for themselves as a condition for admission to the membership of this group. Their personalities are also impulsive in their relations without being aware of the behavior of others, who may exploit the impulse, and the lack of understanding of others in directing the behavior of those who use the direction deviant.(22,25)

Conclusion

- The construction of a measure of therapeutic method for the use of psychotropic substances in athletes was reached.
- The scale of therapeutic method should be adopted for the use of psychotropic substances on athletes.
- Similar studies should be conducted on treatment method for drug abusers and other samples.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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Effect of Using Modified Training Equipment to Developsome Soccer Skills for Youth

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Abstract

Purpose: The study aimed to identify effect of using training equipment which were made and modified by the researcher with specific exercises to be applied in pre-season on the sample .

Method: Twenty four youth boys : (n=24: age=16.04±0.9 years) were recruited for the study, The sample is divided randomly into two groups (control and experimental) by (12) players for each, Both were tested pre testing for (zigzag, ball control, scoring, middle pass and ball juggling). Then the two groups attended total (24) sessions for (8) weeks by (3) sessions weekly, Only the experimental group are trained by the equipment, followed by identical retesting.

Results: Both groups elicited development in pre-post tests in total five tests for the benefit of post-test, The experimental group elicited significant improvement in (control & experimental post-post tests).

Conclusion: The experimental group elicited higher results in post-test, The researcher attributes the reason to the effectiveness of training equipment in developing skills, And how motivated players to work harder.

Keywords: *Training, Equipment, skills, football, youth.*

Introduction

Football is a sport that is characterized by varied complex dynamic kinesiology activities that are characterized by a large of cyclic and acyclic movements(1), and the important aspects that have developed significantly are the educational and training equipments used in training, where the training equipments is everything used in training process Helping players to achieve goals with high degree of proficiency(2). Good results have been achieved as a result of using training equipments by shortening the time and effort in learning and acquiring skill and provided an environment of fun and motivation for exercises because it gives a lot of fun especially for youth who tend to link learning to play and enjoyment.

The lack of training curricula to the training equipment has shown a remarkable decrease in the desire of the youth in continuity and motivation in the performance of exercises and attendance, which reflected on their levels physically and skillfully, so the researcher tried to make and modify some training equipments that would raise the level of skills of the players of Al Bat'ha Football Academy for youth.

To know the effect of using the modified training equipments in developing some skills capabilities in the preparation period for football players for the youth 15-17 category.

There is a positive impact by using modified training equipment in developing some skills capabilities in the preparation period for football players for the youth.

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Method

Experimental method was used by designing two groups (experimental and controlled) and two tests pre and post to achieve targets of the research. The objectives set by the researcher for his research and the procedures he uses will determine the nature of the selected sample (khuraibut, 2017). The research sample represented by Al Bat'ha youth 15-17 years old academy players, which contain 24 youth footballers with 100% participation, therefore the sample represented the whole population. The sample divided randomly into two groups (experimental and controlled) 12 players for each. The researcher started the main experiment through the implementation of the pre-tests on sample at Bat'ha stadium Club on 20/10/2018, and then began to apply the exercises designed which using the training equipment on 22/10/2018 until 17/12/2018, where included (24) Training sessions by (3) sessions weekly, the post- test were conducted on 19/12/2018.

The researcher used the following tests:

l Mid-range passing test [3]:

Tools: Specific area for testing, football balls (5), measurement tape.

Test Descriptions: drawing three circles have the same center and the Diameters for the circles as follow: (2, 4, 6) meter respectively, as well as we numbered the circles as (6, 4, 2) respectively, where the center of the circles is the distance point between the starting line and the three circles, which is at a distance of 20 m, (5) consecutive attempts, calculated the number of points obtained by the player of the five attempts, if the ball fall on the lines of circles given grades according to the sequence of circles (5,3,1) score, the attempt is unsuccessful in the case of the ball out of the circles.

l. Ball dribbling test[4]: Performance Method: running with the ball zigzagging between (10) cones, the distance between the cones (2) meters back and forth.

Tools:

- The distance between the starting and finishing line is (25) meters.
- 10 cones placed at equal distances (2) m between the cone and the starting line and the end at a distance of (2) meters from the first cone.
- Football ball.
- Stopwatch.

Test Instructions: Running in zigzag motion between the cones in two directions (back and forth).

The player is given two attempts.

Calculates the best time to score.

Run between the cones in any way and on any side to the right or left of the person.

- Ball control test for (30) seconds[5].

Tools: Specific area for testing, one football ball, stopwatch, two assistants.

Performance Method:

1. When instructed by the test conductor the player will throw the ball in his hands and then start to control the ball with the foot so that the ball does not fall to the ground and counts the number of times the ball is hit in (30) seconds.
2. The player loses one point for each drop for the ball on the ground.

Index:

One point for each (10-12) correct strike

Two points for each (13-14) correct strike

Three points for each (15-16) correct strike

Four points for each (17-18) correct strike

Five points for each (19-20) correct strike

Six points for each (21-22) correct strike

Seven points for each (23-24) correct strike

Eight points for each (25-26) correct strike

Nine points for each (27-28) correct strike

Ten points for each (29) and above is a correct strike

- **Shooting accuracy test[6]:**

Tools: tape measure, football balls (10), goal divided by ropes.

Performance method : 10 balls are placed in specific places of the penalty area where the player shoots these balls one after another in a sequential manner on the goals of a square length (1,50 × 1) meters specified

within the target is marked on the corner and the attempt is not correct in case the player doesn't hit any of the four goals, the test starts from the ball number (1) and ends at the ball number (10).

Test instructions: The player must kick the ball behind the starting line and the kick is not counted correctly if the player passes the starting line when the kicks are performed.

Test Management: A recorder that calculates the number of errors and correct kicks.

Registration: The number of kicks that enter or touch the four goals specified.

Description of the test: The laboratory stands 11 meters away from the target and when the start signal is given, the laboratory tests.

- Stopping the ball movement from a distance of (6) meters within (2)m[7]:

The test aims at: Putting down the ball (stop the movement of the ball)

Tools: (5) balls, square of (2)meters, and drawing (6) meters line away from the Square.

Performance Procedure: A player stands behind the selected test area and the tester bounces the ball high to the player who comes close into the testing area, trying to stop the movement of the ball and start again and thus repeat the player five consecutive movements,The movement of the ball must be stopped within the selected test area. If the tester fails to throw the ball then re through it again and the attempt is not considered correct in any of the following cases:

- If the player failed to stop the ball.
- If the player cross over the selected test area.
- If the ball touched the player's arm while he is trying to stop it.

Scoring: Two scores for each correct attempt from the first touch, one score for each correct attempt from the second the touch, and zero if the ball is out of the selected test area.

Results

Presentation of test results (pre and post-test) of the experimental group: Table (1) Shows the means, standard deviations, (t) value, significance level of the pre-post-tests of the experimental group of the research variables.

Table (1) shows that the tests of skills of the experimental group were all significantly in favor of the post-test

Variables	Pre test		Post test		(t) value	Sig
	S	Q	S	Q		
Mid-range passing	22.000	2.522	26.666	1.614	7.252	0.000
Ball dribbling	23.736	2.043	18.849	2.196	9.536	0.000
Ball control	6.083	1.831	9.666	1.922	6.010	0.001
Shooting accuracy	17.500	3.477	27.333	1.557	11.096	0.000
Stopping the ball	5.083	1.505	10.000	1.758	11.317	0.000

Presentation of tests results (pre and post) of the control group: Table (2) Shows the means, standard deviations, (t) value, significance level of the pre-post-tests of the control group of the research variables.

Table (2) shows that the tests of skills of the control group were all significantly in favor of the post-test .

Variables	Pre test		Post test		(t) value	Sig
	S	Q	S	Q		
Mid-range passing	21.333	2.774	23.666	3.312	2.620	0.024
Ball dribbling	24.080	3.277	22.301	3.708	1.680	0.121
Ball control	5.083	2.644	5.333	2.498	16.735	0.000
Shooting accuracy	18.417	5.680	22.333	3.446	7.603	0.000
Stopping the ball	4.083	2.108	6.000	0.852	3.215	0.008

Presentation of the results of post-post-tests of the experimental and control groups: Table (3) Shows the means, standard deviations, (t) value, significance level of the post-post-tests of the experimental and control l groups of the research variables.

Table (3) for the post-post-tests of the skills of the experimental and control groups shows significant differences in favor of the experimental group in all skills.

Variables	Pre test		Post test		(t) value	Sig
	S	Q	S	Q		
Mid-range passing	23.666	3.312	26.666	1.614	2.821	0.010
Ball dribbling	22.301	3.708	18.849	2.196	2.775	0.011
Ball control	5.333	2.498	9.666	1.922	4.761	0.000
Shooting accuracy	22.333	3.446	27.333	1.557	4.580	0.000
Stopping the ball	6.000	0.852	10.000	1.758	7.091	0.000

Discussion

The results and analysis show that there is a remarkable development in the level of skills (Mid-range passing,Ball dribbling, Ball control, Shooting accuracy, and Stopping the ball). The researcher attributes this development to the effect of the special exercises carried out through the auxiliary training method prepared by the researcher which contributed to raising desire levels and motivation of the players to perform the exercises and attendance, All possible uses of available resources contribute greatly to the learner's ability to acquire, master, and install motor skills[8]. The selection of appropriate exercises and their rationing according to the scientific basis and the appropriate type of the sample and the training stage in developing the physical level of the players,Selecting the appropriate exercises enables the trainer to develop physical qualities while at the same time working on the skill of the player [9].

The players practiced most of the exercises with the ball to increase the sense of playing football in addition to increase desire to perform perfectly without being bored of the performance of high repetitions, so the exercises was highly motivated, which gave players a greater chance to master the skills and proficiency[10].

Conclusions

The researcher concluded the following:

1. The use of training equipments has had a positive role in the development of the technical skills under study for young footballers (ages 15-17).
2. The research sample showed a great desire to apply the exercises by using the training equipments.

Ethical Clearance: The Research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq

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The Diagnostic Value of Motor Evoked Potential in Patient with Cervical Radiculopathy

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Abstract

Objectives: our objective is to evaluate the role of motor evoked potential in diagnosis of cervical radiculopathy.

Method: MEP test was performed in 74 patients with clinical diagnosis of cervical radiculopathy and 30 healthy control, we analyzed the data and compare it with MRI findings.

Results: the results revealed a statistically significant prolongation of CMCT, PMCT and MRCT for patients group ($p<0.05$). The sensitivity of MEP test was ranging (68% - 84.2%) and the specificity was (81.6% - 98.2%).

Conclusion: MEP test plays an important role for evaluation of radiculopathies since it monitors injury to the motor fibers.

Keywords: *Motor evoked potential, cervical radiculopathies, transcranial magnetic stimulation.*

Introduction

Cervical radiculopathy is a neurological disease characterized by dysfunction that could involve a nerve, root, or both. It is clinically appear as a pain in the neck and one arm, with sensory or motor loss of function, or reflex changes in the affected nerve-root distribution[(1)].

In order to help the patient to returnto their normal state of health, the aim for clinicians should be the rapid diagnosis and the proper treatment of this condition[(2)]. A recent study reported the average annual (ageadjusted) incidence rate of cervical radiculopathy to be 83.2 per 100,000[(3)].

In order to achieve a proper managment of cervical radiculopathy, a combination of clinical, electrodiagnostic, and radiological evaluation are required[(2)].

Electrophysiological tests for patient with cervical radiculopathy help to establish the diagnosis, identify the root, determine the presence of axonal loss or conduction block, grade the severity of the process, estimate the duration of disease and exclude other disorders that could mimic radiculopathy[(4)].

Electrodiagnostic tests are operator dependent, several method and different reference values are used by laboratories. One of these tests is MEP study which evaluate motor fibers. In fact, it is not sensitive to sensory radiculopathies. Root injury from any structural pathology (disc herniation, tumor encroachment, and scarring) can produce similar electrophysiological findings andalthough MRI is considered as (gold standard) for diagnosis of radiculopathies structural abnormalities in MRI do not necessarily reflect the underlying pathology of the clinical symptoms, alsosometimes the disease present itselfwith noevident structural pathology seen on MRI, Thus, depending solely on singlediagnostic method may be misleading or counterproductive. In addition, there is a possibility of presence of dual underlying pathology. therefore, more viable strategies are needed in the diagnosis of cervical radiculopathies[(5, 6)].

Transcranial magnetic stimulation (TMS) is a neurostimulation and neuromodulation technique, the principle that it based on is the electromagnetic induction of an electric field in the brain[7].Because it activates the proximal parts of peripheral motor pathways by magnetic paravertebral stimulationin a noninvasive and painless manner, it may be useful in addition to the traditionally used techniques (EMG, NCS) in the diagnosis of radiculopathies and in the assessment of peripheral nerves that cannot be directly assessed usingstandard electrophysiological techniques[8].

The aim of this study was to evaluate the role of motor evoked potential in the diagnosis of motor dysfunction in patient with cervical radiculopathy and tomatch the electrodiagnostic data with imaging data in localization of cervical roots lesion.

Materials and Method

This study was conducted at the unit of neurophysiology in Baghdad teaching hospital, in the period from November/2018 to May/2019.

Two groups were included, the control group consists of (30) healthy volunteers (20 males and 10 females) the mean of age (52.4 ± 9.03) years. All subjects were healthy and symptoms free. And (74) patients with clinical diagnosis of cervical radiculopathy, with exclusion of other causes (44 males and 30 females), with a mean of age (49.8 ± 10.1) years. The duration of symptoms of radiculopathy is ranged between (4 months – 3 years), with a mean of (18 months).

The exclusion criteria included Patients with other diseases like CVA, diabetic polyneuropathies, neuropathies, plexopathies, and musculoskeletal disorder.

Both groups were subjected to MEP study, using Trascranial magnetic stimulator device. The following muscles were examined: Abductor pollicisbrevis, Biceps brachii and Triceps.

The room temperature was monitored and kept between 26-28C during the test and the patients were studied in a semi sitting position, with a circular coil, capable of generating a (2 -T) maximum field intensity. The MEPs were studied with conventional surface electrodes attached to the examined muscle, The responses were recorded by a conventional electromyography the usual filters were used for motor conduction. The TMS technique and the measurements of latencies were performed with maximal stimulation output, at least five consecutive trials were recorded and superimposed. The shortest latency of the evoked CMAP after cortical and cervical stimulation was recorded for each muscle tested. The MEPs were recorded from upper extremity for both cases and control groups.

After the procedure of magnetic stimulation, electrical stimulation was delivered to the median nerve at the wrist,axillary nerve and musculocutaneous nerve at erb's point, to elicit F and M waves the trials repeated 20 times to obtain and measure F wave from axillary and musculocutaneous nerves, and it was difficult to discriminate F wave from M wave in some patients so they were excluded from calculation of MRCT. The peripheral conduction time was determined using the following formula: (F+M–1)/2, where F and M were onsetlatencies of the F wave and the M response, respectively. CMCT, PMCT, MRCT were measured for both groups.

MRI was performed with a (Philips Ingenia 1.5-T unit) using a standardized cervical spine protocol (sagittal and transverse T1- and T2- weighted sequences with a 4-mm slice thickness) and the results were interpreted by aboard-certified radiologist who was blinded to the patients history and physical examination.

Statistical analysis was performed using SPSS (Statistical Package for Social Sciences, version 18) and Microsoft Office Excel 2007. Mean and SD were used for numeric variables, while nominal data were presented as frequency and percentage. Independent sample (t) test was used to compare the data of patients and control group. The number and percentage were calculated using Chi-square test. And the level of statistical significance was defined as (P) value < 0.05. Descriptive statistics for all data were expressed as mean± SD, recording were classified pathologic when the MRCT is exceeding 1.4 msec or when side to side differences in MRCT more than 1.5 msec, and if either PMCTm or CMCTm or both are exceeding the mean value of matched control group for those whom MRCT couldn't be obtained. The validity of the test were also applied (sensitivity, specificity, positive predictive value, negative predictive value). And the statistical significance was ($p < 0.05$).

Results

The demographic characteristics of 74 patients with cervical radiculopathy and those for 30 control group are shown in table (1), in which there are no significant differences in the age and gender of the patients versus the control group (p>0.05).

Table (1): Demographic data of the studied groups

Subjects		Case	Control	
Age	Mean ± SD	(49.8 ± 10.1)	(52.4 ± 9.03)	0.2
Gender	Male Female	44 (59.5%) 30 (40.5%)	20 (66.6%) 10 (33.3%)	0.4

The results of our study show significant differences between patients and controls regarding the central motor conduction time measured by magnetic stimulation (CMCT), peripheral motor conduction time (PMCT) measured by F wave method and motor root conduction time (MRCT) in the form of prolongation of latencies in cases group when recording from biceps, triceps and ABP muscle, also regarding PMCT measured by cervical stimulation recorded from biceps brachii. While non significant differences regarding CMCT measured by F method as shown in table (2, 3, 4).

Table (2): Comparison of MEP parameters between cases and control groups recorded from biceps muscle.

Parameters	Stimulation and Recording Sites	Case (Mean±SD)	Control (30) (Mean±SD)	P value
PMCT	Magnetic PMCT	6.87 ± 1.26	5.33 ± 1.15	0.001
CMCT	Cortical-cervical(R.)	7.9 ± 1.85	5.53 ± 1.89	0.001
	Cortical-cervical(C.)	5.03 ± 1.23	3.83 ± 2.76	0.02
	Cortical-(f+m-1)/2(R.)	5.73 ± 1.46	5.56 ± 1.45	0.59
	Cortical-(f+m-1)/2(C.)	3.51 ± 1.32	3.54 ± 2.33	0.94
PMCTf	(Fmin+M-1)/2	9.36 ± 1.43	7.03 ± 1.05	0.001
MRCT	(PMCTf-PMCTm)	2.76 ± 0.45	1.06 ± 0.23	0.002

Table (3): Comparison of MEP parameters between cases and control groups recorded from triceps.

Parameters	Stimulation and Recordingsites	Case (Mean±SD)	Control (30) (Mean±SD)	P value
PMCT	Magnetic PMCT	5.50 ± 1.43	5.34 ± 2.33	0.66
CMCT	Cortical-cervical(R.)	9.46 ± 1.36	7.09 ± 3.55	0.001
	Cortical-cervical(C.)	7.60 ± 0.87	6.06 ± 1.04	0.002
	Cortical-(f+m-1)/2(R.)	6.20 ± 1.80	6.84 ± 1.41	0.07
	Cortical-(f+m-1)/2(C.)	5.22 ± 1.57	5.19 ± 1.36	0.92
PMCTf	(Fmin+M-1)/2	8.86 ± 0.65	5.83 ± 1.28	0.002
MRCT	(PMCTf-PMCTm)	3.06 ± 0.40	1.03 ± 0.65	0.003

Table (4): Comparison of MEP parameters between cases and control groups recorded from ABP.

Parameters	Stimulation and recording site	Case(74) (mean±sd)	Control (30) (mean±sd)	P value
PMCT	Magnetic PMCT	12.75 ± 1.82	12.33 ± 2.66	0.43
CMCT	Cortical-cervical(R.)	9.66 ± 1.97	7.71 ± 2.91	0.002
	Cortical-cervical(C.)	7.48 ± 1.54	4.98 ± 1.59	0.001
	Cortical-(f+m-1)/2(R.)	6.51 ± 1.47	6.78 ± 2.11	0.8
	Cortical-(f+m-1)/2(C.)	4.93 ± 0.6	4.28 ± 1.03	0.34
PMCTf	(Fmin+M-1)/2	15.83 ± 1.51	13.34 ± 1.79	0.001
MRCT	(PMCTf-PMCTm)	3.15 ± 1.16	1.12 ± 1.31	0.004

*R = Relaxed, *C = Contracted

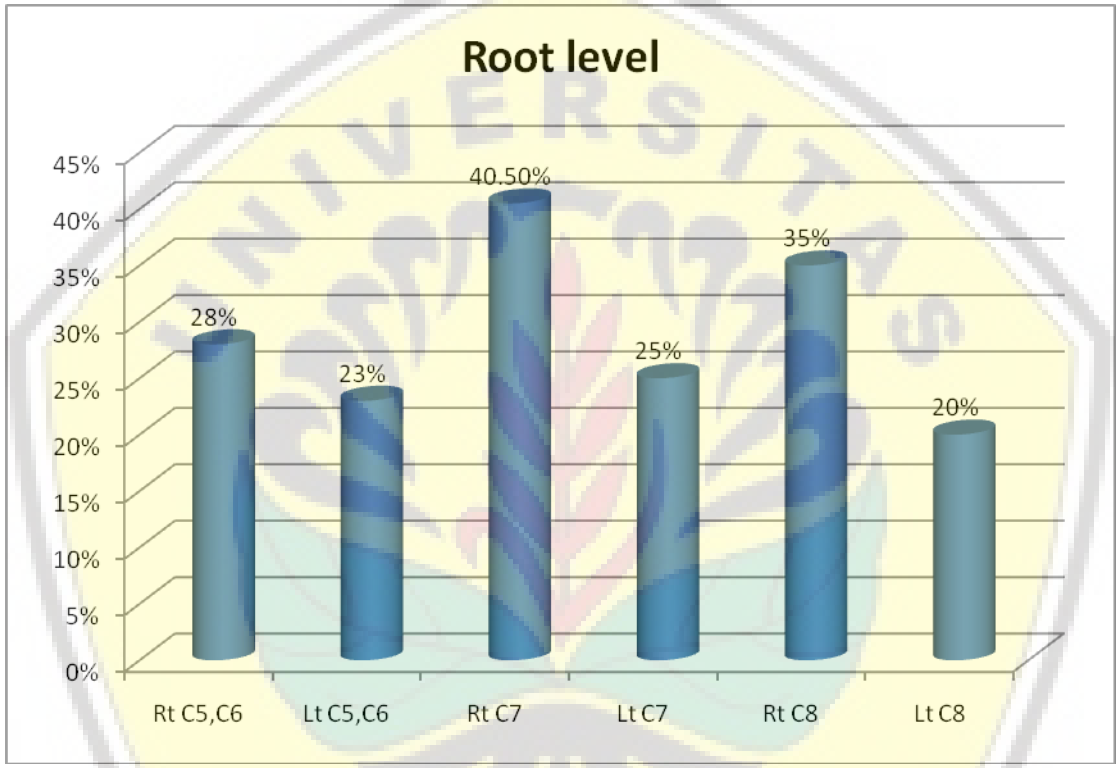

Figure (1) explores the different percentages of cervical radiculopathy from C5 to C8 levels for both right and left sides, using MEP abnormalities of the upper limbs muscles, in which the higher percentage was recorded for C7 (40.5% - 25%) then C8 (35% - 20%) then C5, C6 (28% - 23%).

Table (5): Validity of upper limbs MEP with corresponding MRI as a gold standard.

Level of radiculopathy	Sensitivity	Specificity	PPV	NPV
Rt C5,C6	76.2%	90.6%	76.2%	90.6%
Lt C5,C6	84.2%	98.2%	94.1%	94.7%
Rt C7	74.2%	83.7%	76.7%	81.8%
Lt C7	78.3%	98%	94.7%	90.9%
Rt C8,T1	68%	81.6%	65.4%	83.3%
Lt C8,T1	73.3%	93.2%	73.3%	93.2%

Regarding the validity tests, the sensitivity of MEP was (68% - 84.2%) and the specificity was (81.6% - 98.2%).

Discussion

Most studies of MEP in cases of cervical radiculopathy routinely use distal hand muscles to obtain MEP latency usually ABP and ADM muscles which is not enough to detect the roots affected as the diagnosis of radiculopathy needs to include all roots in examination[9], So in this study the proximal and distal muscles were examined to identify the affected root and improve both the accuracy and sensitivity of TMS in the diagnosis of cervical radiculopathy.

In this study, the prolongation of both PMCT and CMCT agree with study done by Eun S. Parkwhich was performed on 27 normal healthy person and 17 patients with radiculopathy found that mean peripheral and central motor conduction time was significantly prolonged in lesion side of patients group[10]. Also there was prolongation of PMCT which is obtained by cervical stimulation in some patients, this agree with study of S Chokroverty who studied five patients presenting with sensory-motor disturbances consistent with a clinical diagnosis of radiculopathy and concluded There was a significant difference in latencies between the affected and unaffected sides after paraspinal stimulation of nerve roots and he concluded that surface stimulation of the roots by a magnetic coil is a potentially useful technique for the non-invasive evaluation of root function[11].Disk herniation affect the nerve roots proximal to the neural foramen would be expected to prolong CMCT-M rather than PMCT-M, where as more distal lesions may cause prolongation of PMCT-M, this can explain why some patients show prolonged central latency while others show prolonged peripheral latency.

some patients show significant prolongation of CMCT-M while no prolongation of central conduction time when measured from latency of F wave and this is in consistence with study done by Wehling in patients with cervical radiculopathy studied by MEP recording from biceps brachii and abductor pollicisbrevis and founded that CMCT-M was delayed in patients with clinical motor involvement as it involves the time of impulse traveling through the proximal root segment that affected by root compression[12]. And agree with Bischoff who studied 42 patient with monoradiculopathy and recorded from deltoid, biceps, extensor digitorumcommunis and FDI on both sides majority of patients with muscle weakness show prolonged CMCT-M or PMCT-M by absolute value or side to side differences[13].

In addition to that this study shows that majority of patients with radiculopathy resulted in prolonged root conduction time more than normal values or by side to side comparison, this is in agreement with T.K.Banerjee who calculated the MRCT in 26 patients with lumber spondylosis and founded that in all patients with motor deficit and 36% of those without motor deficit the MRCT was significantly prolonged on the affected side[14]. Prolongation of cervical MRCT has been attributed to the segmental demyelination of proximal nerve segments or loss of F waves in the fast-conducting motor axons[15].

MRCT makes the conduction slowing at a small proximal nerve part apparent, which may not be detected by F latency measurement alone as it is diluted by the normal conduction at remaining longer nerve segment. Also it can help to demonstrate the motor root origin of a slowing at central motor conduction time (CMCT) instead of a corticospinal tract dysfunction. Observing a delay in MRCT proportional to the prolongation in CMCT can exclude central pathologies[16].

Moreover, our results show good MEP sensitivities (68% - 84.2%).This agree with Herdmann J who stated that MEP is sensitive test for diagnosis of lower motor neuron disease including radiculopathies[17]. The obtained specificity of MEP in the present study was higher than sensitivity for all the levels by comparing MEP abnormalities to the MRI (as a gold standard) and it was between (81.6% - 98.2%) and it goes in parallel to Aleksandra Bryndal who resulted in specificity between (86%-100%).

Clinical neurophysiology and neuroimaging focus on different aspects of spinal root damage. Neurophysiological tests detect functional pathology, while neuroimaging detect structural pathology.it is therefore believed that these two diagnostic method may be highly complementary[9].

Conclusion

MEP test plays an important role for evaluation of radiculopathies since it monitors injury to the motor fibers that are mostly affected and responsible for the signs and symptoms in radiculopathies.

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Green and Efficient Composition and Diagnosis of Pentdentate Schiff Base Donative Metal Complexes: Antimicrobial, Antifungal, Antioxidant Screening and DNA Binding

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Abstract

Background: Enforcement of sustainable and green chemistry protocols has seen colossal surge in recent times, the development of an effective, eco-friendly, simple and novel methodologies towards the synthesis of valuable synthetic scaffolds and drug intermediates. Recent advances in technology have now a more efficient means of heating reactions that made microwave energy. Efforts to synthesize novel heterocyclic molecules of biological importance are in continuation. Microwave irradiation is well known to promote the synthesis of a variety of organic and inorganic compounds. The aim of current study was to conceivea mild base mediated preparation of novel Schiff base of 2-Acetylpheno with trimethoprim drug (H_2TPBD) and its complexes with Cu(II),Co(II),Zn(II),Cd(II) and Ni(II).

Method: The products are likening with traditional processes for reaction time and their yield. (H_2TPBD) and the complexes were diagnosed by spectroscopic (Mass, NMR, UV–vis, IR spectral studies, analytical and magnetic data.

Results: All complexes were found to be six co-ordinate mono-hydrate as[M(TPBD)(H_2O)] [1:1(ligand:metal) ratio] type. The complexes exhibited biological activity against (B.subtilis, P.aeruginosa, C.albicansand Staphylococcus aureus) bacterial strains as compared to (H_2TPBD). The antibacterial efficiency showed the following trend: M(II)-complexes > (H_2TPBD) > parent drugs. Cu(II), Co(II), Zn(II), Cd(II)andNi(II) complexes had good antioxidant efficiencies than the free ligand (H_2TPBD). DNA binding study of complexes with (CT)-DNA utilizing binding nature of the complexes with CT DNA has moreover inveterate by viscometer and emission which then bespoken that complexes bound with CT DNA. The complexestook effective scavenging impact during the DPPH process.

Conclusion: [H_2TPBD] has been prepared by the condensation of trimethoprim drug and Acetylphenol and characterized by electronic absorption spectra, ^{1}H and ^{13}C-NMR and IR,mass UV-spectroscopies.

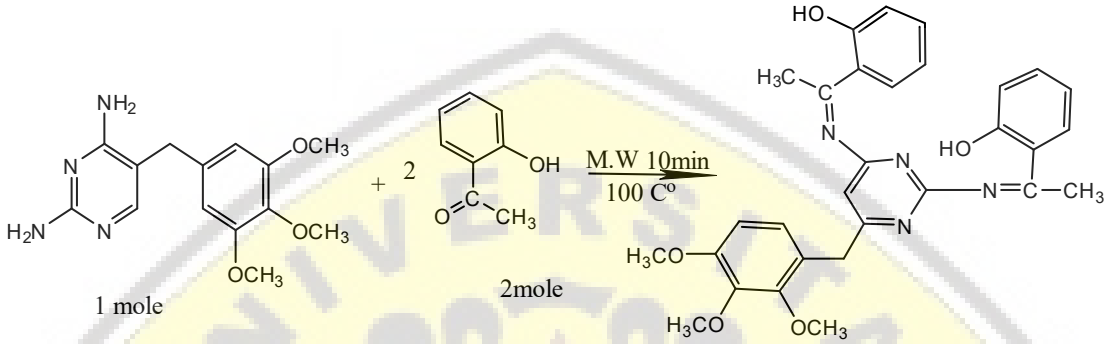
Keywords: *DNA cleavage; Microwave irradiation; Coordination compounds, Trimethoprim, Antioxidant.*

Introduction

Enforcement of sustainable and green chemistry protocols has seen colossal surge in recent times, the development of an effective[1], eco-friendly[2], simple and novel methodologies[3] towards the synthesis of valuable synthetic scaffolds and drug intermediates[4]. Recent advances in technology have now a more efficient means of heating reactions that made microwave energy[5]. Efforts to synthesize novel heterocyclic molecules of biological importanceare in continuation[6]. Microwave irradiation is well known to promote the synthesis of a variety of organic and inorganic compounds[7]. The development of the bioinorganic chemistry field has grew the attention in its complexeswere suggested for antimicrobial[8], anticancer[9], antibacterial[10], anticonvulsant[11], anti-inflammatory[12], anti fungal activities[13]. The essential metallic element and third most abundant is Copper that has antibacterial property and has a biological role in sustaining life[14]. A trace quantity of copper is required by all living organisms to

maintain their proper cellular functions[15]. We conceived a mild base mediated preparation of novel Schiff base of 2-Acetylpheno with trimethoprim drug (H_2TPBD) and its complexes with Cu(II),Co(II),Zn(II),Cd(II)andNi(II).

Synthesis of (H_2TPBD): The ratio (1:2) of ethanolic solution of (0.29g; 0.001mmol) trimethoprim drug and (0.281g; 0.002mmol) 2-Acetylphenol were mixed and irradiated in the microwave-oven insolution (3-4ml), then it was done in (1-2min) with good yield. [H_2TPBD] was isolated by crystallization after volume reduction by evaporation.



Scheme 1: Structure of (H_2TPBD) ligand

Synthesis of Complexes: The ethanolic-solution of the metal salt and ligand and were mixed in ratio of 1:1 and 0.1% ethanolic KOH was added to adjust pH(7-8) and was then irradiated insolution (4-5ml),then it was done in(3-6min). The resulting coloured products were then recrystallized with diethyl ether and ethanol.

MCl_2+H_2TPBD→[M(TPBD)(H_2O)]

Antimicrobial Evaluation: All the investigated (H_2TPBD) and its complexes were tested for their antibacterial activity (MIC) *in vitro* by broth dilution method with B.subtilis, P.aeruginosa, C.albicansand Staphylococcus aureus by disc diffusion technique taking Muller Hinton broth and byusing streptomycin as control and nutrient agar as medium.

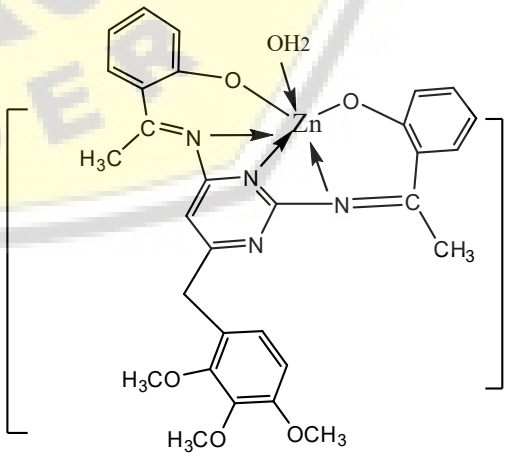
Antioxidant Studies: Antioxidant activities of compounds were investigated by using different free radicals (DPPH) assays.

The % inhibition was determined conforming to the following equation:

$$\%\ of\ radical\ scavenging\ activity = \frac{A_0 - A_1}{A_0} \quad 100$$

Where, A_1 is the absorbance of standard or sample and A_0 is the absorbance of control.

DNA Binding Studies: The experiments of the DNA binding were fulfilled in pH=7.5 (50mM Tris–HCl/1mM NaCl buffer),Tris–HCl/NaCl buffer utilizing (10%)from DMSO solution of the complexes. Experiments of absorption titration were made via employing concentrations of CT-DNA[40, 60 and 80lM]. Saving the concentration of the complexes constant, with suggested rectification for the absorbance of the CT-DNA itself. Specimens were equiponderated before recording each spectrum.



M= Co(II),Ni(II), Cu (II), Zn(II),and Cd(II)

Scheme 2: Suggested structure for complexes

Table (1): Some of physical properties and microanalysis of products

Compound	Empirical Formula	(Formula wt.)	Yield %	Colour	Elemental Analyses Found (Calc.) % (calculated)			
					C	H	N	M
[H_2TPBD]	$C_{30}H_{30}N_4O_5$	526.23	90	Pale Brown	64.24(64.69)	5.26(5.92)	13.07(13.72)	-
[Co(TPBD)(H_2O)]	$C_{30}H_{34}CoN_4O_8$	665.01	81	Olive	59.79 (58.65)	4.59 (4.39)	8.74 (9.24)	6.76 (7.78)
[Ni(TPBD)(H_2O)]	$C_{30}H_{32}N_4NiO_7$	664.77	89	Pale Green	57.40(58.67)	4.62(4.39)	8.57(9.25)	7.65(7.75)
[Cu(TPBD)(H_2O)]	$C_{30}H_{34}CuN_4O_8$	669.62	80	Greenth Brown	57.31(58.29)	3.43(4.36)	9.38(9.19)	8.53(8.34)
[Cd(TPBD)(H_2O)]	$C_{30}H_{34}CdO_5N_8$	671.46	83	Pale Yellow	58.02(58.15)	4.22(4.35)	8.11(9.16)	8.49(8.56)
[Zn(TPBD)(H_2O)]	$C_{30}H_{32}ZnO_7N_4$	718.44	81	Yellow	53.66(54.78)	4.44(4.10)	7.55(8.63)	12.83(13.86)

Characterization of Complexes: The complexes have been prepared by template process by treating [H_2TPBD]and MCl_2in ethanol. The complexes isolated in the current research along with melting point, colour, molar conductance and analytical values have been given in Table (1) [4].They are soluble in highly chelating solvents such as DMSO & DMF. An effort was taken up to crystallize the complexes in different solvent method under various experimental conditions. The melting of complexes with decomposition was in the temperature range(200–240°C).

IR Spectra of Complexes: The band at 3426 and 3365cm^{-1} was assigned to stretching vibration of O-H in [H_2TPBD]. This reside unaltered in the complexes spectra, signalizing that this group in not involved in chelation. The characteristic spectra of compounds possessed azomethine linkage also two (C=N) of trimethoprimdrug groups[9]. [H_2TPBD] hastridentated coordinate with metal ions. The IR spectrum of the ligand exhibited a peak at 1564cm^{-1} corresponded to vibration of (C=N) (trimethoprimdrug). In [H_2TPBD] spectra a new sharp band appeared at 1642 and 624cm^{-1} assigned to the azomethine linkage (C=N).Another frequency observed in the range 1200-1223cm^{-1} corresponded to C-O bond. In complexes, a new band appeared at 520–532cm^{-1} due to M–N indicating the coordination of metal ionswith nitrogen atom[10]. The appearance of a weak band at 463-497cm^{-1} assigned to weak(M–O) and confirmed the chalet ionwith oxygen atom[11].

Mass Spectral Studies: [H_2TPBD]spectrum showed the formation of a molecular ion peak at m/z = 526$[M]^+$ equivalent to its general molecular weight. In addition, to this, $[M]^+$ fragmented observed peak at m/z 333, 200, 168, 137, 134, 109, 93, 77, 76, 67, 56 and 32 equivalent to their molecular weights were due to the cleavage of $[C_{19}H_{17}N_4O_2]^+$, $[C_{11}H_{10}N_3O]^+$, $[C_9H_{12}O_3]^+$, $[C_8H_8NO]^+$, $[C_{10}H_{12}O_3]^+$, $[C_6H_5O]^+$, $[C_6H_6]^+$, $[C_5H_4]^+$, $[CH_4N_3]^+$, $[C_3H_3N_2]^+$, $[C_3H_6N]^+$ and [CH_4O] groups, respectively[12].

UV-Vis Spectra and magnetic susceptibility: UV-VisSpectra of Cu(II), Co(II), Cd(II), Zn(II) and Ni(II) complexes were recorded at ca.10^{-3}M DMSO solution at room temperature. The band places of band maxima functions are listed in Table (2). [H_2TPBD] presented recognizable band at 37,037cm^{-1} would be due to π–π* for C=Ngroup and band at 28,490cm^{-1} is assigned for n–π* transition, respectively[13]. Co(II) complex showed three peaks which fall in the range 13,227-14,556cm^{-1} and23,752cm^{-1} attributed to $^4T_1g_{(F)}\rightarrow{}^4T_2g_{(F)}(\upsilon_1)$ and $^4T_1g_{(F)}\rightarrow{}^4T_1g_{(P)}(\upsilon_3)$ transitions, respectively, [14]. The ligand field parameters (Dq,B, β, β%) have also been calculated for Co(II) complex. The magnetic moment value of Co(II)complexes indicated the presence of three unpaired electrons. The magnetic moment value was found at 4.7BM, that is in the regarded region (4.3–5.2BM) for octahedral arrangement of the Ni(II) complexes[15]. The Ni(II) complex offered three absorption bands in the region 11792$cm^{-1}(\upsilon_3)$, 12345(υ_2),24509(υ_1) attributed to $^3A_2g_{(F)}\rightarrow{}^3T_1g_{(P)}(\upsilon_3)$,$^3A_2g_{(F)}\rightarrow{}^3T_2g_{(F)}(\upsilon_2)$ and $^3A_2g_{(F)}\rightarrow{}^3T_1g_{(F)}(\upsilon_1)$ transitions, respectively. The parameters (Dq,B, β, β%) were called the ligand field parameters that have been studied by using (Dq,B, β, β%). Ligand field parameters have been studied for

Ni(II) complexes.υ_2 was not noticed, but it might be studied by employing the relation $\upsilon_2=\upsilon_1+10Dq$. The data (B) equal(967cm^{-1}) that was further thandata of free ion, signalizing delocalization of d-electron and the orbital overlap on the ligand. The nephelauxetic ratio(β) was>1 that exposes the partial covalent nature of metal ligand bonds. The values 1174.8 and 1221cm^{-1} were (Dq) calculated data of crystal field schism energy. Thesevalues were well within the reignrecited for octahedral complexes[16]. The moment of magnetic data was found at2.86BM of Co(II)complexes.

Cu(II) complex spectrum presented absorption signals at 24271cm^{-1}, 14265cm^{-1} and 11641cm^{-1} which were referred to the transitions$^2B_1g\rightarrow{}^2A_1g$, $^2B_1g\rightarrow{}^2B_2g$ and $^2B_1g\rightarrow{}^2A_1g$ attributed to distorted octahedral structure. In addition substantiation was accomplished by magnetic moment 1.73BM which is compatible with submitted distorted octahedral structure for Cu(II) complex[17].

The electronic transition spectrum of the Zn(II) and Cd(II)complexes showed shoulder band at 421 and 409nm. This band can be attributed to the LMCT-transition. The electronic spectra of the Zn(II) and Cd(II) complexes did not show any (d→d)transition, which may be due to d^{10} electronic configuration. It has been reported that octahedral is the most favoured one.

Biological Effectiveness: In screening antibacterial efficacy of these compounds, we applied more than one screening organism to raise the prospect of exposing antibiotics essentials in examination materials[18; 19]. All of the tested compounds showed the following results: Bacteria: ligand was found to have no biological activity against all tested bacteria[20], but its complexes were found to have sensitivity for inhibition of Gram(+) more than Gram(-)bacteria. It was found in the order Co(II)>Cd(II)>Cu(II)>Zn(II)>Ni(II) for Gram-(+)and Ni(II)≈Zn(II)>Cd(II)>Co(II) for Gram-(-)bacteria, but Cu(II)complex did not show any antibacterial activity[20].

Antioxidants: These are materials or chemicals that give an electron to the free radical and transform it into harmless molecule. They may suppress radical positioning or reformdeterioration or decrease the energy of the free radical or cut-offseriesprevalence and reconstitute vellums.Free radicals ofligand mode is an antioxidant screening constructed on electrontransferthat manufactures a violet solution in ethanol[21;22] at room temperature is decreased in the existence of an antioxidant molecule, granting high to colourless solution of ethanol. The usage of the ligandchecksupplies arapid and easy path to estimate antioxidants by spectrophotometer and it may be beneficial to estimate different produces at a time. The proportion of antioxidant efficacy of each material was estimated by ligand free radical check[23; 24]. The determent of the ligand radical scavenging efficacy was completed depending to methodology recognized by radical scavenging efficacy of Brand-Williams and was evidenced as proportion repression of ligand radical and was determined by the following equation (Table 2).

$$\% \text{ Inhibition} = \frac{(\text{Absorbance of control} - \text{Absorbance of sample})}{\text{Absorbance of control}} \times 100$$

Table 2: DPPH efficacy of compounds

Last Conc. of Complex × 10 M^{-5}	% Inhibition				
	[Co(TMAP)(H_2O)]	[Ni(TMAP)(H_2O)]	[Cu(TMAP)(H_2O)]	[Zn(TMAP)(H_2O)]	[Cd(TMAP)(H_2O)]
2.9411	45.94	40.43	35.43	33.24	30.64
6.0606	59.68	59.68	40.26	38.83	36.85
9.9032	64.05	64.05	45.68	42.98	40.83
12.6666	67.5	67.5	56.35	51.65	46.56
16.0606	72.98	72.98	61.08	57.54	50.54

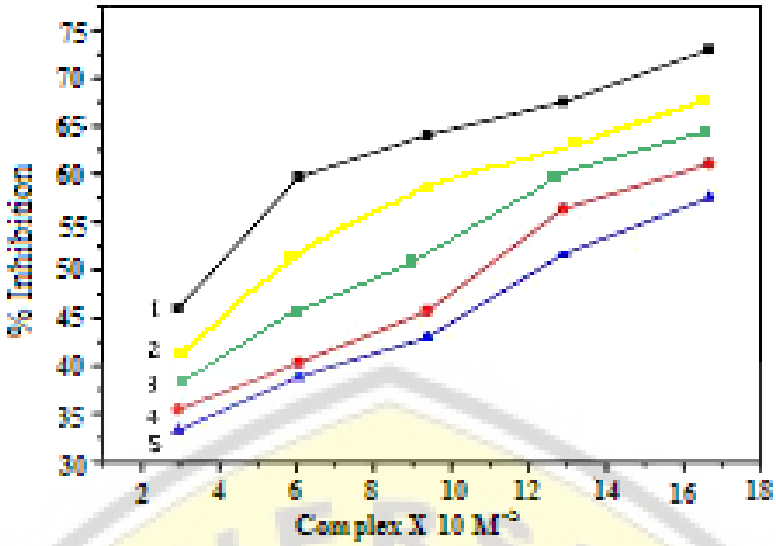


Figure 1: DPPH Activity.

DNA binding studies: UV-Vis spectroscopy avails as the generality prevalent means to research the interactions between DNA-complexes. Bind complex-DNA through intercalation conducts in bathochromism and hypochromism, assign to intercalation method including a powerful accumulating interaction between the DNA, by pairs of base, and an aromatic chromophore[24]**.** The bands of MLCT-transition for complexes displayed bathochromism and hypochromism when concentration of DNA was increased that were related to bind between CT-DNA and the complexes by intercalation. Absorption of complexes in existence of DNA was displayed in Figure (2). The binding strength of the complexes, K_b constant of the intrinsic binding of DNA with the complexes, was calculated from the deterioration of the absorbance observed for complexes**.** K_b for CTDNA with the complexes was estimated from the Equation (1). K_b constants of Intrinsic binding of complexes gained were 1.41×10^{-4}, 1.38×10^{-4}, 1.37×10^{-4}, 1.35×10^{-4} and $1.32\times10^{-4}M^{-1}$. The constants of stability of metal complexes including Schiff base ligand were in the range 10^7–10^6M^1. For example, for Co(II), Cu(II), Ni(II), Cd(II) and Zn (II) were 1.17×10^{-5}, 1.7×10^{-4}, 2.35×10^{-5}, 3.12×10^{-4}, 2.675×10^{-5} and $2.98\times10^{-4}M^{-1}$. These data were lower than (EB) as binding constants were in the range 10^6–10^7 M^1[25].

Viscosity Calculations: For stabilization of the interactions DNA-complexes, viscosity calculations were completed. Physical probes of optical photo supply in dispensable, but not adequate proofs to back up a linking model**.** The calculations of hydrodynamic, which are critical to change of length, were considered like the mostcritical and least ambiguous screen of a linking insolation, in the non-attendance of crystallographic constitutional values. A conventional intercalation pattern demands that the helix of DNA lengthens like base pairs are isolated to harmonize the linking ligand, that due to the increase of DNA viscosity. EB, a recognized DNA intercalator, raises the relative viscosity greatly by lengthening the double helix of DNA through intercalation. Upon increasing the complexes concentrations, the relative viscosity of complexes rises comparable to the conduct of EB. The increased viscosity[28] follows the arrangement EB>1>2>3>4>5 (Figure 2).

Melting of DNA studies: The complexes intercalation into base pairs of DNA brings about stabilization of base accumulating in a way that promotes T for DNA. The DNA melting experience is beneficial in founding the range of intercalation[26]. The complexes were brooded with CT-DNA and their temperature (10-100°C) and the absorbance at 260nm was observed. Conductivity- and pH-determents were then executed previously and next warming the complexes(Figure 3).

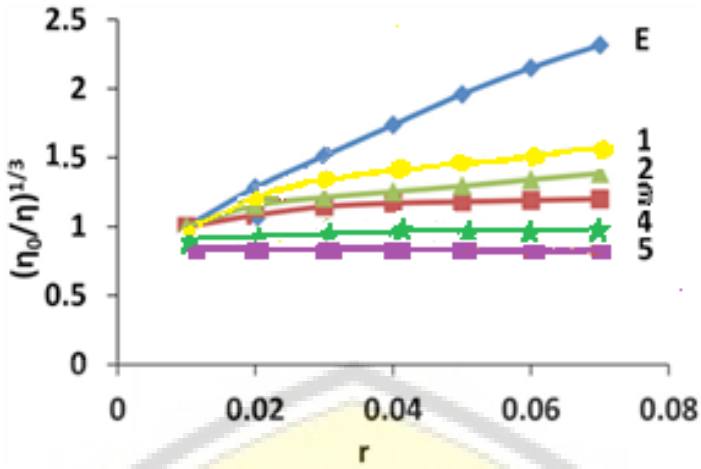


Figure 2: Effects of increasing amount of (EB). Complex(1): Co(II), complex(2): Ni(II), complex(3): Cu(II), complex(4): Zn(II)and complex(5): Cd(II)on ή of CTDNA at 29°C±0.1, [DNA]=15lM.

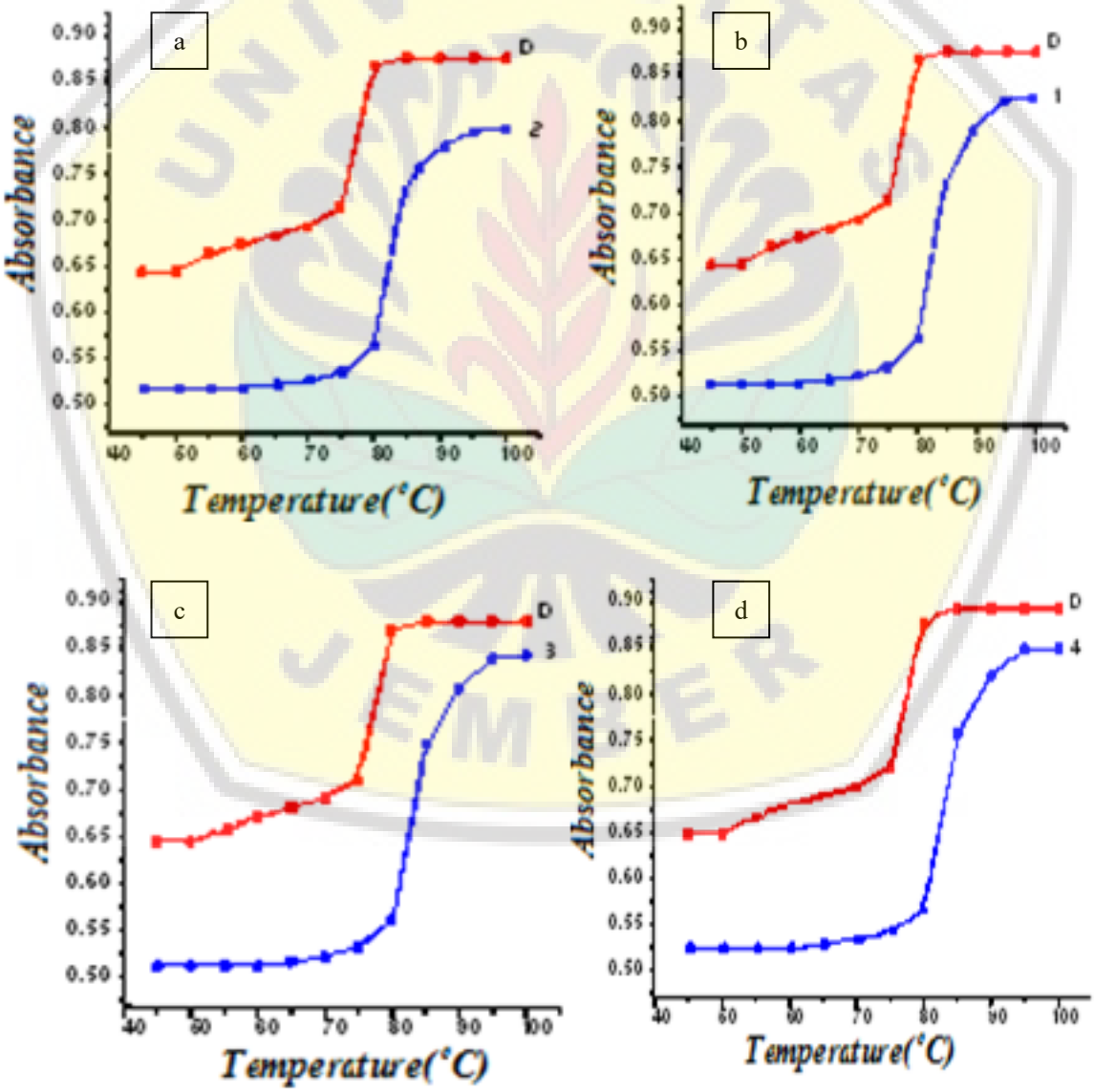


Figure 3 Plots of Abs versus T (C) for the melting of CT-DNA: (only DNA), DNA+ Co complex(a), DNA+ Nicomplex(b), DNA+ Cucomplex(C), DNA+ Zn complex (d) DNA+Cdcomplex(f).

Ethical Clearance: The research Ethical Committee at scientific research by ethical approval of both environmental and health and higher education and scientific research ministries in Iraq.

Conflict of Interest: The authors declare that they have no conflict of interest.

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The Effect of Plumbum, Zinc and Zinc Ratio on Plumbum in Children's Temperament

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Abstract

Introduction: Plumbum is a heavy metal that is neurotoxic in children. Plumbum exposure in slum and densely populated environments adversely affects physical growth, nervous system development, memory disorders, and learning disorders, cognitive deficits, psychological disorders and negative temperament of children that persist until adulthood. Zinc is an important trace element in the body. Increased free radical production and oxidative stress can interfere with homeostasis trace elements. Trace element zinc plays an important role in the mechanism of oxidants and antioxidants in microorganisms.

Method: This study is an analytical study with a cross-sectional design with sampling using the random sampling method in grade 3 to 6 grade BK Surabaya elementary school. Measuring plumbum and zinc levels using hair media was measured by the Atomic Absorption Spectrophotometry (AAS) and temperament measurements using the Indonesia's Children's Temperament Questionnaire.

Results and Discussions: Disorders of elemental levels and elemental imbalances will result in oxidative cellular component damage associated with the child's negative temperament which adversely affects communication with parents, siblings with peers and poor academic performance. This disorder can be sustained in adolescence with clinical manifestations of aggressiveness, behavioral disorders, and substance abuse and in adulthood the negative impact of difficulty finding work and poor communication in the family.
Conclusions: Pb, Zinc, the ratio of zinc to Plumbum is significant to the child's temperament

Keywords: *Child temperament, plumbum, zinc, zinc/plumbum ratio.*

Introduction

Plumbum exposure in the environment adversely affects children because plumbum is neurotoxic and and affects the development of the brain area of the prefrontal cortex, basal ganglia, hippocampus, and cerebellum[1,2]. The highest target for plumbum exposure is the central nervous system area. Chronic plumbum exposure adversely affects physical growth, nervous system development, memory disorders, and learning disorders, cognitive deficits, psychological disorders and behaviors and negative temperament of children. Infants and children at high risk of plumbum pollution with levels below 10µg/100ml can cause impaired fetal growth and development and cognitive deficits[3]. Temperament in children is defined as a way of thinking, behaving, or reacting which is an individual characteristic and refers to the ways a person lives[4–8] Children with negative temper the difficult child (difficult children) are usually very active, sensitive stimulate, and have irregular habits. The negative withdrawal response is a characteristic of these children, and requires a more structured environment. Children become slow to adapt to new routines, people or situations. Mood expressions

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are usually strong and especially negative. They often cry, and frustration often leads to violent tantrums (the slow-to-warm-up) child usually reacts negatively and with mild intensity to new stimuli, and unless pressed, slowly adapts to repeated contact. They only respond with mild rejection but are passive to something new or foreign or changes in routine. Children are quite inactive and moody but only show moderate disorder in terms of function. Children are more susceptible to behavioral problems at the beginning and middle of childhood[7]. Negative temperament is associated with emotional and behavioral disorders that require clinical attention because they can be sustained until adulthood[9]. Given the magnitude of the impact of plumbum exposure on the negative temperament of children as an observer of mental health of children and adolescents, it is considered necessary to conduct research to prevent the risk of children's and adolescent behavioral disorders and personality disorders as adults which burden my family and the surrounding environment

Method

This study was an observational analytic study with cross-sectional design using random sampling method in grade 3 to 6 grade B K Surabaya elementary school with a sample of 44 children. Before the research was conducted, researchers with the help of the principal and class teacher met with parents and students to provide an explanation of the research procedures and provide information for consent and informed consent that must be filled by the respondent. Inclusion criteria for research subjects were children aged 9-12 years no organic disturbances were found, mothers of children with at least junior high school education could communicate Indonesian, patients cooperatively and not experience severe psychosocial stressors. Pb and zinc examination was taken from cutting 10 pieces of children's hair in the occipital area close to the scalp, then the Atomic Absorption Spectrophotometry (AAS) method and temperament measurements were examined using the Children's Temperament Questionnaire. Sampling from hair based on growth is not invasive, provides a child's sense of comfort and the levels of plumbum and zinc in the hair stay longer so they can accurately identify PB and Zink levels[10-12]. Pb value, Zn, Pb/Zink ratio in the form of numerical data and statistical analysis with normality test with results p <0.05, which means that the distribution is not normal so that in the correlation test using the Spearman correlation test. The child's temperament questionnaire which was validated by Rini Harahap in 2013 and has been used for both research and clinical needs (Harapan, 2014) consisted of 15 questions consisting of positive and negative statements. Positive statements consist of 11 statements, namely statements with numbers 1, 2,3, 4, 5, 6, 7, 8, 9, 10, and 11. The choice form of positive statements is always valued (SL), sometimes (KK), and never (TP), with a score of 1-3. Score 1 is never, score 2 is sometimes, score 3 is always. While the negative statement consists of 4 statements on numbers 12, 13, 14 and 15. Negative statement choices are always (SL), sometimes (KK), and never (TP), with a score of 1-3. Score 1 is always, score 2 is sometimes, score 3 is never. The lowest total score is 15 and the highest score is 45. Scoring interpretation is a total score of 15-24 = difficult, a total score of 25-34 = slow and a score of 35-45 = eas.

Results and Discussions

Table 1: Demographic Data of the Childrenin BK Surabaya Elementary 2019

Variable	Category	Frequency	%
Age	≤12 years	41	93,18%
	> 12 years	3	6,82%
Gender	Female	13	29,55%
	Male	31	70,45%
Birth Order	First Child	24	54,55%
	Others	20	45,45%
History of violence in childhood	Never	40	90,91%
	Yes	4	9,09%
Temperament	Difficult	3	6,82%
	Slow	35	79,55%
	Easy	6	13,64%

Table 1 obtains the highest age results of less than 12 years at 93.18% with male sex at 70.54%, the order of the first high-ranking child is 54.55% and the most temperament of the child is the slow temperament of 79.55%. Pb, Zn, Pb/Zink ratios are numerical data and have been tested by normality test with the results of p <0.05, which means that the distribution is abnormal so that the correlation test uses the Spearman correlation test with the following results:

Table 2: Correlation between Pb, Zink, Pb/Zink ratio with the children's temperament in B K Surabaya Elementary 2019

Spearman Correlation	Temperament Score
	r – value
Pb	–0,078
Zn	–0,325*
Pb/Zn	0,208

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Most child respondents are slow temperament. Temperament in children is defined as a way of thinking, behaving, or reacting which becomes individual characteristics and refers to the ways a person goes through life.

The classification of temperaments in children is divided into three, namely The Easy Child, The Difficult Child, The Slow-to-warm-up child[13,14] The Easy Child (easy child) children are more relaxed and temperamental, have regular and predictable habits, and have a positive approach to new stimuli. Children are more open and can adapt to changes and show the intensity of moods that are mild to moderate which are usually positive [15] The Difficult Child (difficult child) children have a difficult temper usually very active, sensitive, and have irregular habits. The negative withdrawal response is a characteristic of these children, and requires a more structured environment. Children become slow to adapt to new routines, people or situations. Mood expressions are usually strong and especially negative. They often cry, and frustration often leads to violent tantrums [16]The Slow-to-warm-up child usually reacts negatively and with mild intensity to new stimuli, and unless pressed, slowly adapt to repeated contact. They only respond with mild rejection but are passive to something new or foreign or changes in routine. Children are not quite active and moody but only show moderate disorder in terms of function. Children are more susceptible to behavioral problems at the beginning and middle of childhood [13,17]. Parenting is a process of introducing and supporting a child's physical, emotional, social and intellectual development from a baby to an adult.. Another aspect is that parenting is the interaction between children and caregivers during care, including the process of developing appropriate knowledge and skills for children, ways to educate by giving rules and restrictions applied to their children, maintenance, instilling trust, how to get along, attitudes create an emotional atmosphere, protection, and teach general behavior that can be accepted by society. Socio-economic status affects many aspects of parenting. Low income families limit the purchase of goods needed in parenting, such as educational games and books that are beneficial for child development. Poverty and economic insecurity affect the mental health of parents in relation to non-supportive childcare [18,19]. Slow temperament can be caused by a lack of parental stimulation due to family economic limitations and the impact of slum environments with high air pollution.

Stressful conditions in parents can potentially damage parents' attitudes and behavior towards children. Parental stress can come from various forms, such as financial difficulties, lack of social support, and marriage problems. Stressors have a negative impact on the general well-being and health of parents and seize their attention and emotional energy. Parental stress can reduce involvement, attention, patience, and tolerance for children and increase the use of punitive practices.[20] The results of the study stated that the majority of children did not experience childhood trauma while the results of the most temperament were slow temperament. These results can explain the theory of Stella Chest that since childhood children have their own responses. Easy child child, easy to adapt to children environment difficult child difficult to adapt to environment, dissident while child slow to warm up is marked by indifference to the surrounding environment. Children also play a role in their own development. Temperament's interactions and environment are known as good and fit. The results of the study concluded that there was a significant relationship between zinc levels and the child's temperament, but no significant results were found between the plumbum level and the child's temperament. These results are not in accordance with the theory that plumbum is neurotoxic and the risk of brain damage in children with clinical manifestations of learning disorders, memory disorders, and disorders of emotional control, irritability, irritability and chronic and high levels of exposure can cause death. The results of this study still require special attention considering the location of the living and living areas of slums, the pattern of care that does not provide stimulation and limited facilities and infrastructure, because the interaction of these factors negatively affects the child's growth process in the form of mental emotional disorders that can continuing until adolescence and adulthood which results in a

burden on the family and the environment. The ratio of Zinc to Pb in child respondents in the study showed meaningless results. Measurement of Zinc ratio to Pb is a new study that has never been done before[21-24] The rationale of this study is based on the Pb mechanism into the body by binding to calmodulin and blocking the N-methyl-D-aspartate enzyme which will damage brain neuroplasticity and cause encephalopathy and edema in the cerebellum region, this damage is irreversible. Plumbum will inhibit tyrosine synthesis into dopamine, resulting in reduced attention function, visual motor reasoning skills, and reading, numeracy and math skills.[25-26] Plumbum also inhibits the synthesis of tryptophan into serotonin, resulting in symptoms of hyperactivity and impulsivity. [27]Zinc is an important trace element and plays a major role in the synthesis of neurotransmitters in central nervous system. [28-29]Zinc plays a role in the synthesis of dopamine, serotonin and norepinephrine neurotransmitters and increases GABA (amino-amino butyric acid) which functions as inhibitory/relaxation neurotransmitters.[24,25]

Conclusions

The results showed significant results between zinc and child's temperament. Zinc plays a role in the metabolism of melatonin which is the basic ingredient of tyrosine. Melatonin is a hormone secreted by the pineal glandule and is tasked with regulating the rhythm of the circadian cycle which is responsible for regulating the human sleep cycle. Children with emotional disorders often experience sleep disorders that are thought to be caused due to melatonin deficiency[17,29]. Zinc also acts as a precursor in the synthesis of tryptophan. High Pb levels will aggravate children's emotional disturbances characterized by increased symptoms of hyperactivity, impulsivity, motor, cognitive impairment and decreased academic performance.[28,30]

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Performance of Fundamental Movement Skills among Elementary School Children with Hearing Impairment by Using an Exergame in an Inclusive Physical Education Sitting: Review of Literature

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Abstract

The societal perception of the hearing impairment has changed in the past few decades. People show more concern on hearing impairment and have reached a consensus that the case needs to be dealt with care and positivity. Thus, the recent trends towards the integration of children with hearing disabilities in ordinary schools have begun. The integrated physical education program offers opportunities for normal people to learn about the talents and their special skills. The teacher must take care of the child's locomotor and object control skills by paying attention to the development of basic motor skills through which the child can fulfill the necessary needs in life such as walking, running, throwing, etc. In this article, a systematic literature review (SLR) is presented to discuss the possibility of embedding an exergame to improve fundamental motor skills among elementary school children with hearing impairment in an inclusive physical education classroom in Saudi Arabia. The study uses a qualitative method and conducted a content analysis along with the systematic literature review to understand the research done in this field and to set the agenda of future research in this area.

Keywords: *Performance of Fundamental Movement Skills, Elementary schools in Saudi Arabia, Hearing Impairment, Inclusion, Exergame and Physical Education.*

Introduction

Hearing facilitates human communication via languages and forms the basis for social behavioural understanding which ultimately leads to environmental development irrespective of prevailing daily challenges[1]. The quality of being unable to hear or perceive sound is called deafness or hearing impairment. Fundamental Movement Skills (FMS), a combination of movement patterns of two of more body parts to form series of basic movements required for active participations in physical activities, is the foundation for a physically active lifestyle and life-long enjoyment of sporting activities[2]. While school-based interventions via PE classes have been the common media of training in FMS-related studies for children, the number of studies on FMS amongst children with hearing impairment is limited; confirming earlier studies highlighting the inadequacy of research studies on development of FMS in children with hearing impairment [3].Additionally, individuals with hearing impairment need special care and education to adapt to the needs of life and better living in accordance to their abilities and strength. Thus, Inclusion, the model of jointly educating students with disabilities and their normal peers in the same mainstream educational setting is increasingly becoming a norm in the developed nations [4].

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Overview of the Problem: The studies indicate the importance of participating in physical activities in upgrading some aspects of psychological evaluation for children, such as the realization of competence, as well as some social aspects such as making friends[5]. One of the most important requirements to achieve the effective participation of students is developing the fundamental movement skills for students with hearing impairment, both in during inclusive class of physical education and non-inclusive class. Furthermore, none of the previous studies dealt with comparing the level of fundamental movement skills of students with hearing impairment during inclusive class and non-inclusive class of physical education. Therefore, there is an urgent need to know the development of students who impaired during both the inclusive and non-inclusive educational environment by using an exergame.

Objectives of the Study:

The specific objectives are as follows:

- To investigate the object control and locomotor skills level among elementary school children with hearing impairment within inclusive and non-inclusive educational settings in Saudi Arabia.
- To investigate impact of exergame-based and traditional interventions on the object control and locomotor skills level among elementary school children with hearing impairment within inclusive and non-inclusive educational settings in Saudi Arabia
- To suggest a teaching model approach for hearing impairment student by using exergames within an inclusive and non-inclusive education setting.

Research Questions:

- Does a statistically significant difference exist in the pre and post – tests assessments of object control and locomotor skills of students with hearing impairment in the inclusive and non-inclusive educational setting groups?
- Does a statistically significant difference exist in the pre and post – tests assessments of object control and locomotor skills of students with hearing impairment in the inclusive and non-inclusive educational setting groups while using exergame-based intervention?
- Does a statistically significant difference exist pre and post – tests assessments of object control and locomotor skills of students with hearing impairment in the inclusive and non-inclusive educational setting groups while using traditional PE intervention?

The Methodology Used and Data Search Criteria: This study was approved by a panel of experts who were considered to be an ethical committee for the school of education at the University Technology Malaysia (UTM). The study uses a qualitative method and conducted a content analysis along with the systematic literature review to understand the research done in this field and to set the agenda of future research. Data collected from articles in Google Scholar databases were performed from January, first 2008 to the end of December 2018. Collected data included study design, study demographics, sample size, study population, outcome measures, and results.

Extraction of Primary Data: The initial search on the database yielded 769 articles were retrieved. Titles and the abstracts of all articles were read and revised for inclusion and exclusion. Meanwhile, most of the articles were excluded because they did not reach to the inclusion criteria. The remaining relevant primary articles were 25 articles. 3 articles were excluded because it did not touch on object control and locomotor skills and the finally forms the choices for the systematic literature review screening. 22 articles were found to be eligible for this research. Of the 22 articles included, three articles analyzed inclusion a, five articles analyzed hearing impairment students, three articles analyzed exergames and eleven articles analyzed fundamental motor skill.

Literature review findings: In this section, the results of the systematic literature review are presented. Table 1 shows the summary of pertinent research on fundamental motor skills development and hearing impairment. Numbers of publication by years for fundamental movement skills from 2008 to 2018. Out of the studies in Table 1, only 3 focused on fundamental movement skills and hearing impairment, 5 on fundament movement skills only. Out of the studies, 5 used test of gross motor development (TGMD-2). As clearly seen from the systematic literature review not too many studies conducted on an inclusion and other research terms.

Table 1: Summary of Pertinent Research on Fundamental Movement Skills Deevelopment

Study	Sample; Age; Location	Design and Intervention Type	Hearing Impairment?	FMS measure
Salmon et al., (2008)	N=311(male= 49%,); 10yr 8 mnths average; Melbourne Australia	Group-randomized controlled trial; School-based	No	Others not clearly stated
Akbari et al., (2009)	N=40 (male= 100%); 7-9 years; Semnan, Iran	quasi- experimental design; School-based	No	Test of Gross Motor Development (TGMD-2)
(Ericsson, 2011)	N=263 (male=49%, girls=51%, intervention=161, control= 102; baseline=7yr, follow-up= 15yrs; Sweden	longitudinal study; school-based	No	MUGI checklists
(Sabah, 2011)	N=40 (girls=100%, intervention=20, control= 20); 9 yrs average; Ahwaz City, Iran	semi–experimental; school-based	No	Test of Gross Motor Development (TGMD-2)
(Araujo et al., 2012)	N=41; intervention=9.6yrs, control= 9.5 yrs. average; Sao Paulo city, Brazil	school-based	No	TGMD-2
(Sirinkan 2014)	N=24; 9-12 yrs.; Turkey	Pre-posttest design; school-based	Yes	Others Not stated
(Gursel 2014)	N=18(7 hearing impaired and 11 normal); 60-70 months.; Turkey	quasi experimental design; school-based	Yes	TGMD-2
(Temple, 2017)	N=260 (male= 52%, female= 48%); 5.9 yrs.; Canada	quasi-experimental; School-based	Yes	Test of Gross Motor Development (TGMD-2)

The Current State Research Terms: Children with hearing impairment have been shown to characteristically have challenges in their individual development as it relates to speech, language, social, cognitive and FMS development, and early detection with prompt intervention is crucial to alleviating most of these difficulties for an improved overall quality of life [6;8]. [1] also pointed out that early developmental problems in students with hearing impairment are a relatively stable risk factor for certain aspects of the lives like poor academic performance, future behavioural problems, and avoidance of communication with hearing peers.

Significant delays have been reported to exist in FMS of hearing-impaired children in comparison to their hearing peers [6]. FMS development is important to a child's (hearing impaired or not) development as it forms the basis for a physically active lifestyle and lifelong enjoyment and participation in sporting activities[7]. Contrarily, lack or inadequate motor skills could predispose people to inactive behaviour and sedentary lifestyle which is one of the factors behind the rising cases of overweight and obesity in recent years[2].

In conformity with the claim that a critical period to instill the object control and locomotor skills is in the early childhood and primary school stages due to their willingness to learn and implement instructions[10], the existing studies on FMS performance and development have largely focused on children using school-based PE classes as a medium of FMS training, however, very few have focused on children with hearing impairment despite their inherent need for it. This fact has also been noted in [11].

This entails teaching hearing-impaired children alongside their hearing peers in the same class within the same mainstream educational setting. It is expected that by so doing, most of the deficiencies as regards their language, social, academic and general societal perception of them will be improved[4]. Representative studies have shown positive feedback from parents and teachers on this initiative[4;12]. However, when it comes to FMS related studies, only a preliminary study by [13] has been carried out in an inclusive setting.

The contribution of Video Games (VGs) amongst other technological advancements to the growing sedentarily in children and teenagers of this generation has attained an epidemic scale[14]. Given its captivating and motivating yet challenging nature, increasing attempts have been made reduce the stationary nature

of traditional VGs by incorporating a physical activity component to tackle some of its drawbacks [15]. Thus, Exergames, VGs which adds a physical activity component to the otherwise stationary VG environment, have been proposed a few decades ago. Representative studies have shown exergames are increasingly been used in PE classes and has been incorporated into the PE curriculum of some public schools in the United States[15].

In addition to its ability to improve physical fitness, motor skills, and being highly motivating for physical exercise, studies have also shown that exergames is capable alleviating characteristic loneliness in challenged children through increased group participation via multiple players mode[16]. Exergames have also been reported amongst other technology-oriented interventional studies related to children with hearing impairment[5;17]. However, the only related study to FMS development in hearing-impaired children is in[18], where the balance ability of adolescents with hearing impairments were tested after an exergame-based balance training. Finding reveal improved balance ability at post-test. An important future direction suggested by the authors is the need to investigate the effectiveness of this mode of balance training in multiple settings and populations.

Discussion

This Systematic Literature Review (SLR) can be seen as the first broad review on fundamental movement skills among hearing impairment in (KSA), discussing the current state of investigating the impact of interventions like FMS under varying populations gives a wider perspective of the study and exposes the possibility of other confounding factors behind certain findings if it exists. Saudi Arabia. Hence, the establishment of initiatives like the Universal newborn hearing screening which ensures that every newborn is screened for hearing problem in the first few weeks of their birth[8]. However, FMS related studies on children with hearing impairment is still lacking on this population. Although, inclusive education exists for the hearing-impaired, it only happens during PE and Art classes and intervals between classes[19]. Given the apparent lack of studies, the Saudi population of hearing-impaired children becomes an ideal one for this research.

Limitations: The study is limited in the sense that some articles might be missed out in the course of selected studies search considered. More emphasis is laid on ministry even though an in-depth study of the SLR cover other educational method; this is to know the extent of the following:

- What has been done in the popular literature in KSA?
- Where the researches in this domain of fundamental movement skills of hearing impairment students during PE class have reached by using exergame?

Conclusion

Child learning of fundamental movement skills and mastery of it may cause the child to participate in programs of physical activities on a regular basis, and this participation in physical activities increases the fitness of the child. This Systematic Literature Review (SLR) pointed out that early developmental problems in students with hearing impairment are a relatively stable risk factor for certain aspects of the lives like poor academic performance, future behavioural problems, and avoidance of communication with hearing peers**.** One of the most important requirements to achieve the effective participation of students is developing the fundamental movement skills for students with hearing impairment, both in during inclusive class of physical education and non-inclusive class. However, this study has presented detail SLR on the current state of fundamental movement skills Table 1 andnone of the previous studies dealt with comparing the level of fundamental movement skills of students with hearing impairment during inclusive class and non-inclusive class of physical education. Therefore, there is an urgent need to know the development of students who impaired during both the inclusive and non-inclusive educational environment by using an exergame.

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The Association between Levels of Mercury in the Hair with Proteinuria on Scavengers in Cipayung Landfill Area, Depok City, West Java, Indonesia

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Abstract

Mercury is a toxic contaminant, but its existence until now continues to be discarded into the waters, soil, and atmosphere. One of the organs sensitive to the type of heavy metals in the kidneys. One sign of symptoms of chronic kidney disease is the presence of proteinuria. This research aims to do the association between mercury levels in hair and the incidence of proteinuria on the scavenger in Cipayung landfill area. This research uses cross-sectional study design. The research sample is 85 people scavenger. The statistic test used is a chi-square test. A scavenger with a risk of exposure to mercury (≥ 1 ppm) by 10.6%. The maximum rate of mercury in the hair of the respondent is 2,306 µg/g. As many as 67.1% of respondents experienced proteinuria symptoms. There is a significant association between mercury in hair and proteinuria on the scavenger around Cipayung landfill area (P-value 0.002). Living and working near areas of high pollution have the potential to lower quality of life. Therefore, the local policymakers should aim to establish practices and procedures to reduce exposure to heavy metals from landfill area to improve the quality of life.

Keywords: *Mercury, Proteinuria, Cipayung, Scavenger.*

Introduction

The US Government Agency states that mercury is a toxic contaminant, but its existence is still continuously discarded into the waters, soils, and atmospheres, and consumed in food and drinking water [1]. This heavy metal is still widely used in various fields including the manufacture of thermometers, barometer, manometers, cosmetics, and dental analgam[2]. Mercury emissions from waste disposal and municipal waste utilization are estimated at 0.033 to 46.2 kg-1. India became the world's largest mercury emission nation, followed by China, and North America [3].

Increasing populations, economic growth, rapid urbanization, and increased standards of living communities, potentially increasing the city's dense waste in developing countries. The garbage generated by the world population is about 1.3 trillion tonnes per year, and is expected to increase to 22 trillion tonnes by 2025 [4]. Solid waste disposal management is a priority in modern society organizations. Potential health hazards for the environment and the communities that live nearby are claimed to be associated with waste management [5]. This potential danger also threatens workers who work in landfill (scavenger).

In Indonesia, the mercury contamination is recorded in Banda Acehlandfill, mercury is found in water lecheate which exceeds the standard threshold of quality[6]. At Bantar Gebanglandfill, mercury content in water wells and river water around the landfill area shows the

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number of quality standards[7]. Cipayung Depok is a landfill with the largest open dumping system in Depok city. Year 2012 results of water quality test with mercury parameter in Cipayung landfill namely < 0.0002 mg/L[8]. Based on preliminary tests that researchers do in September, the mercury content in water is 0.11 mg/L. It shows mercury in water in Cipayung landfill above the threshold of quality standards, and there has been an increase in the last 7 years. The potential for increased mercury levels in water continues to increase with the increase in the amount of garbage per day of Depok, but not accompanied by good waste management.

The effects of mercury can result in disturbances in the cardiovascular, hematological, pulmonary, digestive and renal systems, the imum system, the nervous system, the endocrine system, the reproductive system, and embryo development disorder [1]. One of the organs sensitive to the type of heavy metals is kidneys. One sign of symptoms of chronic kidney disease is the presence of proteins in urine. Chronic kidney disease is becoming increasingly common in the world. In high-income countries, treatment of kidney disease weighs more than 2-3% of the health budget. The cause of kidney disease is very complex, arising from biological, genetic, lifestyle, and environment [9]. In the year 2015 in Depok, kidney disease became the top disease cause of patient death in hospitals, with 1167 cases and 625 of which is a new case [10].

Increased amount of garbage per day that is not accompanied by good garbage management, can cause mercury pollution in the environment especially around Cipayunglandfillarea. This becomes a risk factor for decreasing the function of mercury's target organ, one of which is kidney, characterized by the presence of protein levels in urine. The increasing number of age groups in the people of Depok who suffer from kidney disease, need to be re-examined sources of exposure especially heavy metals in the environment that can lead to decreased renal function. Based on the explanation, researchers are interested to know the association between mercury levels in hair and the incidence of proteinuria in the scavenger around Cipayung landfill area, Depok city, West Java.

Method

This study uses a cross-sectional design and was conducted in September 2019 at Cipayung landfill Depok, West Java, Province Indonesia. This study uses the Chi-Square test and uses the significance limit of α (alpha) = 0.05 and 95% convidence interval. The population of this study were all scavengers working around the Cipayung landfill. This research technique uses total sampling technique. The sample of this study was 85 scavengers who worked during sampling days. Hair used as a biomarker to measure mercury in this study. Hair samples are taken to the laboratory and analyzed using MA-3000 devices. Urine is used to test protein levels. Testing using a dipstick. Then, the results were verified by two clinical laboratory analysts.

Result

In this study there were 85 respondents who had the characteristics presented in table 1.

Table 1. Characteristics of Sample Populations

No	Characteritics (N=85)	n (%)
1.	Sex	
	Male	44 (51.8)
	Female	41 (48.2)
2.	Age, mean ± SD	46.33 ± 13.2
	≤25	7 (8.2)
	26-45	30 (35.3)
	46-64	42 (49.4)
	≥65	6 (7.1)
3.	Weight, mean ± SD	54.02 ± 11.5
	20-40 kg	9 (10.6)
	41-60 kg	58 (68.2)
	>60 kg	18 (21.2)
4.	Education	
	Not Study	24 (28.2)
	Primary School	35 (41.2)
	Secondary School	14 (16.5)
	Higher Secondary School	12 (14.1)
5.	Smooking	
	No	34 (40)
	Yes	51 (60)

Gender of the participants were 44 males (51.8%) and 41 females (48.2%). The average age was 46.33 years old. The average weight of the respondent is 54.02 kg. As many as 35 (41.2%) respondents graduated from primary school. Respondents who smoked were 51 (60%) (Table 1).

The results of measurements of mercury in hair are in table 2. Scavengers with a risk of exposure to mercury (≥1 ppm) of 10.6%. The maximum level of mercury in the respondent's hair is 2,306 µg/g.

Table 2. Results of Mercury in Hair

Mercury in Hair (N=85)	n (%)
Normal (<1 ppm)	76 (89.4)
Risk (≥1 ppm)	9 (10.6)
Mean ± SD	0.56 ± 0.43
Min – max (µg/g)	0.156 – 2.306

The results of proteinuria on scavengers are presented in table 3. As many as 67.1% of respondents experienced symptoms of proteinuria. Only 32.9% of respondents with negative proteinuria.

Table 3. Proteinuria Results

Proteinuria (N=85)	n (%)
Normal (negative)	28 (32.9)
Risk (≥1)	57 (67.1)

In this study, respondents with mercury levels above recommended levels and proteinuria positive, at 7.8%, A strength of our study is that it addresses a significant association between mercury in hair and proteinuria on scavengers around the Cipayung landfill (p-value 0.002). Scavengers with mercury levels in the hair above the quality standard have a 11,278 times chance of experiencing proteinuria (Table 4).

Table 4. Associations between Mercury in Hair and Proteinuria

Mercury in Hair	Proteinuria		Total n (%)	Pvalue	OR
	Normal n (%)	Risk n (%)			
Normal n (%)	58 (76.3)	18 (23.7)	76 (100)	0.002	11.278 (2.149-59.198)
Risk n (%)	2 (22.2)	7 (7.8)	9 (100)		
Total	60 (70.6)	25 (29.4)	85 (100)		

Discussion

Cipayung landfill area (6º25'08ºS 106º47'10ºE), located in Depok, West Java Province, Indonesia. Cipayung Depok landfill is the largest open dumping landfill in Depok City. Cipayung landfill began operating since 1984 with a total land area of morethan 11.2 hectares with a 5.1 hectare landfill area. The volume of garbage entering per dayreaches 1,500 tons per day, but 600 tons have been processed into the composting process at the waste management unit and garbage bank. So that average waste daily entrance to the Cipayung landfill reaches 900 tons of waste a day.

Urban waste management in Indonesia becomes an actual problem along with the increasing rate of population growth which has an impact on the increasing amount of waste generated [2]. The Government of Indonesia still faces many obstacles in the implementation of waste management systems, especially in the context of achieving universal sanitation access targets in 2019, including the low access to waste services, low public awareness, low commitment by local governments in waste management, weak institutional management sanitation (regulator and operator) as well as human resource capabilities. The complexity of the waste problem in Indonesia makes health problems stem from landfills including mercury pollution.

Based on the water quality test results of the mercury parameters at the Cipayung Landfill in 2012, it was found that mercury levels were still below the quality standard of <0,0002 mg/L [8]. In September 2019, researchers conducted a mercury test in water which was 0.11 mg/L. this shows that the mercury in the water around the Cipayung landfill is above the quality standard threshold, and there has been an increase in the last 7 years.

Increasing the amount of waste per day, which is not accompanied by good waste management, can cause mercury pollution from heavy metals in the vicinity

of the landfill. The control of mercury emission is very difficult, because anthropogenic mercury sources decompose for a long time, while the residual waste of mercury products is still piling up at the landfill site and is increasing day by day. As a global pollutant, mercury bioaccumulation can enter the food chain and is very toxic to humans [12].

Hair is the preferred choice for many studies because it provides simple, integrative, and non-invasive samples. Estimated exposure should not take up to 11 years. After accumulating in the hair, mercury does not return to the blood, thus providing a good long-term marker of methyl mercury exposure. The total mercury in the hair is around 250 to 300 times higher than the blood mercury concentration when the hair is formed. CVAAS is one method for measuring mercury levels in hair [13]. The permissible reference dose of mercury in hair is 1.0 µg/g. More than the specified dose, can cause damage to the target organ [14].

Proteinuria is a condition that is often found in humans, which is generally a marker of kidney and urinary tract abnormalities. Acute clinical symptoms of mercury exposure in the renal are oliguria, anuria, hematuria, proteinuria. Chronic clinical symptoms of mercury exposure in the renal are polyuria, polydipsia, and albuminuria. After acute exposure to mercury, acute tubular necrosis appears, usually accompanied by oliguria. In chronic exposure, mercury is stored in the kidneys and induces epithelial injury and necrosis in the rectal pars of the proximal tubules [15]. Mercury concentrates on the kidney tubules and in the glomerulus which produces proteinuria, fibrosis, chronic kidney dysfunction, and renal insufficiency [16].

Mercury and proteinuria are also reported in Hg toxicity. Effects on rectal pars tubules, proximal tubules, inclusion of mercury in glomerular filters, and sensitivity of lysosome tissue are assumed to contribute to proteinuria. Long-term exposure to organic and inorganic mercury is detrimental to health including the kidneys [17]. Various reports have shown that mercury exposure can cause a variety of kidney injuries including subacute-onset nephrotic syndrome, tubular dysfunction, secondary segmental focal glomerulosclerosis, synchronic nephrotic syndrome, nephritic syndrome, nephrotic range proteinuria, glomerular disease, and membranous glomerulosclerosis[1].

Conclusions

Working as a scavenger has the risk of being exposed to hazardous substances and is detrimental to health. The discovery of an association between mercury in the hair with proteinuria shows the presence of heavy metal mercury exposure around the Cipayung landfill area. Living and working near high polluting areas has the potential to reduce quality of life. Therefore, the local policymakers should aim to establish practices and procedures to reduce heavy metal exposurefrom the landfill area to improve the quality of life. Moreover, these findings indicate the importance of intervention and surveillance measures, especially for residents with respiratory symptoms, to reduce the risks of water pollution exposure and lead to better health.

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Ethics Approval: The study protocol was approved by the Ethics Committee of Public Health Faculty, University of Indonesia, Depok, Indonesia (Number 676/UN2.F10/PPM.00.02/2019).

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Health Risk Analysis of Exposure to Air Benzene among Student at Junior High School 16 Bandung West Java

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Abstract

Air containing harmful substances can harm human health. One of the harmful chemicals that can pollute the air is benzene. The use of benzene in Indonesia ranging from 20-40%. Bandung is one of the largest cities in Indonesia, which experienced a decline in ambient air quality due to air pollution. With the condition of ambient air pollution on children of the school to be one risk population exposed to benzene substances. This study was conducted to analyze the environmental health risks due to exposure benzene to students of Junior High School 16 Bandung. The research method used a cross-sectional design with environmental health analysis. The samples were 109 respondents who are selected by purposive sampling. The anthropometric characteristic was measured by body weight, and student activity pattern characteristic was measured by direct interview. Benzene concentration used NIOSH 1501 method using a personal sampler pump and charcoal tube which analyzed by Gas Chromatography. Analysis conducted using the Environmental health risk analysis method. Benzene concentration in ambient air had an average of <0,316 mg/m3. The average of intake rate for non-carcinogenic (CDI) real-time duration was 0,000987 mg/kg/day while for the intake rate for carcinogenic (LADD) was 0,00035 mg/kg/day. The non-carcinogenic risk level Risk Quotient (RQ) real-time duration was 0,115 and 3 years duration was 0,191, while for life span exposure was 1,598. The carcinogenic risk level (ECR) minimum was 2,676E-6, and the maximum was 9,426E-6. The RQ value of life span duration had exceeded the risk-safe limits so that the air in the school environment could lead to a non-carcinogenic health effect.

Keywords: *Benzene, Air Pollution, School, Environmental Health Risk Analysis.*

Introduction

Air containing harmful substances can harm human health. According to WHO in 2014, 92% of the human population lives in areas with air quality that does not comply with the provisions of the WHO. One of the harmful chemicals that can pollute the air is benzene. Benzene exposure in the population comes from inhaling contaminated air such as benzene from transport, motor vehicle exhaust emissions, industrial waste gas, oil extraction, and the location is close to the fueling stations[1,2,3]. The International Agency for Research on Cancer (IARC) and the US Environmental Protection Agency (US EPA) classifies benzene as a carcinogenic to humans [4,5]. The use of benzene in Indonesia ranging from 20-40% [6]. The presence of benzene content in gasoline to 12 million kL per year led to a decrease in air quality in major cities[7]. Bandung is one of the largest cities in Indonesia, which experienced a decline in ambient air quality due to air pollution. With the condition of ambient air pollution on children of the school to be one risk population exposed to benzene substances. Children aged less than seventeen years old who are exposed to benzene showed a change in the blood profile, liver enzymes, and somatic symptoms, so

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children at higher risk of experiencing blood disorders or liver development [8]. This study was conducted to analyze the environmental health risks due to exposure benzene to students of Junior High School 16 Bandung.

Method

This study uses a cross-sectional study design. The analysis conducted using the method of Environmental Health Risk Analysis. The research looked at the amount of benzene concentration in ambient air as much risk of exposure and health effects estimates of carcinogenic and non-carcinogenic which may occur at-risk populations studied.

The concentration of benzene obtained through measurement using NIOSH method 1501 at 10 points at Junior High School 16 Bandung. A sampling of benzene in the air using a personal sample pump and filter tube benzene SKC 226-01 charcoal. Set the pump flow rate of 0.2 mL/min and the pump is activated first for 5 minutes to obtain an appropriate sampling volume. Activated carbon (charcoal) containing benzene from the air will be broken up and dissolved carbon disulfide (CS2). Analysis of benzene will use tools Gas Chromatography (GC-FID) in the laboratory.

Data processing is performed on the results of studies using the quantitative analysis method by comparing the intake of benzene exposure is inhaled by students Junior High School 16 Bandung with the reference concentration value (RFC) for non-carcinogenic effects while the slope factor (SF) for carcinogenic effects.

Results

Benzene Concentration: Air sampling was conducted at 10 points in the Junior High School 16 Bandung when learning activities taking place was 4 points corridors classes and six points outside the room (2 points in the field, one point in the cafeteria, one point in front of the security office, 1 point in the sidewalk in front of the school, and 1 point opposite the location of the school students of Junior High school 16 Bandung ride down public transit). In the analysis of the measurement results of air samples at Junior High School 16 Bandung, in getting that on the whole point has a value of 0.092 ppm or 0.316 mg/m^3. These values are used for each point mentioned contained levels of benzene in air analysis using Gas Chromatography, but do not exceed the limit so that the tool detection stated that the concentration of benzene in the air 0.092 ppm or 0.316 mg/m^3.

Table 1. Benzene concentration, temperature, humidity, and wind speed at Junior High School 16 Bandung

No.	Locations	Result				
		Benzene (ppm)	Benzene (mg/m^3)	Temperature (^{o}C)	Humidity (%)	Wind Speed (m/s)
Indoor						
1	Between Class 8A & 8B	<0.092	0316	29.5	61	0,00
2	Class 8E 2nd-floor hallway	<0.092	0316	29.2	61	0,00
3	8J Class 2nd floor hallway	<0.092	0316	30.1	59	0,00
4	8D Class 2nd floor hallway	<0.092	0316	30	59	0,00
Outdoors						
5	Sports Fields 1	<0.092	0316	30.8	56	0.02
6	Sports Fields 2	<0.092	0316	30.9	56	0.03
7	Security post	<0.092	0316	30.5	58	0.02
8	Across Schools	<0.092	0316	30.8	58	0.03
9	Home School	<0.092	0316	29.4	63	0.03
10	Canteen	<0.092	0316	29.4	63	0.01
Average Indoor		<0.092	0316	29.7	60	0,00
Average Outdoors		<0.092	0316	30.3	59	0,023
Average Overall		<0.092	0316	30.06	59.4	0,014

Dose-response Analysis: Analysis of dose-response is determining quantitative values the agent for any form of specific chemical in which the toxicity of the effects of non-carcinogenic expressed in the reference dose (RFD) or the concentration of reference (RFC), while the carcinogenic effects expressed in value curve effect-dose or Slope Factor (SF). RFC value of benzene is 3x10-2 mg/m^3 in order to know the value of RQ (Risk Quotient), the unit value of RFC should be converted into mg/kg/day in order to be compared with the value of the intake (Intake) by multiplying the value of concentration reference (RFC) benzene with units of mg/m3 by inhalation rate value per day, then divided by the weight. From these calculations are obtained benzene RFC value is 0.00857 mg/kg/day.

SF value can be derived from the value of water inhalation unit risk of benzene exposure set by the US-EPA IRIS. The value water unit risk of benzene was 2.2 x 10-6 to 7.8 x 10-6 for every 1 g/m^3 of benzene. SF value obtained that have two minimum and maximum values in which the minimum SF is 7.59 x 10-3 (mg/kg/day) -1 and a maximum SF is 2.69 x 10-2 (mg/kg/day) -1. CSF maximum and minimum value will be used to calculate the health risk of cancer due to exposure to benzene in the air at students of Junior High School 16 Bandung.

Characterization Risk: The level of non-cancer health risks stated in the Risk Quotient (RQ) to be able to determine the magnitude of the danger level of exposure to a populace. Non-cancer health risks (RQ) for all student respondents SPMN 16 Bandung on the duration of exposure at this time (real time) did not indicate any risk, so bullae on the duration of exposure for three years. However, if the time duration is calculated throughout life (lifespan), then visible non-carcinogenic health risks. Calculations are also performed when the exposure for 5, 10, 15, 20, and 25, so it can be estimated that exposure to benzene for students of Junior High School 16 Bandung no risk to less than 20 years.

Table 2. Estimated Health Risk Non-Carcinogenic (RQ) Benzene Against Students Junior High School 16 Bandung

Information	Dt (years)						
	1.8 (Real Time)	3	5	10	15	20	25 (Life Span)
CDI (mg/kg/day)	0.000987	0.00165	0.00274	0.00548	0.00823	.0110	.0137
RQ	0,115	0.191	0.319	.639	0,960	1,280	1,598

The level of carcinogenic health risk expressed in the ECR (Excess Cancer Risk) was calculated to determine the level of the carcinogenic hazards of an agent of risk in the population.

The health risks of cancer in real time for all the students of Junior High School 16 Bandung is 2,676 x 10^{-6} to 9,483 x 10^{-6}. The value indicates that the health risks of cancer do not exceed 10-4, so that means there is no risk of carcinogenic cancer. To predict the health risks of cancer in students of Junior High School 16 Bandung then done anyway if exposure calculation for 5, 10, 15, 20, and 25. From Table 6 it can be estimated that the health risks of cancer (ECR) minimum exposure to benzene are not at risk up to 25 years but in the ECR maximum exposure to benzene can occur from year to 20 which is equal to 1.05 x 10^{-4} up to 25 years of exposure which is equal to 1.31 x 10^{-4}.

Table 3. Estimated Carcinogenic Health Risk (ECR) Benzene Against Students Junior High School 16 Bandung

Information	Dt					
	1.8 (Real Time)	5	10	15	20	25 (Life Span)
LADD (mg/kg/day)	0.000352	0.000979	0.00196	0.00294	0.00391	0.00489
ECR min	2.676 x 10-6	7.43 x 10-6	1.49 x 10-5	2.23 x 10-5	2.97 x 10-5	3.71 x 10-5
ECR max	9.483 x 10-6	2.63 x 10-5	5.27 x 10-5	7.90 x 10-5	1.05 x 10-4	1.31 x 10-4

Discussion

Benzene is used as an astringent Catalyser and an anti-knock engine with a concentration of 1-5% of the total volume, resulting in approximately 85% of benzene in ambient air coming from transportation activities, namely motor vehicle exhaust gas [9,10]. In Indonesia, the exhaust emission test results conducted by BTMP-BPPT in 2010 showed that concentrations of benzene emitted motor vehicle engines range from 0.01 to 0.39 mg/m^3[1]. Metabolites result from the metabolism of benzene is a reactive compound that can cause health problems [11].

Overview concentration of benzene in the Junior High School 16 Bandung obtained by the measurement of air samples at 10 points and obtained the value of <0.092 ppm, equivalent to <0.316 mg/m^3 in the overall points measured. This is influenced by the method of sampling carried out, in which the sampling method by NIOSH 1501. The standard is suitable for measuring the concentration of benzene in the air working environment but must make modifications to the old sampling to obtain a larger air volume so that the absorption of benzene can be measured with high scores. The concentration of benzene in the air is influenced by the surrounding air temperature and weather. Benzene vapor in the air intangible and can last for one day to two weeks, which is influenced by climatic conditions and concentrations of other pollutants in the air [3,11].Junior High School 16 Bandung has air quality, but quite humid heat, humidity as a whole had an average of 59.4%.

Calculating the value of real-time risk level of benzene exposure in students of Junior High School 16 Bandung obtained 0,115. Nilai value RQ <1 indicates that the absence of non-carcinogenic health risks for the population in a certain duration of exposure. RQ value obtained in a real-time exposure of 0,115 mean benzene exposure to the students of Junior High School 16 Bandung in the duration of the exposure is currently 1.8 years did not show any non-carcinogenic health risks. RQ value for the duration of exposure for three years also showed no non-carcinogenic health risks. However, different for lifelong exposure, the value of non-carcinogenic health risk level indicates RQ of 1.59 which means it shows that under the same conditions, non-carcinogenic health risks may arise.

At the estimated level of non-cancer health risks indicate the level of risk (RQ) ≥ 1 began in the year to 20 exposures, which is equal to 1.280. Estimates of the level of risk undertaken benzene exposure apply to the condition of anthropometry and a similar pattern of activity. In the event of an increase in the concentration and activity patterns that may occur non-carcinogenic health risks faster than forecasts made, because the concentration of benzene and patterns of human activity is directly proportional to the value of the intake.

Carcinogenic health risk characteristics obtained from the calculation of Excess Cancer Risk (ECR) ECR. Value use of lifelong exposure duration of 70 years because if a person at risk for exposure to a toxic, carcinogenic substance, the risk is valid throughout his life. ECR value is 2.676 x 10^{-6} minimum and maximum values w 9.483 x 10^{-6}. Declared carcinogenic risk level exceeded safe limits for population and risk causes carcinogenic health effects if the value of the ECR> 10-4. In this study, the real-time value of the ECR either a maximum or minimum indicates a smaller result of> 10-4 so that it can be concluded that benzene exposure to real-time risk does not pose carcinogenic health effects for students of Junior High School 16 Bandung.

At the minimum risk level value is not found carcinogenic risk up to 25 years into the future, but for maximum risk level can be seen the emergence of a risk to start in all 20 exposures. Under the same circumstances, the emergence of carcinogenic health risks in the year to 20 exposures can occur in a teacher or other school personel who worked for years at the school. Teachers and school staff are not experienced turnover teach or work location will be at the same school so that the concentration of benzene and similarities of the activity will allow for the emergence of the health risk of carcinogenic and non-carcinogenic.

Risk management is conducted if the value of the risk of non-carcinogenic and carcinogenic both declared unsafe. However, risk management also must still be done considering the value of risk is never zero or is always there. Large non-carcinogenic and carcinogenic risk in this study indicates the number within safe limits for the duration of the exposure to real-time, but showed no safe level of risk in the next few years or even sooner if the value of increased concentration and activity patterns. Therefore, do health recommendations (Health Advisory) to be able to control the risk of exposure to benzene. Recommendation health (Health Advisory) that can be done is by controlling the time of exposure. Non-carcinogenic safe exposure time for students in Junior High School 16 Bandung is ≤ 6 hours. Currently, the average exposure time was 6 hours per day so it

is still within safe limits, but other students activities such as extracurricular activities can increase the time students during the school day. Therefore, it is necessary to monitoring learning time during the school day for students that do not pose a health risk.

Conclusion

The average value of the concentration of benzene in the air Junior High School 16 Bandung in 2017 was 0.092 ppm or 0.316 mg/m^3, were above the Reference Concentration (RFC), which has been established by the US EPA which is equal to 0.03 mg/m^3. The results of anthropometric data obtained an average weight of respondents was 47.10 kg. Values intake rate had an average of 0.56 m^3/h, the value of frequency of exposure which is 219 days per year, the value of exposure time was 6 hours/day, and the duration of exposure in real-time was 1.8 years. The average value of the intake (CDI) real-time is 0.000987 mg/kg/day, the value of the intake (CDI) 3 years is 0.00165 mg/kg/day, and the value of the intake (CDI) throughout life or life span is 0, 1371 mg/kg/day. Values for the intake of carcinogenic exposure (LADD) of 0.00035 mg/kg/day. Large non-carcinogenic risk level (RQ) for the duration of the exposure to real-time amounted to 0,115 and for a duration of 3 years exposure of 0.191, while the life span for the duration of exposure is equal to 1.598. Large carcinogenic risk level (ECR) minimum of 2,676 x 10^{-6} and ECR maximum of 9.482 x 10^{-6}.

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Analysis and Prediction Blood Pressure and Disease by Applying Decision Tree, Naïve Base and Random Forest algorithms

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Abstract

Healthcare data mainly contains all the patients' information as well as the parties involved in healthcare industries. The rate storage of such type of data is increased very rapidly. Because of the continuous increasing the size of electronic healthcare data becomes very complex. It becomes very difficult to extract the meaningful information from it by using the traditional method. Due to advancement in field of statistics, mathematics and every other discipline, now it is possible to extract the meaningful patterns from it and can be used for medical decision making. Data mining is beneficial in such a situation where large collections of healthcare data are available. This paper includes a comparison between Decision tree, Naïve baseand Random Forest algorithms on diabetes and blood pressure dataset. After data classification, the results show that Random Forest algorithm had the more accurate classification with 98% accuracy.

Keywords: *Data Mining; Decision tree; Naive base; Random forest Classification; blood pressure.*

Introduction

Data Mining mainly extracts actionable, meaningful patterns from the data. These patterns can be then integrated into the knowledge and with the help of this knowledge essential medical decisions can be possible. Data mining provide many benefits in many domains: it plays an important role in the detection of fraud and abuse, very helpful in the medical treatments, it is useful in the disease's early stages detection. Data mining techniques in healthcare domain can provide better medical services to the patients, intelligent in healthcare decision support systems and Beneficial in healthcare organizations in various medical management decisions. It has been used in many domains like image mining, opinion mining, web mining, text mining, graph mining etc.it is also helpful for better effective treatments, fraud insurance claims by patients as well as by providers, readmission of patients, identifies best treatments method for a group of patients, construction of effective drug recommendation systems [1].Diabetes and Blood pressure is a major health issue for a long time, is a chronic disease that indicates the high level of diabetes and blood pressure in the blood vessels. In this paper we used data mining techniques for diabetes and blood pressure disease prediction. In our work we used WEKA tool to classify our diabetes and blood pressure dataset. WEKA is a data mining tool that contains many classification and clustering algorithms. We used WEKA Explore with 10-fold cross validation to compare the accuracy results between Decision tree, Naïve base and Random Forest algorithms. Random forest algorithm provided a better accuracy 98% than Decision Tree and Naïve base algorithm. We set an online dataset from Kaggle website. The flowing figure shows the proposed analysis framework, it includes data collection, data preparation, data modeling and the outcomes evaluation.

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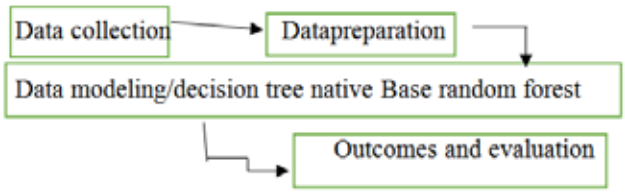

Figure [1]: Proposed Analysis Framework

Data collection and preparation: A lot of online datasets are available now for analysis. We used an online dataset from Kaggle website from hospital of Frankfurt am Main, Germany[2], this dataset has 2000 rows and 9 columns. Basically, we have used WEKA filters, unsupervised filters to change data values from numeric to nominal values because Naïve base algorithm, decision three algorithm and Random forest algorithm deal with nominal data. The table below shows the data using openrefine tool. Openrefine is an opensource tools for data analysis and data cleaningtask[9].

Table (1): Diabetes dataset

All	Pregnancies	Glucose	Diabetes Pedigree	Skin Thickness	Insulin	BMI	Blood Pressure	Age	Outcome
1	2	138	0.127	35	0	33.6	62	47	1
2	0	84	0.233	31	125	38.2	82	23	0
3	0	145	0.63	0	0	44.2	0	31	1
4	0	135	0.365	42	250	42.3	68	24	1
5	1	139	0.536	41	480	40.7	62	21	0
6	0	173	1.159	32	265	46.5	78	58	0
7	4	99	0.294	17	0	25.6	72	28	0
8	8	194	0.551	0	0	26.1	80	67	0
9	2	83	0.629	28	66	36.8	65	24	0
10	2	89	0.292	30	0	33.5	90	42	0

Methodologies

Decision Tree: J48 it is a classification algorithm for supervised technique, it is simply a tree with root at the top and leave in the bottoms consist of tests or attribute nodes linked to two or more subtrees and leaves or nodes. The non-leaf node is the decision node. Decision Tree can hold high amount of categorical data. So, based on the entropy calculation and information gained, decision tree picks the best feature as a root to start splitting the tree in to branches, decision nodes specify a choice and based on that choice we can decide which direction we should continue, the choice or the test is done on the value of the feature of the instance, so based on the value of the choice we go to the corresponding brunch and continue this until it comes to the decision node which is the predicted value.[3]

The outcome of the decision tree classifier is showing in the table below, which is the number of the instances that are correctly classified and the number of instances that are incorrectly classified and the accuracy rate for.

Table (2): Decision Tree classification results

	Number of instances correctly classified	Number of instances incorrectly classified	Accuracy
Decision Tree	1356	644	67.8

Naïve Base: Is a machine learning algorithm for classification problems. It is known for its simplicity and effectiveness, naïve base builds models fast and make quick predictions, it is a probabilistic classifier. Naïve base refers to the statistician and philosopher Thomas Bayes and the theorem named after him Bayes' theorem[4]. Bayes' rule It says we can compute the probability of our hypothesis **H** given some evidence **E** by looking at the probability of the evidence given the hypothesis and the unconditional probof the hypothesis and the evidence [5], as shown in the following formula:

$$P(H|E) = \frac{P(E|H) * P(H)}{P(E)} \quad [5]$$

The flowing tables shows the classification results for naïve base algorithm which are the numbers of the instances that are correctly classified from the dataset and the number of instances that are incorrectly classified from the dataset in addition, and the accuracy rate for that classifier.

Table (3): Naïve base classification results

	Number of instances correctly classified	Number of instances incorrectly classified	Accuracy
Naïve Base	1785	215	89.25

Random Forest: It is one of the most powerful supervised machine learning algorithms that is capable for regression and classification tasks. The forest is created by number of trees, the more trees in the forest the more chance of prediction leads to higher accuracy. Random forest simply works like decision tree algorithm, the decision of most of the trees that chosen by random forest, it is the final decision. The prediction in Random forest depends on random directions created that decide the growth of each tree in the staff, it is an example of bagging by Bierman 1996 based on random features selection from the training dataset[7,8]. The table below shows the classification results of Random forest algorithm that displays number of instances that correctly classified, the number of instances that incorrectly classified and the accuracy rate.

Table (4): Random forest classification results

	Number of instances correctly classified	Number of instances incorrectly classified	Accuracy
Random Forest	1974	26	98.7

Examine the Output: The goal behind classification method is to boost the accuracy rate to support decision making. Each algorithm has a clear output about the classifier which includes number of instances were correctly classified, the number of instances were incorrectly classified, accuracy rate, precision, recall and confusion matrix. In The class accuracy section, The True Positive (**TP**) rate is the percentage of instances which were correctly classified, and it is equivalent to Recall. The False Positive (**FP**) rate is the percentage of instances which were incorrectly classified. The True negative (**TN**)rate is the percentage of instances that were not classified from the class. The (**FN**) rate is the percentage of instances that are equivalent but were not classified for that class. The **Precision** is the ratio of True Positive instances of the class among all those which were classified in the class. The **Recall** is the percentage of the equivalent records that were classified in the class. The **F-Measure** is a combined measure for precision and recall[3]. The confusion matrix contains the actual count of correct and incorrectly classified instances. It is easy to read; the rows are the actual class and the columns are the predicted class. Multiple class models have a very similar design [6]. The confusion matrix is shown in the table below:

Table (5): Confusion matrix

	Predicted Classes	
Actual Classes	TP	FN
	FP	TN

The main diagonal of the confusion matrix tells us how the model did, in other word the accuracy rate we can calculate the accuracy rate by using the flowing formula:

$$\text{Accuracy} = \frac{TP + TN}{TP + FP + TN + FN} \quad [3].$$

The flowing table shows the compaction results between Decision Tree, Naïve base and Random forest algorithms.

Table (6): A comparison between classifiers

Algorithm	TP Rate	FP Rate	Precision	Recall	F-measure	Accuracy
Decision Tree	0.926	0.800	0.690	0.926	0.791	67.8
Naïve base	0.905	0.132	0.930	0.905	0.917	89.25
Random forest	0.988	0.015	0.992	0.988	0.990	98.7

Conclusion

Applying data mining techniques for chronic diseases can support decision making, reduce the time and the cost in hence reduce the chronic disease death. In this paper we have analyzed an online diabetes dataset from Kaggle website to predict the early detection of diabetes and blood pressure, we used classification techniques which are Decision tree Naïve base and Random forest to compare the accuracy rate between these classifiers. We used WEKA Explore with 10-fold cross validation to compare the accuracy results, classification outcomes show that Random forest is the highest accuracy 98% among these classifiers, while naïve base accuracy rate is 89% and Decision tree came up with 67% accuracy rate. Each classifier has its own characteristics+ and they are powerful in healthcare domains specially with chronic diseases like diabetes, heart disease, kidney disease etc. many benefits behind data mining in healthcare, the most important one is saving patient's life.

Conflict of Interest:, University of Diyala, Iraq.

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The Impact of Psychological Counseling and its Relationship to Internet Addiction among Preparatory School Students

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Abstract

Context: Psychological counseling among preparatory school students. Internet addiction among preparatory school students. The relationship between Psychological counseling and internet addiction among preparatory school students. There is no doubt that students when their religious and customary values and principles are weakened, they become in a state of disintegration and rupture in their psychological structure and feel loneliness and alienation within themselves and others, and move from a vacuum into a vacuum. The preparatory school students have average internet addiction. There is a correlation between the level of religious commitment and Internet addiction. According to the findings of the research, some recommendations and suggestions were presented.

Keywords: *Religious commitment, internet addiction.*

Introduction

In order to achieve the objectives of the research, the researcher has conduct the following: Adopt the measure of religious commitment [1] and the measure of Internet addiction [2], which were concord in their final form after the completion in the conditions of psychometric properties, which was paragraph for the religious commitment scale and paragraphs for the Internet addiction scale. The research was limited to the Babylon General Directorate of Education for the academic year (2018-2019), and the research population consists of (150) students, as well as the research adopted the descriptive approach, and to achieve the objectives of the research, the religious commitment scale and the Internet addiction scale was applied on the research sample[3], and then analyzed the data using (SPSS) statistical program, and the results were as follows: The preparatory school students have an average religious commitment. The preparatory school students have average internet addiction. There is a correlation between the level of religious commitment and Internet addiction. According to the findings of the research, some recommendations and suggestions were presented [4]. Islam has made the proper way to build a human being with sound mind and body so that it becomes a strong and coherent brick and a positive element in its bigger society. It has also made the way to build a virtuous human society to be the right environment for human development through sound and proper education, and which allows people to show their energies stored in them[5].

Methodology

This chapter includes an overview of the research methodology and procedure in identifying the research population and sample, method of selection and identification of measurement tools, as well as identifying the most important statistical methods used in data processing and analysis.

1. **Research Methodology:** The researcher used the descriptive approach as the most appropriate method to study the correlation between variables and their detection in order to describe and analyze the phenomenon studied [6].
2. **Research Population:** The research population included preparatory school students in the Babylon

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General Directorate of Education for the academic year (2018-2019).

3. **Research Sample:** The research sample was randomly selected from the middle school students. The number of research sample individuals was (150) students distributed in secondary schools in the Babylon General Directorate of Education as illustrated in Table (1).

Table 1: Research sample distributed in schools

No.	School Name	Male	Female	Sum
1	Sana'a Preparatory School	26	-	26
2	Al Sajad Preparatory School for Boys	30	-	30
3	Qortoba High School for Girls	-	27	27
4	Al Jihad Preparatory School for Boys	22	-	22
5	Al-Badour High School for Girls	-	26	26
6	Haifa High School for Girls	-	19	19
	Sum	78	72	150

4. **Research Tools:** The researcher adopted the measures of religious commitment and internet addiction among preparatory school students, where it was adopted Al-Hamdani (2005) scale for religious commitment and Arnot (2007) scale for Internet addiction for the purpose of achieving research objectives.

Validity of paragraphs: The two scales were presented in a preliminary form to a group of specialized arbitrators who were asked to judge the validity of the paragraphs in measuring the religious commitment and Internet addiction, and to give their opinions and notes regarding the formulation of paragraphs and their affiliation to the scale.

Preparing the scales instructions: The instructions of the scale are the guide to the respondent, so it was considered making the scales instructions to be clear, simple and understandable, and should be marked with a sign (/) under the choice that applies to the respondent. In the religious commitment Scale the choices were (totally applicable, medium applicable, slightly applicable, not applicable), while in the Internet Addiction Scale were (totally applicable, applicable to some extent, not applicable), the confidentiality of the answer has been confirmed, and the respondent has not been asked to state an attribute and explained to him that the answer for scientific research purposes.

Survey Application Sample: In order to identify the clarity of the scale instructions and the approval of its paragraphs and to detect the ambiguous and unclear sentences as well as calculating the average time taken to answer all the scale paragraphs, the scales were applied to a sample of (30) male and female students by (15) female and (15) male students. And it was found that the scales were clear, and the average time to respond to the scales was 25 minutes.

Statistical Analysis of the Religious Commitment Scale and the Internet Addiction Scale: Statistical analysis of the paragraphs is more important than the logical analysis because it checks the content of the paragraph in measuring what was prepared for the measurement [7]. The religious commitment scale and the internet addiction scale were applied to a sample of 150 students randomly chosen from the research population and is a non- research sample.

Contrasted Groups Method: For the purpose of analysis in this manner, the following steps were followed:

1. The application of the religious commitment scale and the Internet addiction scale on the statistical analysis sample of (150) male and female students in the preparatory schools in the Babylon General Directorate of Education.
2. Marking students' answers to find the overall score of each student's response to the scale paragraphs.
3. Arranging the students' grades in descending order to choose (27%) of the forms that obtained the highest grades to be the upper group which it's number was (36), and choose (27%) of the forms that obtained low grades to be the lower group which it's number was (36).
4. To extract the coefficient of discrimination using the t-test of two independent samples to test the difference between the upper and lower groups, and for each item of the scales paragraphs, and compare the calculated T value of each item to the tabulated t-value and it was indicated that all the paragraphs are distinguished at the level of significance (0.05) compared to the tabulated t-value of (1.96) except the paragraphs in the religious commitment scale was (16, 19, 28, 42, 49, 60) is less than (1.96) at the level of significance (0.05)

Method of Internal Consistency of Paragraphs: The calculation of paragraphs consistency is one of the important inputs in the psychological measurements because the validity of the scale depends on the validity of its paragraphs and calculated by correlate the degree of each paragraph to the overall degree of the scale [9]. The two scales were applied on the statistical analysis sample of (150) female and male students from the preparatory stage, and when calculating the coefficient of correlation between the score of each paragraph and the total score and using the Pearson correlation coefficient.

Table 2: The paragraph correlation coefficients to the total score of the religious commitment scale.

Item	Item Correlation Coff. to the total score	Item	Item Correlation Coff. to the total score	Item	Item Correlation Coff. to the total score
1	0,638	21	0,219	41	0,467
2	0,625	22	0,498	42	0,083
3	0,714	23	0,342	43	0,529
4	0,402	24	0,650	44	0,279
5	0,639	25	0,570	45	0,626
6	0,611	26	0,622	46	0,325
7	0,452	27	0,704	47	0,402
8	0,520	28	0,110	48	0,389
9	0,608	29	0,452	49	0,016
10	0,312	30	0,714	50	0,735
11	0,448	31	0,608	51	0,610
12	0,711	32	0,315	52	0,440
13	0,593	33	0,590	53	0,656
14	0,617	34	0,528	54	0,433
15	0,589	35	0,363	55	0,368
16	0,031	36	0,606	56	0,598
17	0,532	37	0,631	57	0,452
18	0,717	38	0,680	58	0,285
19	0,019	39	0,441	59	0,601
20	0,603	40	0,493	60	0,120

Table 3: The paragraph correlation coefficients to the total score of the Internet Addiction scale.

Item	Item Correlation Coff. to the total score	Item	Item Correlation Coff. to the total score	Item	Item Correlation Coff. to the total score
1	0,250	21	0,385	41	0,363
2	0,433	22	0,398	42	0,350
3	0,263	23	0,409	43	0,315
4	0,365	24	0,337	44	0,456
5	0,455	25	0,440	45	0,321
6	0,264	26	0,346	46	0,340
7	0,311	27	0,234	47	0,532
8	0,352	28	0,361	48	0,358
9	0,651	29	0,398	49	0,449
10	0,320	30	0,421	50	0,364
11	0,521	31	0,322	51	0,341
12	0,327	32	0,316	52	0,447
13	0,339	33	0,460	53	0,365

Item	Item Correlation Coff. to the total score	Item	Item Correlation Coff. to the total score	Item	Item Correlation Coff. to the total score
14	0,282	34	0,369	54	0,569
15	0,366	35	0,422	55	0,412
16	0,369	36	0,393	56	0,219
17	0,337	37	0,332	57	0,336
18	0,299	38	0,365	58	0,358
19	0,412	39	0,417	59	0,478
20	0,322	40	0,382	60	0,505

Psychometric Characteristics of Religious Commitment Scale and Internet Addiction scale:

1. **Scale Validity:** The researcher applied two types of validity to the current two scales: apparent validity and construct validity.

Recognition of the level of religious commitment in the preparatory school students: In order to achieve this goal, the researcher collected the data and insert it in the statistical analysis program (SPSS), and it was showed that the arithmetical mean of the sample reached (144,007) with a standard deviation of (51.13), and a hypothesis mean of (135). In order to determine the difference between the sample mean and the hypothesis mean, the researcher used a t-test for one sample which found that the calculated t-test value of (34.49) was greater than the tabulated t-test value of (1.96) at statistical significance level of (0,05), and Table (4) shows that:

Table 4: T-value for the significance differences on the religious commitment scale.

Sig. Level at (0.05)	T-Value		STD.	Hypothesis Mean	Arithmetic Mean	Sample Size
	Tabulated	Calculated				
Statistically Sig.	1.96	28.01	56.94	135	130.25	150

Table (4) shows that the research sample has a low level of religious commitment because the arithmetic mean is smaller than the hypothesis mean of the scale. This result is consistent with study.

Conclusion

In the light of the current research results, the researcher concluded the following: The preparatory school students have a low level of religious commitment. The preparatory school students have a high level of Internet addiction.There is a moderate correlation between religious commitment and Internet addiction.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Ministry of Education / Babylon General Directorate of Education, Iraq and all experiments were carried out in accordance with approved guidelines.

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Dental Fillers Enhanced By Nanomaterial's: Oral Health-Related Diagnostic and Therapeutic Methods

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Abstract

Context: The main drawback of flowable dental composite resin is low strength and incasing shrinkage in the shrinking contrast to conventional composite resin. there are two main goals increasing strength, reducing shrinking. So that mechanical and physical properties can be influenced by adding nonparasitic to the material. This technology has been used in various fields of dentistry. In dental compositions, the process of transition from dough to solid material is related to the ability of light to enter through the material and the beginning of the shrinking in all parts. Show that the increasing in effect at 0.02% gm at 30 sec with (4.2 mm) and (3.2 mm) respectively. Also It showed that good properties to the depth of cure, of shrinkage, diameter for the samples. These materials are promising and good for use in dental fillings. The mechanical properties of resin composites advance with additional Nano Silica fillers. Low Nano silica and Nano graphene addition established more effective in improving mechanical properties compared to higher additions.

Keywords: *Silicon Dioxide Nanoparticles,GrapheneNanopowder, depth of Cure, shrinkage.*

Introduction

The field of regenerative medicine has made great progress in various disciplines in science from engineering, biology and medicine. Research has focused on improving the health of the patients through restoration of damaged or diseased tissues and organs. regenerative medicine is exquisitely focused on directing cellular behavior to evoke therapeutic clinical outcomes [1]. The success of dental cures depends not only on biological, chemical, physical, and pat ho physiological principles nonetheless also on the sufficient and precise knowledge of the mechanical properties of dental tissues and materials [2]. The valuation of the mechanical properties of dental tissues and materials is vital for increasing biocompatible dental materials to utilize in dentistry [3]. The quality of dental biomaterials has been enhanced by the emergence of nanotechnology. This technology manufactures materials with much better characteristic or by improving the properties of existing materials[4]. The science of nanotechnology has become the most popular area of research, currently covering a broad range of applications in dentistry [(5)]. Nanotechnology deals with the physical, chemical, and biological properties of structures and their components at nanoscaledimensions[(6)]. Nanotechnology is based on the concept of creating functional structures by controlling atoms and molecules on a one-by-one basis. The use of this technology will allow many developments in the health sciences as well as in materials science, biotechnology, electronic and computer technology, aviation, and space exploration. With developments in materials science and biotechnology, nanotechnology is especially anticipated to provide advances in dentistry and innovations in oral health-related diagnostic and therapeutic methods[(7)]. Science is currently undergoing a major evolution, taking humanity to a new era: the era of nanotechnology[(8)]. The application of nanotechnology to dentistry and the time that will be desired to implement the results of research into practice are the first questions that arise concerning nanotechnology in dentistry.The opportunity to witness the beginning of a pioneering advance in technology is

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encountered scarcely[9]. According to the definition of the National Nanotechnology Initiative, nanotechnology is the direct doctrinaire of materials at the Nano scale[10]. This term defines a technology that enables almost complete control of the synthesis of matter at nanoscale dimensions. Nanotechnology will hand us the ability to arrange atoms as we desire, subsequently to achieve effective and complete control of the structure of matter[11]. The purposes of nanotechnology are to enable structural analysis in nanoscale, to understand the physical properties of structures in the nanoscale, to manufacture nanoscale structures, to develop nanoscale devices, and to create a link between the nanoscopes and macroscopic universes by inventing adequate ways[8]. Nanotechnology is established on the idea of creating functional structures by guiding atoms and molecules on a one-by-one basis. In general, nanotechnology is to understand as "the science of the small." in addition, in addition to creating small structures, nanotechnology includes innovative materials, devices, chemical, systems with physical, biologic properties that differ from those of large scale structures[12].

Restorative Composites: Nanotechnology has allowed the creation of nanofillerparticles[13]. which are added up individually or as clusters into composite resins. Silicon Dioxide,GrapheneNanoparticles offer composites a smoother surface and strength properties. Composite resins with nanoparticles are easier to handle and have more strength and abrasion resistance. composites with hybrid and microfilmed fillers are utilized in Resin containing nanostructured particles in a wider array [14].In recent studies, it was described how these nanoparticles completely Prevented the advance of Streptococcus Mutants bacteria, with an antibacterial efficacy that lasted for up to 3 months. It has been noting that no relevant alteration in terms of enamel lesions and crashes occurred after debracketing of orthodontic brackets bonded with flowable orthodontic composite as well as these with traditional orthodontic composite[15].

The aim of this study: The effect of adding Nanosilica and Nanographene preparation commercial method to the resin composition the mechanical properties.

Preparation of the Silicon Dioxide Nanoparticles: the nano-silica that preparation commercial method from the company US Research Nanomaterials Inc. measurement by XRD to corresponding the materials with calculating the average crystal size.

Preparation of the GrapheneNano powder: the GrapheneNano powder that preparation commercial method from the company SkySpringNanomaterials, Inc. measurement by XRD to corresponding the materials with calculating the average crystal size.

Methodology

In this study, the special type of stainless steel models was used by researchers (SaadiSharshabDiab and his group) [14]. This type of models is used to prepare samples suitable for the examination to be conducted:The study was carried out on the Composan LCM (Shade A1), which is highly transparent (more whiter than the rest of the varieties), which is subject to the comprehensive quality system (ISO 4049/2000). This substance is non-toxic of the type Overlay material in which the Micro Hybrid Composite and the manufacturer (PROMEDICA Domagkstr 24537 Neumunster / Germany).The model is forming of a cylindrical cavity with a diameter (6mm) and thickness (8mm). This model was used for the preparation of samples for the measurement.Measuring the weight ratio from the two nanomaterial's and Mix it with the Composan LCM (Shade A1) respectively.Fill the model with the mixture.Treatment The mixture by using the light emitting diodes for exposure periods (20 - 25-30) sec and Measuring the length and diameter for each of sample.

Result and Discussion

In this study Show that the increasing in effect at 0.02% gm at 30 sec with (4.15 mm) and (3.15mm) for nano-silica and nanographenerespectively. We verified the nanomaterial's capability in the mechanical properties of growing for the two materials. The structure of samples depends both on the Time of curing and ratios of add for the nanomaterials with resin composite. We note form X-Ray for silicon dioxide SiO2 Nanoparticles, we note that the angle diffraction is equal (2θ=11.5°), which is identical to the US Research Nanomaterial's Inc. The average crystal size is calculated using the equation (Debye - Scherer). The average crystal size (28. 16nm).Fig(1) The effect of the addition of Nano silica to the resin composite on the depth cure of the samples so we note that the depth at the lowest ratio is in the greatest value with the highest time. The effect of the material at a depth of up to the last (4.15 mm). It is obvious from figures(2) that the diameter increases, for the samples with increasing the time of light exposure because increasing time of exposure makes more monomers

convert to polymer, so this increasing in a number of the polymers make the polymerization process enhances and becomes better. We observe from Figure (2) and the figures (4) and (5) that increasing the ratio of the filler low the depth of cure. This result, because the nanoparticles restrain the light to enter inside the material due to conduction and valance bands of nanomaterial, are discrete levels not continuous as a result, for every wavelength from the light incident on the material, their must be at least, in the nanomaterial, a pair of levels, one of them in the conduction band and the other in the valance band such that the energy gap between these two levels corresponds the energy of wavelength falling, thus this energy gap will absorb this wavelength; Consequently, the nanoparticles, in the near region from the surface, absorb most of the wavelengths of incident light on the surface and doesn`t let them penetrate inside material. Fig(3,6).The values of shrinkage were added when adding Silica Nano and nanographene ratios to the resin composite. we note X-Ray for nanographene, we note that the angle diffraction is equal ($2\theta=12.5°$), which is identical to the US Research Nanomaterials Inc. The average crystal size is calculated using the equation (Debye - Scherer). The average crystal size 47.04nm.

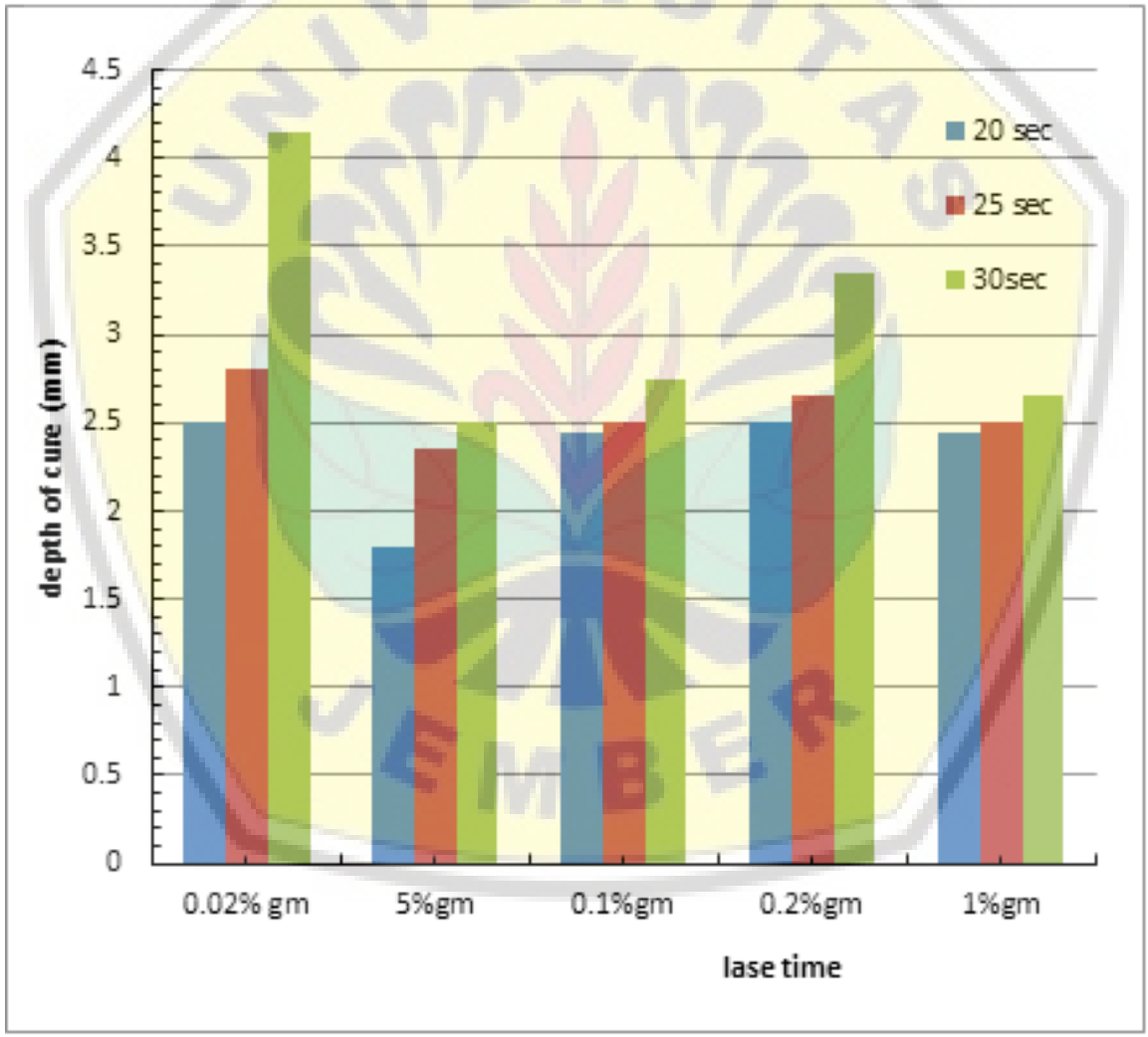

Fig 1:The Effect of Adding Silica Nano to the Resin composite on Depth of cure for the samples

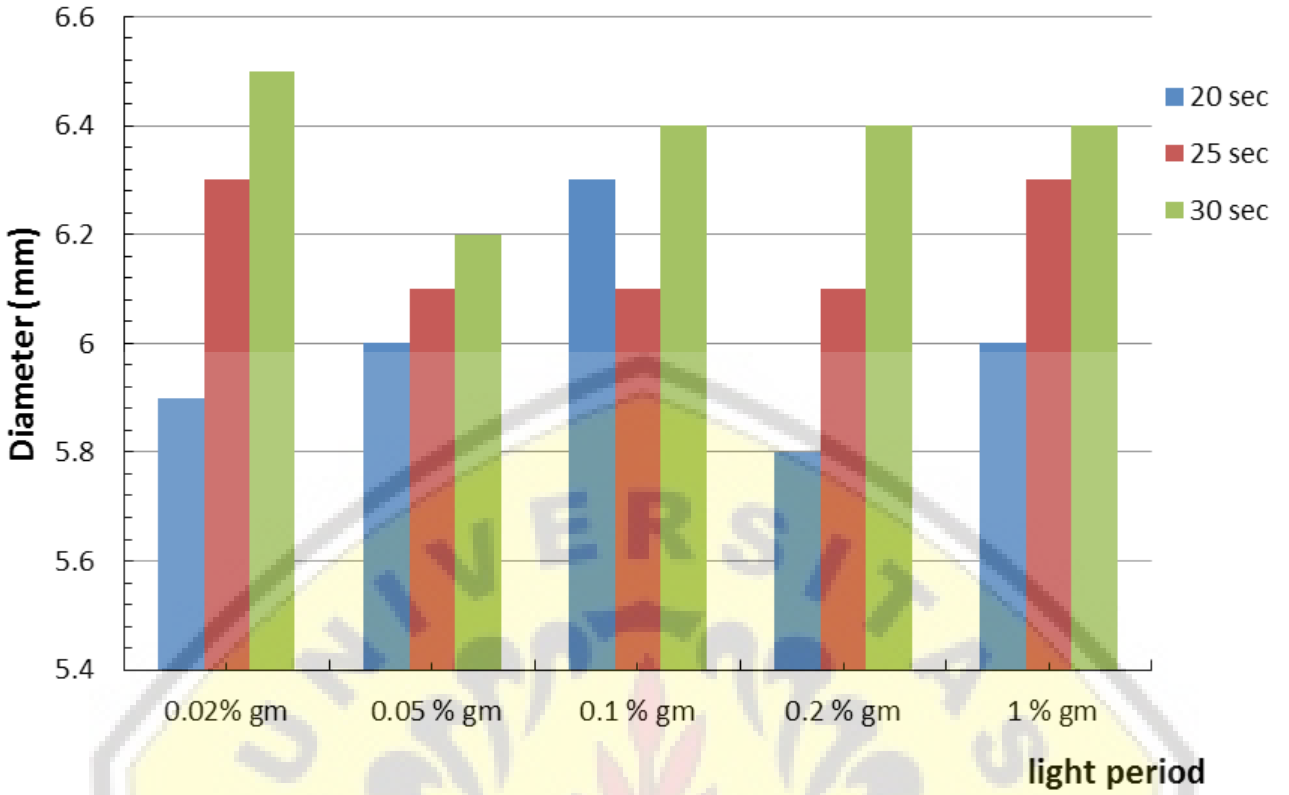

Fig 2: Effect of adding ratios of Silica Nano to the resin composite on the diameter values of the samples.

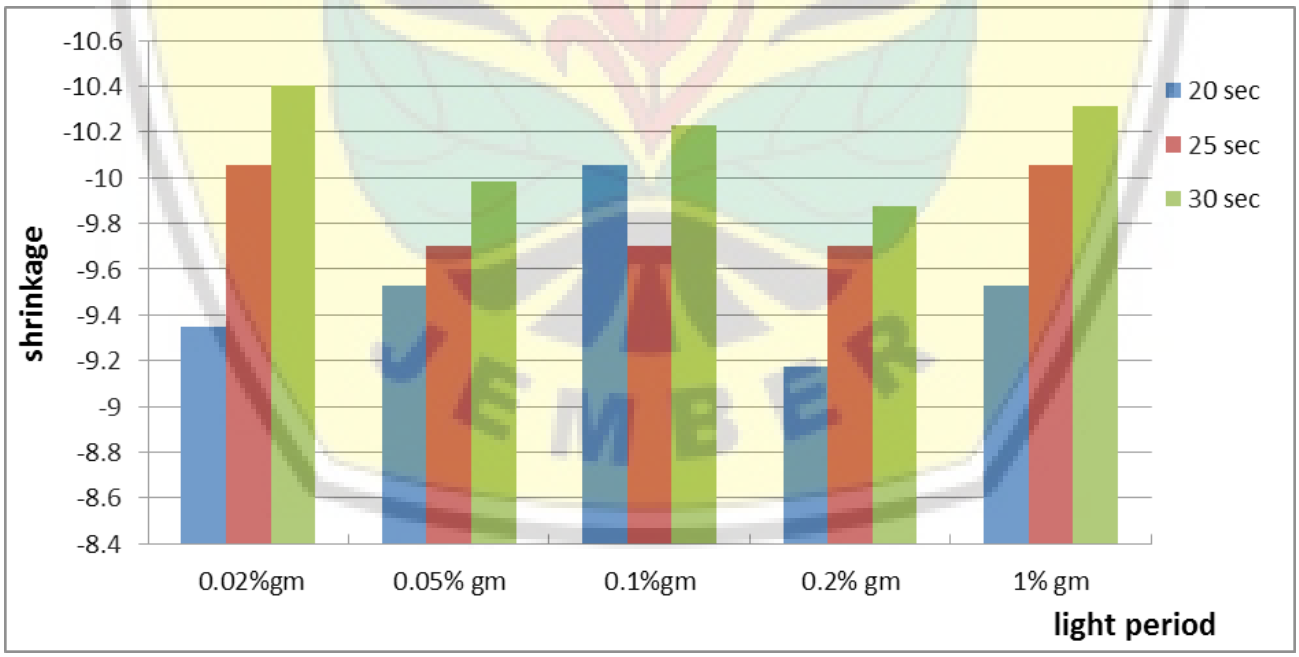

Fig 3: The values of shrinkage were added when adding Silica Nano ratios to the resin composite.

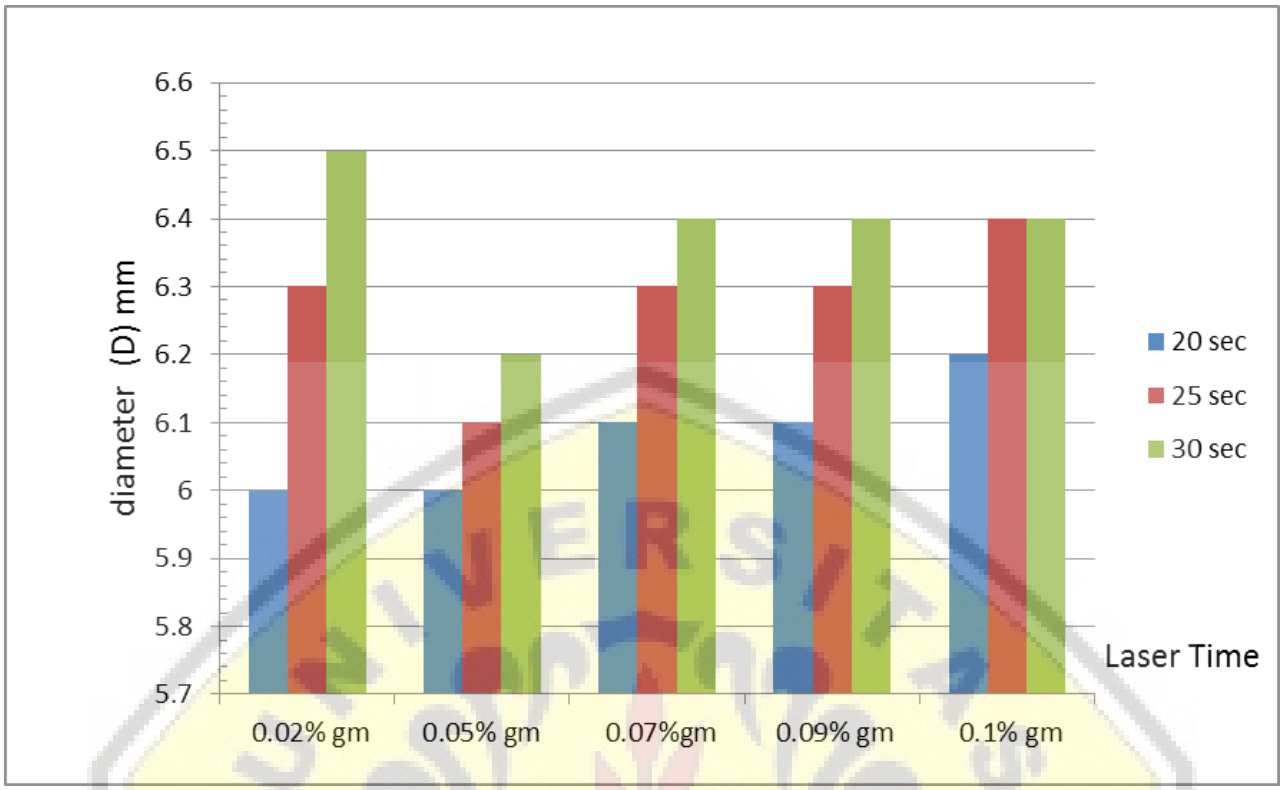

Fig 4: Effect of adding nanographene ratios to the resin composite on Depth of cure for the samples

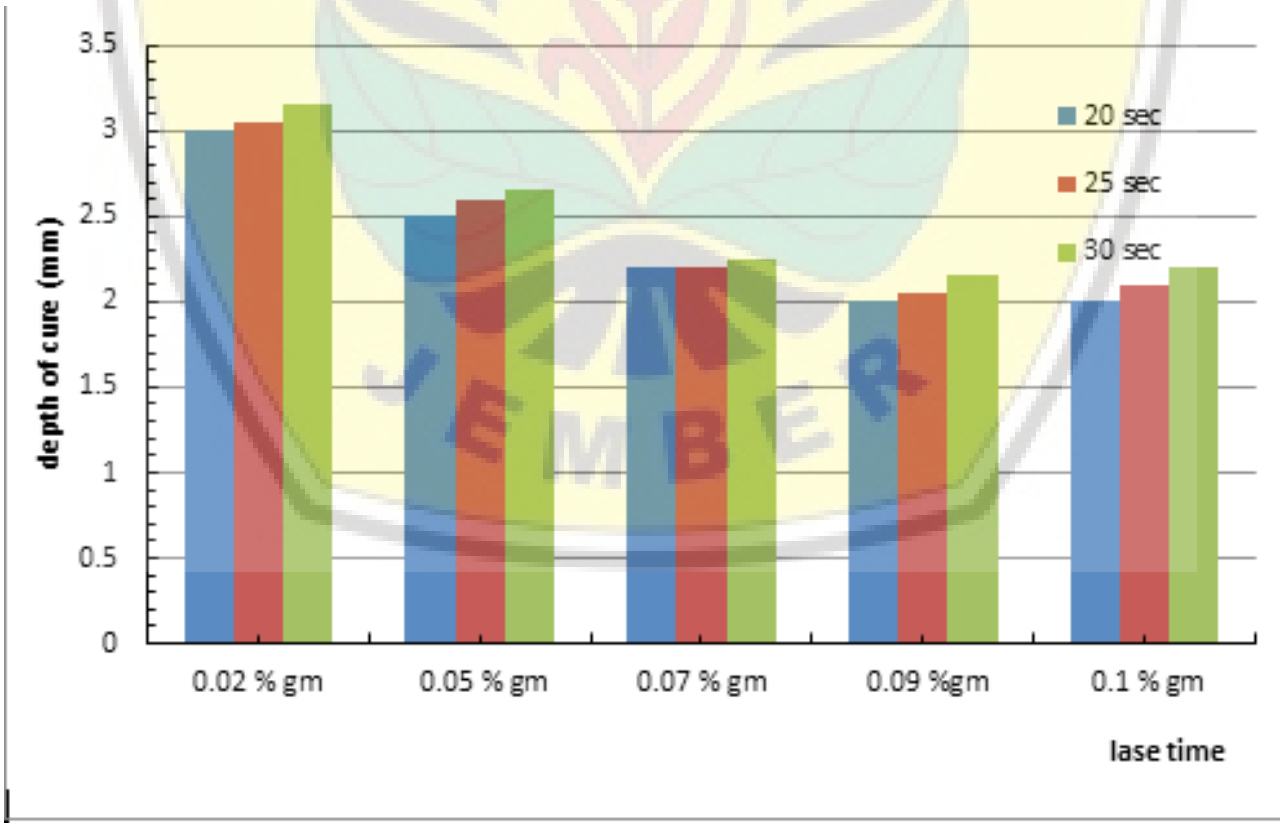

Fig 5: Effect of adding nanographene ratios to the resin composite on on the diameter values of the samples

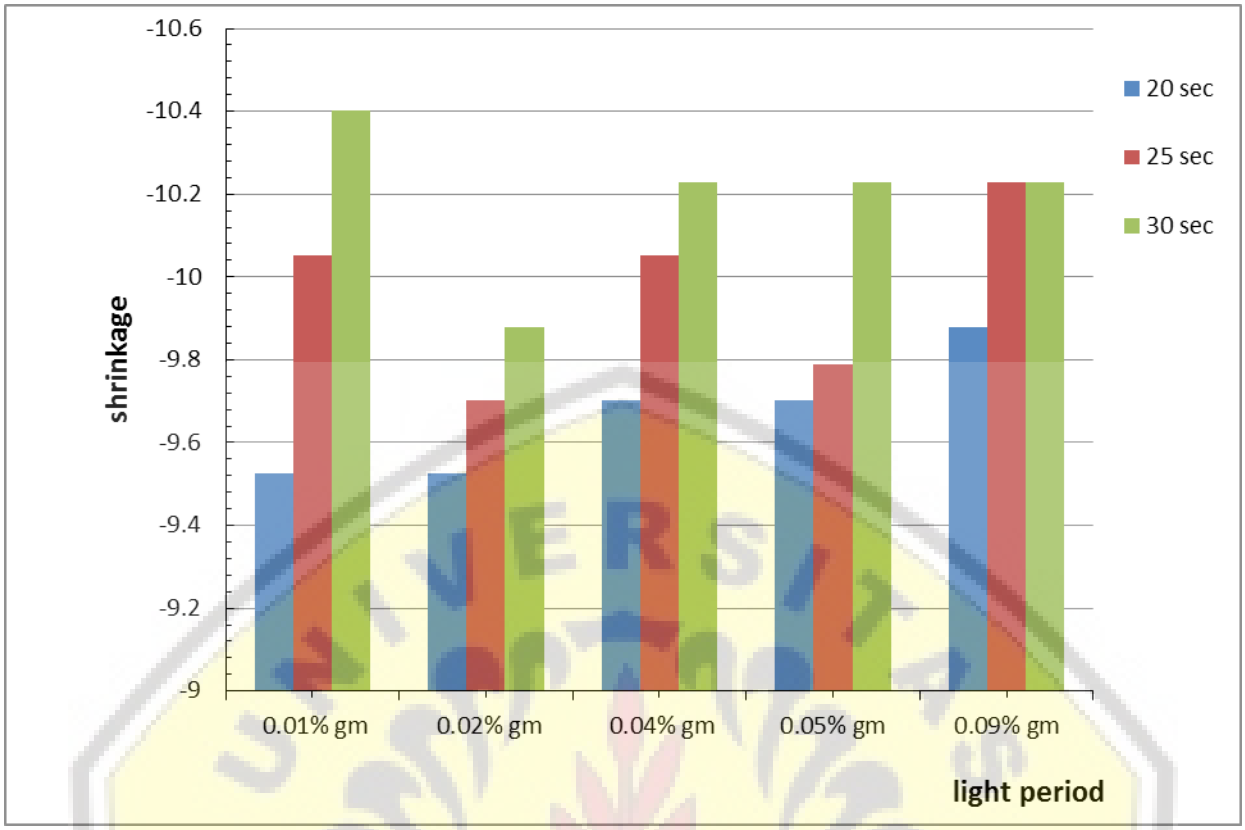

Fig 6: The values of shrinkage were added when adding nanographene ratios to the resin composite

Conclusion

According to the presented results obtained by analysis, the nanomaterial's it could be concluded that low nanomaterial's addition is more effective in increasing mechanical properties of modified composite resin samples, compared to upper nanomaterial's additions. Also, the diameter, shrinkage may be improved at a lower cost than if a higher nanomaterial's addition is considered. More effective reinforcement of the basic material with a lower amount of nanomaterials may be the result of agglomeration, which affects more the samples containing a higher mechanical properties. We conclusion that The depth of cure depends on several factors, including the composition of the composite composition, the type of fillers used in the composition of the overlapping, the size of the particles filler vol. In addition to the proportion of nanoparticles in the overlapping filler ratio. The reason for the difference in the depth of the hardness between the overlays is the non-symmetry distribution of light from the lamp, the nanoparticles are a thick powder (turbid powder) and this density of the particles constitute a barrier to prevent the passage of light or penetrate amount of nanomaterials. Other basic materials and nanoparticle type require careful optimization in term of nanoparticle concentration to achieve optimal

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon, college of sciences, physics Department, Babil, Iraqand all experiments were carried out in accordance with approved guidelines.

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The Effect of Psychological Counseling Healthy Program in Improving the Cognitive Side from (Hardness to Flexibility) and Learning Some Basic Skills of Basketball

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Abstract

Context: This study aims to build a psychological guidance program in improving the cognitive approach from hardening to flexibility among the students of the first stage in the Faculty of Physical Education and Sports Sciences at the University of Mays an for the academic year 2016-2017. It also investigates **to** identify the results of the scale and elasticity of the control and experimental groups in the tribal test. The study finds out that the differences between the control and experimental groups in the post-test.

Keywords: *Psychological guidance, Physical education, Sports sciences, Flexibility, Hardening.*

Introduction

Since the beginning of the second half of the last century, contemporary psychology has witnessed an increasing interest in cognitive processes in general and in the process of thinking in particular. Psychological counseling, as a science and art, seeks to provide psychological services to those individuals who have problems in their daily lives, whether these problems are on psychological, emotional, Academic level with a view to overcoming them, improving them, limiting their negative effects and consequences, and pursuing the individual's personal goals. The term Cognition refers to all the psychological processes through which the sensory input is transformed, shortened and stored in the person until summoned to be used in different situations. It is a process of reflection of reality and the restructuring and treatment of that reality in order to enable it to control these things. The method of knowledge as hardness and flexibility of the methods that's related to individual differences between individuals in how the performance of mental processes such as thinking, problem solving and decision-making, as individuals are hardened by responses which show the tendency towards definitive solutions that distinguish between right and wrong and these people seek absolute acceptance or absolute rejection that is not ambiguous. Individuals who are flexible have the ability to give a variety of mental responses that are commensurate with the complexity of the situation. Hardness cannot adapt to new situations in the throughout the game, or to changes in those situations. This inability to adapt makes the person in conflict with himself or with others, he is not accepting of those changes that are taking place around him, or very acceptable to them and is not immune to them or far from them. The game of basketball is one of the competitive team games, which occupies an advanced position in the attention and have millions of followers in terms of its spreading around the world and it certainly needs specific physical and technical requirements, so it needs to make great amount of effort and practice for the sake of learning and mastery so cognitive methods can have a big role As well as the recognition of the characteristics of learners who use cognitive methods plays a large role in the treatment of the phenomenon of individual differences between learners and reduce them, and the importance of research in identifying the impact of training exercises the same Which was prepared and organized on the basis of scientific in improving the cognitive side from hardness to flexibility and learning some of the skills of basketball from the scientific concept that indicates that the psychological programs that are prepared and organized is one of the means that determine the causes that lead to solving psychological problems in athletes

and It adopts psychological educational processes that seek to develop the skills of athletes, raise their abilities and address the problems and obstacles facing them

Research Problem: Basketball is a group game and the basis for successful performance depends on mastering its basic skills and the goal of any teacher is for his students to master these skills as many scientists and researchers emphasize the need to use cognitive methods and commensurate with the capabilities of students and their levels, especially those that develop the learners thinking and perception in order to discover The facts associated with learnt skills and the achievement of better learning, the problem of research is that there are many learners who are characterized in their behavior during the units of education in the form of hardness, and therefore the emergence of difficulties in learning the skills of this effectiveness, Since this method is concerned with the degree of consistency that characterizes the person in the use of information in a variety of positions and reflected in the issuance of the extreme and rigid beliefs and resistance to change as well as intolerance to others, so researchers tried to address the phenomena of this method through a program of rational - psychological that was intended to improve the knowledge From hardness to flexibility as well as learning basketball skills.

Research Hypotheses: There were no statistically significant differences between the mean scores of both the experimental and control groups at the level of sclerosis on the test. There were no statistically significant differences between the mean scores of both the experimental and control groups in learning the skills of the basketball in question.

Methodology

Research Methodology: The researchers used the experimental approach to suit the nature of the problem and to achieve the objectives of the research. The experimental approach is the closest approach to problem solving research. It is an attempt to control all the basic factors affecting the variable or the dependent variables in the experiment except one factor that is controlled and modified by researchers with a view to identifying and measuring its impact on the variable or dependent variables"

Experimental Design: Researchers should select appropriate experimental design to test the validity of hypothesized results. The choice of experimental design depends on the nature of the study and the conditions under which it is conducted. Therefore, the researchers adopted the design of the two experimental and pre- the effect of the independent variable on the dependent variable by comparing the results of the two-dimensional tests of the control and experimental groups. The independent variable as psychological-training exercises is applied to the experimental group while the control group is left to take its previous standard approaches without the indicative program.

Steps in the implementation of the experimental design: Apply the scale of the cognitive method as hardness and flexibility to the students of the first stage for the purpose of selecting the sample of the research of students who are characterized by the method of hardness and recording the results of all testers who are characterized by this method.

The research community and its sample: The sample is "a part of the society in which the study is conducted and selected according to special rules to properly represent the society." The research community included students in the first stage of the theoretical sciences for the academic year 2016-2017; 30 students per class. The researchers chose 20 students who are characterized by solidity, i.e. 10 students from each department. They represent 33.33% of the total number of students in this stage and after applying the cognitive standard as hardness and flexibility on the students of this division and before their distribution into two groups that have homogeneity in the variables as length, mass and age, the torsion coefficient of the homogeneity variables was found to be between ± 3.

The researchers then distributed the sample to two groups in the lottery method, as follows: - The experimental group 10 students who were characterized by hardness. The researchers tested the tribal skills in the studied subjects and then applied the psychological guidance exercises for 8 weeks after they were carried out after tests in the cognitive scale as Rigidity - flexibility and in the technical tests. - The control group 10 students who are hardened by the researchers Tribal tests in the skills studied and then applied the curriculum applied by the teacher of the article and for a period of 8weeks after the post-tests were carried out in the scale of knowledge as hardness - flexibility.

The equivalence between the two groups of research: that equivalence is the equality between the

members of the group or groups in the search variables, an attempt to reach a single point of entry before entering the search and investigation and for this researchers performed the process of equivalence of the variables in search using the appropriate statistical means, and there were no differences between The sample in the search variables means that the sample has started from one starting point.

Determining the Search Variables: The research required the use of a method of measuring the methods of as hardness - flexibility to measure the individual differences between students as it's one of the cognitive methods, and the appropriate measure of this study is the measure designed by [1]. As used by many researchers in the field of sports and the scale consists of 56 paragraph, as the researchers presented to a group of experts and specialists put before each paragraph a five-response scale. I strongly agree, agree, between approval and not, I disagree, I totally disagree), and grades were given according to this gradient 5 degrees to high and 165 degrees and below flexibility from 166-184 were characterized by moderation and 185 degrees and above were hardened.

Identification of the basic skills: Since the researchers are a teacher of basketball for all four stages, so he chose the skills that are taught to the students of this first stage: - The accuracy of the chest handling. - The velocity of the plump. - The front shooting towards the basket. According to his long experience in basketball, he was a player, trainer, teacher and referee who chose the appropriate skills tests.

Specification of the technical tests: Test the accuracy of the chest handling: 1The velocity of the plump: 2 Test the front shooting towards the basket: 3

The Main Experiment: Pre-measurement: The test sample was tested for cognitive and skill testing on Sunday, 20/11/2016. The orientation program: The guidance program included the alleviation of the knowledge-based method as rigidity-flexibility. The researchers adopted this program extension sessions with a month and a half in 6 sessions.

Post-Measurement: The test sample was tested for cognitive and skill testing on Wednesday, 25/1/2017.

Statistical Method: The researchers used the statistical file of the spss system.

Table 1: Statistical parameters of the results of the pre and post tests of the variables under study for the experimental group members

S	Statistical Milestones Variables	Unit	س̄		±ع	
			Pre	Post	Pre	Post
1	accuracy of the chest handling	Number	10.4	16.4	1.43	0.70
2	The velocity of the plump	Second	13.49	12.68	0.55	0.88
3	front shooting on the basket	Number	9.2	14	1.40	1.33
4	Scale (Hardness - Flexibility)	Degree	207.6	173.1	7.07	2.08

From the results of Table 1, which shows the results of the members of the experimental group in the skills studied, it was found that in the test of the accuracy of chest handling, the mathematical mean for this test in the pre-measurement was 10.4 and its standard deviation 1.43 while in the post-measurement the mathematical mean was found to be equal to 16.4 with a standard deviation of 0.70.

Table 2: Statistical parameters and the calculated value of (t) between the pre and post measurements of the experimental group members

S	Statistical Milestones Variables	ف س̄	ف ع	The calculated value of (t)	The table value of (t)	Significance level
1	accuracy of the chest handling	2.2	0.92	7.59	2.26	Significant
2	The velocity of the plump	1.12	0.25	14		Significant
3	front shooting on the basket	1.8	0.63	9		Significant
4	Scale (Hardness - Flexibility)	32	8.63	11.72		Significant

The results of Table 2 show the results of the use of T test between the pre and post measurements of the experimental group members in the examined tests.

Results of Control Group:

Table 3: Statistical parameters of the results of the pre and post tests of the variables under study for the control group members

S	Statistical Milestones Variables	Unit	س-		±ع	
			Pre	Post		Pre
1	accuracy of the chest handling	Number	10	12.6	1.15	0.84
2	The velocity of the plump	Second	13.86	13.53	0.41	0.90
3	front shooting on the basket	Number	9.10	12.6	1.73	1.56
4	Scale (Hardness - Flexibility)	Degree	207.3	184.1	4.69	2.56

From the results of Table 3, which shows the results of individuals in the control group in the studied skills, it was found that in the test of the accuracy of chest handling, the mathematical mean of this test in the pre-measurement was equal to 10 and its standard deviation 1.15.

Table 4: Statistical parameters and the calculated value of (t) between the pre and post measurements of the control group members

S	Statistical Milestones Variables	ف -س	ف ع	The calculated value of (t)	The table value of (t)	Significance level
1	accuracy of the chest handling	0.6	0.52	3.75	2.26	Significant
2	The velocity of the plump	0.33	0.32	3.3		Significant
3	front shooting on the basket	0.7	0.48	4.67		Significant
4	Scale (Hardness - Flexibility)	23.2	6.93	10.59		Significant

The results of Table 4 show the results of the use of T test between the pre and post measurements of the control group in the examined tests. As shown in this table, in the test accuracy of chest handling, the calculated value T was 3.75 which is greater than the value of T of the table at the degree of freedom 9 and under the level of significance 0.05, which is equal 2.26.

Table 5: Statistical parameters and the calculated value (T) between the two dimensions of the experimental and control groups

S	Statistical Milestones Variables	Experimental Group		Control Group		The calculated value of (t)	The table value of (t)	Significance level
		س	ع	س	ع			
1	Accuracy of the chest handling	16.4	0.70	12.6	0.84	10.27	2.10	Significant
2	The velocity of the plump	12.68	0.88	13.5	0.90	1.95		Random
3	Front shooting on the basket	14	1.33	12.6	1.56	2.60		Significant
4	Scale (Hardness - Flexibility)	173.1	2.08	185.1	2.56	2.15		Significant

Table 5 shows the values of the calculated T between the two dimensions of the two groups of research, as shown in this table that the value of T calculated between the two dimensions in the test as accuracy of chest handling was equal to 10.27, Which is greater than the value of T of the table that's equal to 2.10 at the degree of freedom 18 and the level of significance 0.05, indicating the existence of significant differences between the results of the two groups and for the benefit of the experimental group. The value of T calculated between the two-dimensional measurements in the test of the velocity of the plumps was 1.95, which is smaller

than the value of T of the table2.10 at the degree of freedom 18 and the level of significance 0.05, indicating the absence of differences.

Discussion

Through the previous results, we find that the results of the experimental group that applied the exercise as psychological guidance were better than the results of the control group that worked according to the teacher's curriculum, as It is clear that all the values of the calculated T between the pre and post measures of the technical tests as well as the scale of hardness - Flexibility are greater than the value of T of the table, indicating that the psychological - guidance exercises have had a significant impact on this development. "This is why the psychological aspect is one of the main and essential pillars in the process of preparing psychological programs for the player's numbers in all aspects Physical, mental, planning and psychological"[2]. Although coaches and psychologists are trying to reach high levels of players and develop their skill and planning ability and to benefit from the potential of the players to get the best results. This applies to flexible dimension specifications in the cognitive method hardness. This is confirmed by [3]view that "individuals with a flexible dimension have the ability to reflect on new situations, changing problems and the ability to change thinking towards a particular solution" [4]. The researchers, based on his long experience in the field of basketball, believe that the skills in question need to be focused, timing and accuracy.

Conclusion

Effectiveness of the guidance program in alleviating the hardness and flexibility of the students of the Faculty of Physical Education and Sports Sciences - Phase I - University of Maysan. The guidance program's vocabulary led to a positive change from hardness to flexibility than it was before application. The program has a clear impact on learning some of the basic skills of basketball, including the various psychological concepts of the research sample. Dissemination of the results of the current study to students of faculties of physical education and sports sciences in Iraqi universities. Conduct training programs similar to the current program on a variety of samples of both genders taking into account the other basic skills of basketball.

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Conflict of Interest: None declared

Ethical Approval: The study was approved by the Institutional Ethics Committee

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Isolation and Identification Some Bacterial Causes of Infections of Wounds and Burns form Patients in Salah al-Din General Hospital and Test Some Vegetable Oils Activity

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Abstract

Context: The current study included the collection of 117 samples from wounds and burns from patients lying in the Salah al-Din General Hospital in Tikrit for the period from December 2017 until March 2018, 93 of them showed a positive growth and 24 were negative growth, and the developing colonies were identified with a number of chemical tests. Identification was confirmed using the VITEK2 Compact system. A total of 128 bacterial isolates were distributed among 80 isolates of Gram negative bacteria, including 9 bacterial species (E. col, K. pneumonia, P. mirabilis, Morganellamorganii, Pseudo. Aeruginosa, Entero. Cloacae, Raoultellaornithinolytica, Pseudo. Fluorescence, Stenotrophomonasmaltophilia)and 48 were Gram positive bacteria involving 5 bacterial species(Staph. Aureus, Staph. Epidermidis, Staph. Haemolyticus, Kocuriarhizophila, Staph. Capitis).A susceptibility test has been performed for isolates of some antibiotics where it has been found that antibiotics (Ofloxacin, Tetracycline, Amikacin) the highest efficiency towards the isolates of negative bacteria, and antibiotics (Ciprofloxacin, Penicillin) is more effective towards positive bacteria isolates. We have also tested the activity of some plant oils (Sesame, Fenugreek, Black seed) towards bacteria isolated for four concentrations from each oil (100%, 75%, 50% 25%)The results indicated that the highest activity was for black seed oil, Sesame oil and fenugreek oil respectively.

Keywords: *Patients, Ofloxacin, burns, Tetracycline.*

Introduction

Health-care facilities such as hospitals, nursing homes and outpatient clinics are major causes of infection of many pathogens despite the significant development of sterilization techniques and materials used for one-time.In the statistics of (CDC) the rate of infection associated with health care has increased by 36% over the past 20 years. One of the most important pathogens is the Normal Flora in the human body is opportunistic and poses a risk to patients in hospitals especially individuals whose immunity has been weakened by illness or treatment. Among the bacteria that are commonly isolated in the hospital environment are *streptococcus* bacteria, *Pseudomonas aeruginosa*, *Enterococcus* and *E. coli.* [1, 2].

As a result of the increased and indiscriminate use of drugs to treat microbes, many strains of these microbes have evolved and they have become resistant to these medications and therefore studies have increased in recent years to find more effective and safe alternatives to medicines. For the time being, a lot of new research has been conducted on plants to find natural remedies works to strengthen immunity and overcome microbial resistance to antibiotics. Where it was found that metabolic processes in the parts of plants such as roots, leaves and seedsproduce secondary compounds and these compounds may be medically effective[3].

The aim of this research is to isolation and identification some species of bacteria from wounds and burns in the patients in Salah al-Din General Hospital and test the activity of sesame seed, fenugreek and black seed oils that may contribute to the creation of alternatives to antimicrobial agents such as antibiotics.

Material and Method

Collection of Plant Samples: In this study, seeds were used for three types of commonly used plants which are*Sesamumindicum L., Trigonellafoenum-graecumL.*and*Nigella sativa*which was obtained from the local markets.

Extraction of Essential Oils: Oils were extracted from plant seeds using a saxholet device where they took weight of 50g of each type of seed separately grinding has been crushed by a clean sterile mill, The n□ Hexan used as a solvent by adding 250 ml of it and then turn on the device for 4 hours, Then the oil was separated from the solvent using the device Rotary evaporator the temperature was set at 40°Cto ensure no chemical change in the extract and it lasted for 30 minutes where pure oil was isolated. Four oil concentration were prepared (100%, 75% 50%, 25%)using material Dimethyl Sulphoxide (DMSO). The resulting oil is finally stored in the freezer with sealed plastic containers with each oil information written on it [4].

Sample Collection of Patients: 117 samples of patients were collected from Salah al-Din General hospital in Tikrit using a cotton swab for the period from 13 December 2017 to 21 March 2018 of patients with wounds and burns residing in the hospital where 90 sample of wounds and 27 samples of burns were collected for both genders for ages ranging from 1-65 years.

The samples were then transported directly to the hospital laboratory and cultured on Blood agar and Macon key agar that Pre-prepared and incubated at 37ºC for 24 hours. The growth on the culture media was then observed,the isolates were then purified by taking one colony for each growth and re cultured them on new media and stored in the refrigerator for Identification.

Identification: The initial identification was by using Gram stain after which several biochemical tests were performed on the obtained isolates, these tests were :(Catalase, Oxidase, Urease, Mannitol, Coagulase, Hemolysin, Motility, Methyl Red, Citrate Utilization, Vogasproskaur, Indol test, H2S, Lactose, Glucose, Swarming). Then was used device VITEK 2 compact System as instructed by BioMérieux Company which manufactured the device to confirm the results of the identification obtained from previous tests.

Susceptibility test: Twelve commonly antibiotics were used and described in the table (1) by using the propagation method where bacteria have been cultured on Muller-Hinton Agar antibiotic discs were distributed at 6 discsper petri dish and incubated at 37 ºC for 24 hours and the resistance was determined by measuring the inhibition zone by the ruler as mentioned in[5].

Result and Discussion

The current study included isolation and identification 117 samples from wounds and burns from patients residing in Salah Al-Din General Hospital, bacterial growth was positive in 93 isolates (79.5%), 41 were isolated from females and 52 from males infections included: burns, burns a variety of different degrees, wound while infections included: (Surgery, Explosive injuries, Injury to diabetes feet and other injuries), While 24 isolates (20.5%) of the samples was negative growth on culture media, The total number of bacterial isolates obtained was 128 pure culture, as some of the samples obtained were mixture of growth, 80 (62.5%) isolates was negative to the Gram stain and 48 (37.5%) isolates was positive to Gram stain, as shown in table 2.

Table 1: antibiotics used in the study

No.	Antibiotic	Symbol	Concentration mg/ml	Manufacturer	Origin
1	Amikacin	AK	10	Bioanalyse	Turkey
2	Amoxicillin	AX	25	Bioanalyse	Turkey
3	Ampicillin	AM	25	Bioanalyse	Turkey
4	Carbenicillin	PY	25	Bioanalyse	Turkey
5	Ceftazidime	CAZ	30	Bioanalyse	Turkey
6	Ceftriaxone	CRO	10	Bioanalyse	Turkey
7	Gentamicin	GM	10	Mast Diagnostics	U.K.
8	Tetracycline	T	30	Mast Diagnostics	U.K.
9	Cefpodoxime	CPD	10	Mast Diagnostics	U.K.

No.	Antibiotic	Symbol	Concentration mg/ml	Manufacturer	Origin
10	Penicillin	P	10	Bioanalyse	Turkey
11	Ciprofloxacin	CIP	10	Bioanalyse	Turkey
12	Ofloxacin	OFX	10	Bioanalyse	Turkey
		Turkey	10	10	OFX

Table 2: number and percentage of samples broken down by source

Source samples		Positive isolates of Gram stain		Negative isolates of Gram stain		Total (%)
		Number	%	Number	%	
Wounds	Surgery	45.16%	14	54.83%	17	31 (24.21%)
	Explosion	37.03%	10	62.96%	17	27 (21.09%)
	diabetes feet	16.66%	2	83.33%	10	12 (9.37%)
	Other injuries	46.42%	13	53.57%	15	28 (21.87%)
Burns		30%	9	70%	21	30 (23.43%)
Total (%)		48 (37.5%)		80 (62.5%)		128

Gram positive bacteria were included(5) species (Staph. Aureus, Staph. Epidermidis, Staph. Haemolyticus, Kocuriarhizophila, Staph. capitis),*Staph. aureus* was the highest isolates with 21 isolates (43.75%), the reason is that bacteria are present in 10-30% of the population where they are present naturally under the armpits and in the cavities of the nose and between the thighs so it can therefore easily be transmitted to the skin by sneezing, touching, etc [6]. The isolation ratio of these bacteria was close to that of the researchers[7, 8], where they were recorded that the dominant species on other isolates was *Staph. aureus*.Followedby *Staph. Epidermidis*(17),*Kocuriarhizophila*(2), *Staph. Capitis* (1). Whilegram negative bacteria were (9)species which are*E. coli, K. pneumonia, P. mirabilis, Morganellamorganii, Pseudo. Aeruginosa, Entero. Cloacae, Raoultellaornithinolytica, Pseudo. Fluorescens, Stenotrophomonasmaltophilia*. The most important among them were *E. coli*there were 22 isolates (27.5%) as it is predominantly transmitted from the urethral and anal regions of the patient to the affected areas of the skin they are overwhelmed bymany Virulence factors such as motility, adhesion, fimbriation, k-antigen content, colonization, and others{9}.Followed by bacteria*K. pneumonia* (18), *P. mirabilis*(14), *Morganellamorganii*(10), *Pseudo. aeruginosa*(6), *Entero.cloacae*(5),*Raoultellaornithinolytica*(2),*Pseudo. fluorescens* (2) and *Stenotrophomonasmaltophilia*(1). The rate of isolation of *E.coli*has been agreed with the ratio that appeared in the study [10, 11]with little variation in insulation rates, and differed with the spelling of the researcher[12] where they were *Pseudo. Aeruginosa*are prevailing.Scientific studies indicate that there is a difference in the rates of isolation of bacteria, which may be due to differences in the seasons of collection and number of samples and the cleanliness of the place where the patient and the period of his presence in the hospital and other factors affecting the isolation.

The results of the sensitivity test against the antibiotics used in Table (1) showed different resistance as shown in Tables (3) and (4).

Table 3: the percentage of resistance of Gram positive bacteria to the antibiotics used

Bacterial isolates					Antibiotic	No.
Kocuriarhizophila (2)	Staphylococcus capitis (1)	Staphylococcus haemolyticus (7)	Staphylococcus epidermidis (17)	Staphylococcus aureus (21)		
0	100%	42.8%	29.4%	57.1%	Amikacin	1
100%	100%	14.2%	35.2%	28.5%	Amoxicillin	2
100%	100%	100%	76.4%	80.9%	Ampicillin	3
100%	0	71.4%	58.8%	38%	Carbenicillin	4
0	100%	42.8%	94.1%	85.7%	Ceftazidime	5

Bacterial isolates					Antibiotic	No.
Kocuriarhizophila (2)	**Staphylococcus capitis (1)**	**Staphylococcus haemolyticus (7)**	**Staphylococcus epidermidis (17)**	**Staphylococcus aureus (21)**		
50%	0	28.5%	82.3%	90.4%	Ceftriaxone	6
100%	0	85.7%	23.5%	47.6%	Gentamicin	7
100%	100%	57.1%	47%	61.9%	Tetracycline	8
0	0	28.5%	100%	19%	Cefpodoxime	9
0	0	71.4%	94.1%	71.4%	Penicillin	10
0	0	100%	41.1%	95.2%	Ciprofloxacin	11
0	100%	42.8%	29.4%	100%	Ofloxacin	12

Table 4: the percentage of resistance of Gram negative bacteria to the antibiotics used

Bacterial isolates (numbe)									Antibiotic	No.
Enteo-bacter cloacae (5)	Kleb-siella pneumo-nia (18)	Pseudo-monas aerugi-nosa (6)	Pseudo-monas fluorescens (2)	Raoultel-laor nithino-lytica (2)	Morganell amorganii (10)	Stenotro-phomona smalto-philia (1)	Proteus mirabilis (14)	Esch-erichia coli (22)		
%60	%38.8	%66.6	%100	%100	%20	0	35.7%	45.5%	Amikacin	1
80%	88.8%	100%	100%	100%	10%	0	85.7%	100%	Amoxicillin	2
100%	100%	100%	100%	100%	50%	0	100%	100%	Ampicillin	3
40%	77.7%	83.3%	100%	0	100%	0	57.1%	100%	Carbenicillin	4
80%	83.3%	50%	50%	0	40%	100%	100%	77.2%	Ceftazidime	5
100%	94.4%	100%	100%	100%	50%	100%	100%	100%	Ceftriaxone	6
40%	66.6%	83.3%	0	100%	70%	100%	92.8%	90.9%	Gentamicin	7
60%	55.5%	100%	0	100%	20%	0	85.7%	45.4%	Tetracycline	8
80%	27.2%	100%	50%	100%	90%	100%	100%	86.3%	Cefpodoxime	9
0	88.8%	100%	100%	100%	30%	0	78.5%	100%	Penicillin	10
20%	72.2%	66.6%	100%	0	40%	100%	64.2%	73.7%	Ciprofloxacin	11
40%	16.6%	83.3%	0	100%	100%	0	71.4%	31.8%	Ofloxacin	12

The results showed that the vegetable oils used had positive results in inhibitiongrowth of bacteria isolates studied at different percentage as shown in table (5) above, Black seed oil was the most effective on the bacterial species mentioned previously, of which bacteria *Staph. haemolyticus* were the most affected that showing the highest diameter inhibition of 24mm at the concentration of 50%,and20mm at the concentration of 100%. Followed by*Kocuriarhizophila*with 20mm inhibition at 50% concentration, followed by *Staph. capitis* with a diameter of 16mm inhibition at 25% concentration, while it was not affected with (*Entero. cloacae, R. ornithinolytica, Pseudo. aeruginosa,* and *Steno. maltophilia*) any impact by oil.

Sesame oil ranked second in inhibiting bacterial growth, giving the highest diameter inhibition of 18 mm at concentration 25% followed by *Staph aureus*. And *Pseudo. aeruginosa* 16mm at 25% concentration. A decrease in bacterial growth inhibition was observed with increased oil concentration.

Fenugreek seed oil had the least inhibitory effect compared to other oils,where it was effective against bacteria *E. coli* at 25% concentration was 10 mm inhibition diameter, and effective against bacteria *Staph. Aureus*at the same concentration as 16 mm diameter, and effective with bacteria*Pseudo. aeruginosa* with 12 mm inhibition at 25% concentration as well, and bacteria*Proteus mirabilis* with 4 mm inhibition at 50% concentration. Other bacterial species did not show any impact on oil.

The obtained results showed the active role of oils used to inhibit the growth of isolated bacterial species due to the active compounds such as alkaloids, tannins, flavonoids, steroids, etc., known for their biological efficiency, as the tannins work to prevent the synthesis

of bacterial cell protein by forming complexes with cell wall proteins which is rich in proline, as well as the breakdown of structures on the bacterial cell wall[13, 14]. We also note that flavonoids and phenols have an effective role in stopping the growth of bacteria as they interfere with the proteins leading to the protein mutant and thus inhibiting the enzymes involved in the basic metabolic reactions this inhibits the growth of bacteria. Phenols can inhibit the force of the proton movement (PMF), causing leakage of cellular components, enzyme metabolism, electrons transfer, and cytoplasmic clotting[15,16].

The results obtained from the study can explain that the vegetable oils used have worked like the work of manufactured antibiotics, The study of the inhibitory effect of oils was in conformity with the scientific articles and recommendations of the World Health Organization (WHO) which called for the use of medicinal plants as an alternative to antibiotics manufactured for their high content of active compounds of pharmaceutical importance and not containing harmful side effects of host cells.

Conclusion

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Not required

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Efforts to Improve the Health Status of Junior High School Students Through the Development of School Health Programs

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Abstract

Context: One form of health promotion for school students is the school health program in every region in Indonesia. The purpose of School Health according to the Ministry of Education and Culture in 2012 is to improve the quality of education and student achievement by improving the quality of clean and healthy life and health status of students and creating a healthy environment. This research was conducted using qualitative descriptive methods with the aim of developing a model of implementing school health programs. Respondents in this study were students from junior high schools managed by the government and junior high schools managed by private parties implementing school health programs. The results of this study are expected to support existing models by improving school health management through a systems approach so that students can improve their performance through improving clean and healthy living behaviors and a healthy environment.

Keywords: *Health promotion, health school, development, junior high schools, systems approach.*

Introduction

School-age children are faced with very complex and diverse health problems. Various kinds of health problems arise in elementary school-age children, but problems that are commonly associated with healthy living behavior (Nugraheni, 2019)[(1)]. While for middle school and high school age children, the problem is related to risky behaviors such as drug abuse (Narcotics, Psychotropic and other addictive substances), unwanted pregnancies, unsafe abortion, sexually transmitted diseases (STDs), including HIV / AIDS, adolescent reproductive health, accidents, and other trauma (MOH, 2004)[(2)].

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Efforts to foster school-age children can be done through the School Health program in every region in Indonesia. The School Health is one vehicle for improving student health status (Nugraheni, 2019)[(1)]. The target is students and other school communities with the aim of improving students healthy life skills. School health services that involve all relevant parties such as students, families, and community service providers, school nurses and school doctors play a more complex role to prevent, facilitate and handle health problems to improve the education of all students (Kolbe, 2019) [(3)]. So students can learn, grow and develop optimally and become quality human resources. According to Suliha (2002) the aim of School Health is to improve the ability of healthy living and the health status of students as early as possible and create a healthy school environment so as to enable harmonious and optimal growth and development of children in the context of quality Indonesian human formation[(4)].

Based on the Principles for the Development School Health that have been determined by the government,

School Health has three main programs known as "TRIAS UKS". The three programs include health education, health services and fostering a healthy school environment. School Health activities must be carried out at all levels of education, from the level of kindergarten, elementary school, Junior High School (JHS) to Senior High School (SHS) and vocational education, both under the guidance of the Ministry of National Education and the Ministry of Religion, including Islamic boarding schools and out-of-school education channels (MOH, 2004)[2].

The fundamental problems that occur in the development and development of School Health include: Clean and Healthy Life Behavior has not reached the expected level, the existence of health problems in school-age children, limited human resources, available facilities and infrastructure, lack of optimal coordination between agencies, lack of the optimal role of the School Health Advisory Team, as well as the limited rules and regulations governing the management of School Health (Ministry of Education and Culture, 2012)[5].

The implementation's problem of School Health in Banyuwangi is not much different from the problems raised by the Ministry of Education and Culture. Strong effort and solid cross-sectoral cooperation are needed to implement the School Health program in accordance with established legislation so that the benefits of implementing the School Health program such as the realization of healthy schools and the creation of the next generation that are physically, mentally and spiritually healthy for a prosperous life.

Based on these conditions, it is necessary to take concrete steps to optimize the implementation of the School Health program, especially in service activities. So the need for innovation in the development model of the School Health program in an effort to improve the health of JHS students in Banyuwangi. The development innovation was carried out by optimizing all elements in the School Health program service and integrated with teaching and learning activities in schools. So as to be able to create personal students who have the ability and awareness of the importance of health.

Material and Method

This research use descriptive qualitative approach. This approach is used with the aim of delving deeply into the knowledge, opinions, opinions and views on the current implementation of the School Health program and exploring more information about the partnerships that have been built in optimizing the implementation of the School Health program. Data collection was carried out in four JHS in Banyuwangi which consisted of two public JHSs and two private JHSs for three months, starting April - June 2016. This study used in-depth interviews and FGD methods conducted through several stages, namely situation analysis and primary data collection.

The variables of this study consisted of the characteristics of the informants, the knowledge of the informants, opinions, and views of informants about the implementation of School Health, management of School Health implementation, obstacles experienced, strengths possessed, future expectations regarding the implementation and utilization of School Health specifically implementing "TRIAS UKS".

Findings: There are three main activities of the School Health activity that are commonly known as the "TRIAS UKS". School Health is a form of health promotion and education efforts in the school environment. In modern school health programs include 10 interactive components such as health education, physical education and physical activity, environmental and nutritional services, health services, counseling, psychological and social services, physical environment, social and emotional climate, family involvement, community involvement, and health employee (Kolbe, 2019)[3]. For this reason, the implementation of School Health is based on the awareness of increasing the welfare of the school community in particular. In terms of this, School Health has an important role in health development in schools to prepare a healthy, smart and prosperous generation.

A. Implementation of the School Health Middle School Program in Banyuwangi Regency: To achieve School Health goals, promotive, preventive, curative and rehabilitative efforts are carried out as early as possible in accordance with the "TRIAS UKS", such as:

1. **Health Education in School:** Health education is a dynamic process of behavior change, where the change is not just the process of transferring material or theory from one person to another and not a set of procedures, but these changes occur because of the awareness of the individual, group, or society itself (Wahid IM & Nurul C, 2009: 9-10)[6]. The health education program must also emphasize

behavioral change skills, such as goal setting and self motivation, to positively impact students' physical activity behavior (Dai, 2019)[7]. The results of the study show that in most of the JHS in Banyuwangi have implemented School Health programs in the field of health education such as:

a. Increase knowledge, behavior, attitudes and skills for a clean and healthy life.

b. Planting and habituating clean and healthy life and deterrence of bad influences from outside.

c. Cultivating a healthy lifestyle so that it can be implemented in everyday life.

In addition, health education can be carried out through intracurric and extracurricular activities. The intracurric activity is a part of the school curriculum such as health science subjects, physical education and health subjects or subjects that can be inserted in health sciences. While extracurricular activities are health education that can be included in activities outside of school hours in order to instill student's healthy behavior.

2. School Health Services: School Health service activities are minimum standard service activities in schools. Health services can help health education for students (Giri, 2018)[8]. Not only the provision of material and information to students regarding their health, but also practice through relationships with health workers. School health also services include regular health examinations, open-door clinic, acute medical care for minor symptoms or injuries, some specialist care as well as the promotion of wellbeing and safety at school (Kivimaki, 2018)[9]. The results of interviews with School Health services can be seen that the information stated that there were services provided by School Health in schools. The implementation of School Health services in Banyuwangi includes:

a. Early Growth and Stimulation Detection and Intervention

b. Health screening and periodic health checks

c. Dental and oral examination and treatment.

d. Development of Clean and Healthy Life Behavior

e. First Aid In Accident / First Aid In Disease

f. Provision of immunization

g. Physical Fitness Test

h. Eradication of Mosquito Nest

i. Adding blood tablets

j. Giving worm medicine

k. Use of the school yard as a family medicine park / live pharmacy.

l. Health education and counseling

m. Guidance and supervision of healthy canteens

n. Nutritional information

o. Post-illness recovery

p. Health referrals for public health center/hospitals.

3. Development of a Healthy Environmental Life: The development of the school environment aims to create a healthy environment in the school that allows every citizen of the school to achieve the highest degree of health in order to support the achievement of a maximum learning process for each student (Ministry of Education and Culture, 2012)[5]. Fostering a healthy school environment includes:

a. Implementation of cleanliness, beauty, comfort, order, security, longing and kinship.

b. Development and maintenance of environmental health including smoke free, pornography, psychotropic narcotics and other addictive substances and violence.

c. Fostering cooperation between school communities.

Based on the explanation above, the "TRIAS UKS" activities have run quite well, although not yet as a whole. The School Health implementation team is still focused on the "TRIAS UKS" activities and the fulfillment of School Health facilities and infrastructure, in addition to the rather heavy extracurricular activities in JHS.

B. Model of School Health Program Development in Middle School: The program is a collection of real, systematic and integrated activities, carried out by one government agency or more or in the framework of cooperation with the community or which is the active participation of the community in order to achieve the goals and objectives that have been set (Pramono, 2011: 45)[10].

One example is the substance of special service management engaged in health at the school scope, namely School Health Unit. This school service management is basically made to facilitate learning and can meet the special needs of students at school. The

implementation of School Health activities still refers to the "TRIAS UKS". There has been no development of the middle school health program. The following is the identification of the expectations of the School Health Implementation Team:

1. Obtain School Health guidelines
2. Medication assistance
3. The presence of medical personnel at the School Health
4. Repair of rooms and School Health facilities
5. Training a small doctor
6. Implementation of the School Health Competition as a form of existence and mutual motivation
7. Education about the dangers of free sex, HIV and drugs.
8. The activity of forming the character of independence
9. Involvement of educational institutions

Based on the identification of the above expectations, it can be concluded that the development of School Health at the Implementing Level is strengthening the input components and enriching activities in the process components. While the implementation of School Health activities at the District and District Guidance Team Levels is still focused on organizing and coordinating the Team Builder mechanism. So, the function of fostering and developing School Health has not been implemented optimally.

WHO in Notoatmodjo (2012) launched five (5) health promotion strategies in schools, namely advocacy, cooperation, capacity building, research and partnerships[11]. Thus, the model of developing the JHS School Health in accordance with the conditions of the JHS in Banyuwangi is strengthening the management of School Health with a systems approach. The following is a scheme for strengthening the management of JHS School Health in Banyuwangi Regency.

Caption:

1. **Input:** In the implementation of the School Health program in Banyuwangi Regency, the staff who organized this program were the School Health Implementation Team (headmaster, supervisor of School Health, teacher council, Student Council, School Health administrators), the savings team of the School Health level and the district level supervisors team. For facilities that support the implementation of this program such as the School Health room, administration desk, mattress, pillow, bolster, blanket, registration book, cupboard, medicines and so on. The implementing of the School Health program is using manual method. All of these input factors must work together in order to realize behavior change to achieve optimal health status.

2. **Process:** The management function is starting from planning, organizing, actuating and controlling.

a. **Planning:** Planning is the initial stage in the management process. Planning according to Koontz and O'Donnell (1964) is "involving selecting the objectives and policies, programs and procedures for achieving them-either for the entire enterprise or for any organized part"[12]. Planning includes decision-making activities because it includes the selection of decision alternatives.

Implementation of the School Health program planning in Banyuwangi, planning was carried out by the School School Health Implementation Team but was not integrated with the District and District Head of the School Health Development Team because the organizing of the School Health Development Team in Banyuwangi didn't work. This can occur because there is no planning for public health center specifically for School Health at the District Level.

While the planning of School Health guidance at the District Level is integrated with the Health Office and the majority is joined by the public health center's program. So that the planning of the JHS School Health program in Banyuwangi is only limited to planning by the School Health Implementation Team itself.

b. **Organizing:** Organizing can be formulated as an overall management activity in grouping people and assigning tasks, functions, authorities, and responsibilities of each with the aim of creating useful and effective activities in achieving predetermined goals (Manullang, 2008)[13]. According to Terry (2006) Organizing includes[14]:

1. Divide the components of activities needed to achieve goals into groups
2. Dividing tasks to someone manager to hold the grouping

3. Establish authority between groups or organizational units

The School Health executive team that came from students namely 7th, 8th and 9th grade students fulfilled the requirements after the School Health training. In line with the organization of the School Health program implementation team in schools, it was not balanced with the organization of District and District advisory teams. Because the sub-district advisory did not know about the team implementing this development. Thus, it resulted in the non-implementation of the task of School Health Guidance Teams in conducting the development of School Health in Banyuwangi.

c. Actuating: Activation and Implementation (actuation) is an action to make all group members want to try to achieve organizational goals in accordance with planning (Prayitno, 1997)[15]. In management, other terms will often be encountered for mobilization and implementation functions, namely motivating, directing, influencing, commanding.

The implementation of School Health must be in accordance with the health needs of students. Implementation of these activities can be in the form of "TRIAS UKS". These needs can cover physical, psychological, social and spiritual needs. The implementation of health business activities can be carried out well if all the residents of the school, supporting facilities and infrastructures and various cross-sectoral agencies can contribute to the success of this activity.

d. Controlling: Planning is closely related to the function of supervision or control because it can be said that the plan is a standard or tool of supervision for the work being done. George R Terry (2006) suggested "control is to determine what is accomplished, evaluate it, and apply corrective measures, if need, to insure result in keeping with the plan". Furthermore, Newman said "control is the performance that conforms to plan"[14].

Control of purpose of school health activities includes monitoring and evaluation efforts supported by recording and reporting. Control must be carried out periodically and continuously, one of the methods used by the Government (Regional) in monitoring and evaluating the implementation of health activities in schools. The main objective of control is to make what is planned become a reality (Manullang, 2008)[13].

The supervision of the School Health program in Banyuwangi is carried out by the implementation team and the subdistrict and district development team. At the supervisory level, the evaluation is carried out in each semester. However,0020 supervision of the sub-district and district supervisors team did not work due to barriers to integration with monitoring programs in the puskesmas.

3. **Output:** The output factor of the implementation of this school health business is the change in behavior from unhealthy habits to clean and healthy living habits and a healthy environment.

4. **Outcome:** The outcome factor of the implementation of this school health effort is the increasing quality and achievement of students both academically and non-academically according to the purpose of education at school.

5. **Impact:** The impact of the results of the implementation of health business is expected to increase the level of health of students so that the growth of students continues to increase and free from sources of disease.

Conclusion

Based on the results and finding of research on the development of the School Health program in JHS in Banyuwangi it can be concluded that the planning of the School Health program is still routine which results in less optimal organization. However, the implementation of the School Health program is in accordance with the "TRIAS UKS" and its supervision is already good at the level of the implementation team. It's just that the School Health program development has not been implemented optimally.

Therefore it is necessary to make efforts to optimize the implementation of the School Health program in accordance with the Policy Principles for the Development and Development of School Health and the School Health Development Team. With the model of developing a JHS School Health program in Kabupaten Banyuwangi, "Strengthening School Health Management with a System Approach" is expected to be able to optimize the implementation of the School Health program.

Conflict of Interest: In this article conflict of interest is nil.

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Evaluation of Intermediate Schools Female Students Adherence to Healthy Diet at Al-Russafa Sector in Baghdad City: Theory of Self-Efficacy as a Theoretical Framework

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Abstract

Objectives: To Evaluate of intermediate schools female student's adherence to healthy diet and To find out the relationship between students adherence to healthy diet and some of socio-demographic characteristics and Body Mass Index (BMI). A descriptive study, Multi stage "probability" sample of (270) female students were selected. The study sample distribution at selected school: (90) female students from Al-Russafa 1 directorates, (90) female students from Al-Russafa 2 directorates, and (90) female students from Al-Russafa 3 directorates in Baghdad City, Governorate for the period of 6th of January 2019 to 4th of march 2019, and questionnaire for knowledge was constructed for the purpose of the study. Validity and reliability of the instrument were determined through a pilot study. Data were analyzed through the use of Statistical package for Social Sciences (SPSS) version (22.0) descriptive and inferential statistical measures were employed. Findings of the study show that majority of the study sample with age group (14-15) years with percent (61%). Body mass index reported that more than half are normal weight (n=138;51.5%). School's female student's adherence to healthy diet with a moderate level with fifty percentage .

Keywords: *Evaluation, Adherence, Healthy Diet, Self-Efficacy.*

Introduction

A healthy diet is a pillar of well-being throughout the lifespan. It promotes the achievement of healthy pregnancy outcomes, supports normal growth, development and aging helps maintaining healthy body weight, reduces chronic disease risks, and promotes overall health and well-being [(1)]. Most people's diets around the world fail to meet the ideal for healthy diets. It is estimated that "poor diets are responsible for more of the global burden of ill health than sex, drugs, alcohol, and tobacco combined[(2)]. Adolescent girls are a very important section of society. Proper growth of adolescent girls is very important as they constitute a one-tenth population of a country. According to the World Health Organization (WHO) about 1/5th of the world consists of adolescents, during this period good nutrition is very important for their proper physical growth and cognitive development Nutritional status of adolescent girls influences both the growth of the nation as well as the growth of the remaining population. Adolescence is defined as a phase of a rapid growth that needs special nutritional requirements because 20% growth happens in stature and 50% growth happens in adult bone mass [(3)]. Poor diet is a factor of one in five deaths around the world, according to the most comprehensive study ever carried out on the subject. Millions of people are eating the wrong sorts of food for good health. Eating a diet that is low in whole grains, fruit, nuts and seeds and fish oils and high in salt raises the risk of early death, according to the huge and ongoing study Global Burden of Disease [(4)]. Approximately 15-20% of adult height, up to 60% of skeletal mass, and 50% of the weight of the adult body is gained within the adolescent period. Poor nutrition during this time can result in adverse health conditions later in life and poor reproductive health outcomes [(5)]. For girls, low BMI and short stature during childbearing years increase the risk of adverse birth outcomes and obstetric complications[(6)]. Iraq faced quite a long time of unsettlement and conflict during and after the 1991st Gulf War. Except the Northern Region of

Iraq, the nutrition and health situation in the country has continued its deterioration since then, specifically among children and women categories. Data gained from the Iraqi Ministry of Health show that a fast reduction in the population health generally, and of children particularly [7]. The nutritional status of adolescent girls affects their health and condition in later life. The high prevalence of chronic energy and micronutrient deficiencies of today's adolescent girls are directly linked to the quality of the next generation[8].

Methodology

Design of the Study: A descriptive (cross-sectional) study design was used to evaluate intermediate schools females about adherence to healthy diet among intermediate schools female students at Al-Russafa directors in Baghdad City. This study was started from(October 10th, 2018 to April 30th, 2019).

Sample of the study: Multi stage "probability" sample of (270) female students were selected. The study sample distribution at selected school: (90) female students from Al-Russafa 1 directorates, (90) female students from Al-Russafa 2 directorates, and (90) female students from Al-Russafa 3 directorates.

Study Instrument:

Part One: Socio demographic characteristic variables: Socio-demographic characteristic variables of student consist of; Age,Female students' anthropometric measurement, classroom, female student serial between brothers, and socioeconomic statues of the student family and they are accounted through applying of WHO instrument, which consists of several parameters such that, occupation, education levels, crowding index, and particular properties (Especially House Ownership). Three social and economic levels represented by the preceding contents (Low, Moderate, and High).

Part Second: Is related to the information of student health status was included (7) question.

Third Part: self-efficacy scale, the overall number of items including in the questionnaire are (60) items.

Validity: Content validity was determined for study instrument through (16) experts. They were (9) faculty members from the College of Nursing of University of Baghdad, (1) faculty member from college of medicine, (2) Consultant members from Hospital, Ministry of Health, and (3) faculty members from Nutritional Research Institute.

Reliability: Internal consistency reflects reliability of the items. It can be determined by computing Cronbach alpha (α).

A Cronbach's alpha of 0.928 is considered satisfactory.

Data Collection: Data were collected through using of the questionnaire, and the process started at 6th of January 2019 to 4th of march 2019 after obtaining permission from the school for 4th days of week. Each respondents take about (15-25) minute to fill the questionnaire.

Statistical Data Analysis: (SPSS. version22)

Descriptive Data Analysis:

Inferential Data Analysis:

Ethical Considerations: It is necessary to consider moral issues during the evaluation period, among these ethical considerations are the following:

- Informed consent.
- Do no harm.
- Confidentiality.
- Anonymity.

Results

Table (1): Distribution of Students (socio-demographic characteristics) with comparisons significant

SDCv.	Groups	No.	Cum %	C.S. P-value
Age Groups per yrs.	12 _ 13	74	27.4	χ^2= 110.067 P=0.000 (HS)
	14 _ 15	167	61.9	
	16 _ 17	29	10.7	
	Total	270	100	
	Mean ± SD	14.26 ± 1.18		

SDCv.	Groups	No.	Cum %	C.S. P-value
Stage (Class)	First	90	33.3	χ^2= 0.000 P=1.000 (NS)
	Second	90	33.3	
	Third	90	33.3	
	Total	270	100	
Your order among your brothers	First	62	23	χ^2= 129.867 P=0.000 (HS)
	Second	87	32.2	
	Third	74	27.4	
	Fourth	30	11.1	
	Fifth	14	5.2	
	Sixth	3	1.1	
	Total	270	100	

(*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non Sig. at P>0.05;Testing based on One-Sample Chi-Square test.

Respect to "Student›s Age Groups", majority age group was assigned in group (14-15) yrs., and statistically has highly significant different at P<0.01, as well as recorded mean and standard deviation 14.26 yrs., and 1.18 yrs. respectively. With reference to "Stages or Classes", statistically no significant different at P>0.05 are accounted among the observed frequencies with their an expected outcomes, since studied sample›s students were selected 90 individuals from each stage of an intermediate schools. Respect of "Asking about order among others brothers", majority of ordered were assigned within second, and third, and statistically has highly significant different at P<0.01 accounted among observed frequencies with their an expected outcomes.

Table (2): Distribution of Studied Samples according to Anthropometric Parameter (BMI)

Anthropometric variable	Groups	No.	%	Cum. %	C.S. (*) [P-value]
Body Mass Index BMI	Obese	35	13.0	13.0	χ^2 = 117.067 P=0.000 HS
	Overweight	73	27.0	40.0	
	Normalweight	138	51.1	91.1	
	Underweight	24	8.9	100	
	Total	270	100	-	

(*) HS: Highly Sig. at P<0.01; Statistical hypothesis based on Testing based on One-Sample Chi-Square test

Concerning Body mass index,more than half is normal weight (n=138;51.5%),followed by those who areover weight (n=73;27%), those who are obese (35;13.5%), and those who are underweight (n=24;89%).

Table (3) : Adherence of Schools Female Students to Healthy Diet Domain

Subjective Domain	No.	PGMS	PSD	Min.	Max.	Range	Ev.
The commitment of students to healthy diet	270	44.48	13.80	4.17	93.33	89.16	Mod.

Ev. : Evaluated (0.00 – 33.33) Low (L); (33.34 – 66.66) Moderate (M); (66.67– 100) High (H).

Table (4-2-2) shows summary statistics such that: percentile global mean of score, pooled standard deviation, pooled relative sufficiency, as well as an evaluation of studied responding were assigned using percentile transformation values through three categories (Low, Moderate, and High), and that were

done according to three intervals [(0.00 – 33.33), (33.34–66.66), and (66.67– 100)].

Results show that the observed responses of studied female students are weak evaluated, since percentile global mean of score was assigned under a cutoff point (i.e. Fifty Percent), as well as too wide range are accounted, which indicate that studied female students has large dispersion among the sample respondents.

Table (4): Relationship between redistribution Adherence of students to Healthy Diet and Age Groups with significant level

Age Groups	No. and Percent	Overall Evaluated		Total	C.S. P-value
		Under	Upper		
12 _ 13	No.	53	21	74	CC= 0.172 P=0.016 S
	% Age Groups	71.6%	28.4%	100%	
14 _ 15		129	38	167	
	% Age Groups	77.2%	22.8%	100%	
16 _ 17	No.	15	14	29	
	% Age Groups	51.700%	48.300%	100%	
Total	No.	197	73	270	
	% Age Groups	73.0%	27.0%	100%	

(*) S: Sig. at P<0.05; Testing based on Contingency Coefficient.

Results show that strong relationships are accounted with significant level at P<0.05 between studied factors which, are indicated with the increasing of age students, a positive responding would be obtained by adherence of students to healthy diet.

Table (5): Relationship between Redistribution Adherence of Students to Healthy Diet and Student's BMI with Significant Level

BMI	No. and Percent	Overall Evaluated		Total	C.S. P-value
		Under	Upper		
Under weight	No.	18	6	24	CC= 0.298 P=0.000 HS
	% BMI	75.0%	25.0%	100%	
Normal weight	No.	84	54	138	
	% BMI	60.9%	39.1%	100%	
Over weight	No.	60	13	73	
	% BMI	82.2%	17.8%	100%	
Obese	No.	35	0	35	
	% BMI	100.0%	0.00%	100%	
Total	No.	197	73	270	
	% BMI	73.0%	27.0%	100%	

(*) HS: High Sig. at P<0.01; Testing based on Contingency Coefficient.

Results show that strong relationships are accounted with significant level at P<0.01 between studied factors, which are indicated with escalating of BMI students, a negative responding would be obtained by adherence of students to healthy diet, especially concerning obesity level which shows that among 35(13.0%) of studied subjects no one of student's adherence to healthy diet are passing to upper cutoff point indeed.

Concerning the fathers' level of education, the majority of fathers are intermediate school graduates. This finding agrees with that of Chandrashekarappa, Ramakrishnaiah and Manjunath (2018) who studied stated that the largest proportion of fathers completed 10th grade (4.3%)With respect to mothers' level of education, more than a quarter have completed secondary school. This finding is consistent with that obtained by Chandrashekarappa and others (2018) who reported that less than a third of mothers have completed 10th grade (30.0%). As per fathers' occupation, most of fathers were assigned within lower professionals. This finding is supported by Rani (2016) who stated that most of the fathers' occupation were labour (62.0%)[10].With respect to mothers' occupation, most of mothers were assigned within unskilled workers. This finding is supported by Rani (2016) who reported that most of the mothers' occupation were non-working (Housewives) (75.5%). (Table 1). Concerning to "student's age groups", the majority of the study samples within the age group of was assigned in the group (14-15) years, and statistically has highly significant different at P<0.01, as well as recorded mean and standard deviation 14.26 (± 1.18) years. This finding is consistent with that of Rani (2016) who found that most of the study participants with age group (13-15) years, (n= 139 with percentage) 69.50). Also, Elkhgoly & other (2011) who found that most of the study participants with age group (14-15) years, (n=41) with percentage)58.6([11]. Respect of "Asking about order among others brothers", the majority of ordered were assigned within second, and third, and statistically has highly significant different at P<0.01 accounted among observed frequencies with their an expected outcomes.(n=87, 74) respectively with percentage (32.2, 27.4) respectively. This result is supported with Ibrahim & El-Lassy (2013) who obtain that a highest percent of students were observed to be either first or second child order.(n=360,350 respectively, with percentage 36.0, 35.0 respectively)[12]**.** concerning the result shows that of body mass index readings were evaluated by CDC charts of age (Percentiles) and has recorded highly significant different at P<0.01 among different levels of BMI responding, and however of increasing numbers concerning normal BMI, but leftover cases with reference to overweight level, and who were assigned obesity level cannot be underestimated in contrast of the same studied age groups of normal children, since they are accounted for 35 (35.0%), given that the percentage of an overweight and obese for age groups (2 – 19) is less than half the percentage mentioned in normal cases Table (3)This result is compatible with that of Plotnikoff, Gebel, & Lubans (2014) who reported that anthropometric (BMI) categories (the majority of them were healthy weight with mean SD (n=202 ± 56.60%). On the other hand, underweight was a lower level of BMI with mean SD (n 2 ± 0.60%)[13] . The results show that the observed responses of studied female students are moderate evaluation majority in the whole items, except (low-salt foods, Stick to low-fat when are unable to prepare healthy meal & Avoid junk food that has brought into your home by your family members) have indicated low evaluation of adherence to healthy diet. Since percentile, the global mean of the score was assigned under a cutoff point (i.e. Fifty Percent), as well as too wide range are accounted, which indicate that studied female students have large dispersion among the sample respondents. This study is supported by El Ansari, Suominen, & Samara, (2015) who observed that moderate adherence for most of the 'healthy food' items (> 50%) (Dairy/dairy products, fruit/vegetables servings/ day, fresh fruit, salads/raw vegetables and cereal/cereal products). Fish/seafood, meat/sausage products, and cooked vegetables had levels < 50% for adherence to the guidelines. Women had better adherence for meat/ sausage products, fast food/canned food and for most 'healthy food' items (p≤0.001).[14]Results show that strong relationships are accounted with a significant level at P<0.05 between studied factors which, indicated with increasing of age students, a positive response would be obtained by adherence of students to a healthy diet. This finding agrees with Eraby & Abdollwahid (2016) who found that a significant relationship between dietary habit and age of the female student at p-value=0,05, which means that whenever the age increases, their dietary habit becomes more healthy [15].

Conclusion

For summarizing of preceding results, it could be concluded that school's female students adherence to healthy diet, is not at the level that achieves the goal of self-efficacy for which it was established in the proper health indeed.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Ministry of Health and all experiments were carried out in accordance with approved guidelines.

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Impact of the GIST Model in Development of Thinking in Students

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Abstract

The objective of the research was to define the effect of the GIST model on the acquisition of geographical concepts. The researcher adopted the empirical research methodology as a methodology for the research regression which includes independent variable (GIST model) and variable dependent (acquisition of concepts)before start applying the experiment The researcher was rewarded between the two research groups for the purpose of obtaining accurate and objective results in the following variables (age of the first month, first grade, parental achievement, Danleys intelligence test). After parity between the two groups, Coordination of plans and objectives, concepts and tests for the two sets of research, and after the completion of the application of the experiment. The researcher applied research tools to the two research groups and after correcting the students' answers, the researcher obtained data for the experimental group and control. The data were processed by spss and T-test of the two groups. The results showed that the experimental group was better than the GIST model. On the officer group that was taught in the normal way independentrariable which teaches the experimental group is the Gest model group.

Keywords: *Gist Model - Acquire Concepts - Fourth Literary Grade*

Introduction

Education is a necessary process for every member of the society together, and the need for the human being to preserve his sex, to direct his instincts, to organize his emotions and develop his tendencies, commensurate with the culture of the society in which he lives, and help him in facing life and its requirements and organizing public behaviors in society to live between The community is a convenient life [1]. The researcher believes that education is a necessary process for man, which can not be dispensed with. It is concerned with helping people to rise to the highest levels of society and increase their cultural achievements[2]. Education can achieve its goals only through education. Education is only a means of transferring individuals to a better future by imparting knowledge, ideas and information to the student, which in turn will receive what the teacher receives from him [3]. The teaching profession requires knowledge based on instinct and teaching, and the most difficult is the confrontation. Facing the teacher to the students in the classroom is not easy, and it must be thought here that the choice of the appropriate teaching method rests with the teacher is the one who determines how and how the material is taught by him And Mohammed, 2002 [4]. The teaching method is a set of interactive procedures used by the teacher to guide and supervise the activities and activities of the learners in order to bring about learning in the different aspects (knowledge - attitudes_ skills) to fit the educational situation and to match the characteristics of the students addressed and the type of educational content concerned. Dynamic interaction between the various elements of teaching of the teacher and student, the content of education and the learning environment, and we must know the good way in a particular educational position may not be the same in another position. Because of the existence of new variables but in general if we have developed the principles of good teaching and established as a standard, the method of teaching will be one of the elements of communication of the teacher and the student and the study material. The importance of teaching social materials at different levels of education is highlighted in order to clarify the humanitarian aspect of human beings and to examine the relationships that

must prevail in societies and their organization, where geography comes in the forefront of social articles which are interested in studying the relationship between man and the natural environment and method of interaction with this environment and the effects of that interaction, where natural geography is concerned with the study of natural phenomena environment surrounding the human distribution And the factors influencing this distribution, while human geography is interested in studying the manifestations of human life and its gatherings and the relations of those gatherings and their negative and positive effects and their impact on natural phenomena and human impact. It also aims to learn geographic concepts from the main objectives of the geography curriculum. It means learning the geographical concept. Any activity that requires the learner to combine two or more phenomena and classify them in order to lead to the growth of the geographical concept and to present new geographic concepts so that it can classify them correctly and distinguish between positive examples and examples Negative [5]. The Gist Template is a model to summarize the content of the readable text in 20 or fewer words, including words or question keys, each of which is a field in which the reader's mind should go to search for what belongs to it or to classify ideas in the text These words are: (who, what, when, where, why, how) expressed by (W 5 and H) because the first five begin with the letter W and the last begins with the letter H, respectively (Who, What, Where, Where and How is a model used to summarize subjects that allows the learner to understand and store learning content in memory in such a way as to provide large volumes of storage space It seeks to occupy the memory of the basic issues contained in the text when summoned can be able to give a picture of it and related ideas and it is by way of molding the meanings of the text read and his ideas in the form or template referred to first and then express them together no more than The effectiveness of this method in the comprehension and comprehension of the reading did not come from a summary, but from the way of intensive reading and analysis of texts and focus on ideas W Aghtha center in the language of the learner and written in the form of notes under each of the areas included in the model Geist then reduced in twenty words or less of them

Methodology

It includes an overview of the research methodology and its procedures in terms of selecting the appropriate experimental design, identifying the research community and its sample, and the equivalence of the research groups (experimental and control), controlling the external variables, preparing the research requirements,

Experimental Design for Research: The experimental design means that the researcher adopts a plan and a work plan for how to implement the experiment belong to research. The experiment is intended to plan the conditions and factors surrounding the phenomenon that you are studying in a certain way and then note what happens.

Search community and eye: The current research community represents fourth grade students, all in secondary and middle schools. Of the Directorate General of the education of Babylon - the Hashemite district. For the academic year (2018 - 2019). In order to identify him, the researcher visited the schools where the number of people is not less than one fourth grade. The researcher (preparatory Hakim) chose in the Hashemite district randomly to conduct his experiment, and after he chose the researcher (preparatory Hakim) to apply the experiment, he found that it contains one division of the fourth grade literary representation of the experimental group, and the number of students (33) students, (The GIST model). In the same way, the researcher chose randomly (middle school) to represent the control group and the number of its students (31) students who will study the students according to the usual method

Equal Search Groups: The researcher's keenness before embarking on actual teaching is to be rewarded between the students of the two research groups statistically. The parity between the experimental and control groups was carried out in some variables that affected in one way or another the results of the experiment, although the researcher chose the two groups in the random drawing method. Although the students of the research sample from the center of social, cultural and economic are very similar to alarge extent and study in two schools are similar in terms of building and garden seats and sitting of one sex, but the researcher was keen to make equivalence of the variables (the age of time calculated months, the achievement of students in the first course in geography, The results of parity between the two research groups showed that the two research groups are equal to the variables mentioned.

Adjusting Extraneous Variables: The control of the external variables is one of the important events in the experimental studies in order to provide an acceptable

degree of internal honesty for the experimental design. The researcher verified the equivalence of the two research groups in some variables that they believe affect the course of the experiment in a different manner, but he tried to control the effect Some experiential variables in the course of the experiment and in what follows some of these variables and how to adjust them to adjust the conditions of the experiment and the accompanying accidents, the experiment did not accompany a circumstance or incident that led to the obstruction of the experiment or affected the results, experimental extinction, Ada The sample was determined by the two groups according to multiple choice. The study material determined the same study material for the two research groups, the selection of the research sample, the two groups were randomized and the two groups were confirmed as the maturity factor. Between the two groups and the age of the students are close, the maturity will return to both groups at the same level, so this factor did not have an impact in the research.

Preparation of research requirements: The research materials is one of the basic factors underlying the research according to which the research is carried out. The scientific material that is taught to the students of the two research groups during the period of the experiment was defined in chapters (4 and 5)of the book of the foundation of geo graph yard its techniaues for the fourlh grade literary Study (2018 - 2019) studied by the researcher in the second course of the same year.

The researcher has set out a set of teaching plans for experimental and control research in the light of the contents of chapters (4 and 5) of the book of the foundations of geography and its techniques for the fourth grade literary year (2018). - 2019)

Search Tools: The test is defined as a structured procedure for measuring a property through a sample of behavior. The purpose of the test is to measure the level of student achievement in the research sample for the basis of the geo-based techniques according to predefined concepts. Determination of test dimensions: The dimensions of the test are determined by the processes of acquiring the geographical concepts (definition - discrimination - application).Formulation of the test paragraphs: After determining the target and dimensions of the selection, the researcher tested the types of questions that measure these objectives and chose (multiple test) the four alternatives, according to three levels (definition - discrimination - application).

Half way Split: In order to avoid some of the method used to measure stability, there was a need to re-test with regard to the failure to ensure the conditions of the first application itself with the second application, and not to give the students experience, if the re-test to gain a little experience. And the ability to determine the internal consistency of the test paragraphs, and determine the time required for statistical processing, and its simplicity in the calculation of the coefficient of stability, and the half-split method was calculated by dividing the paragraphs of the test into two sections, individual paragraphs and pairs of paragraphs. The researcher adopted a random sample of the same students whose grades were subjected to statistical analysis of the application (30) of the students. The Pearson correlation coefficient was used to extract the coefficient of correlation between the individual and marital vertebrates. The coefficient of stability was 0.87 and the coefficient of stability of the extract in this manner was half the test, The overall homogeneity of the test, and to amend the researcher has resorted to a correction equation using Spearman - Brown, then reached (0.93). I tried to apply the experience

During the course of the experiment, the researcher undertook the following steps:

1. The research groups were taught by the researcher himself, in order to avoid the difference.
2. The same amount of scientific material was given through the concepts contained in all subjects.
3. The researcher presented himself as one of the teachers in the school to urge students to be keen and eager to learn the subject.
4. The researcher began to apply the experiment in a single date between the two groups.
5. The duration of the experiment was one between the two groups, if the second course lasted.
6. The researcher applied the test of acquisition of geographical concepts on all sample members, after giving the students time to prepare for the test.

Statistical Method

The researcher used his research and analysis of the results of a number of statistical means, including

1. The second test te - test for two independent samples used this means to know the significance of statistical differences between the grades of the

experimental group and control at the equivalence in the analysis of the results

$$T = \frac{x1 - x2 -}{\sqrt{(n1-1)\sum + (n2-1)\sum \frac{2}{1} \times \left(\frac{1}{n1} + \frac{1}{n2}\right)}}$$

2. **Square Kay X ^ 2:** The researcher used this equation for the purpose of calculating the parity of the two groups of students in the educational achievement of the parents

$$X^2 = \frac{\sum(0-E)^2}{E}$$

Results and Discussion

The results of this study showed that the independent variable (GIST model) in the acquisition of the fourth grade students achieved geographical concepts. This indicates the superiority of the experimental group who studied the GIST model to the control group students who studied the usual method in the achievement test (5468) for the interest of the experimental group studied by relying on multimedia, where the calculated T value (3.568) was greater than the value of Altait and therefore rejected the null hypothesis and accept the alternative hypothesis, and this confirms the superiority of teaching B The GIST model is typical of social studies.

Conclusion

The researcher applied research tools to the two research groups and after correcting the students' answers, the researcher obtained data for the experimental group and control. The data were processed by spss and T-test of the two groups. The results showed that the experimental group was better than the GIST model. On the officer group that was taught in the normal way independentrariable which teaches the experimental group is the Gest model group.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon/Faculty of Basic Education and all experiments were carried out in accordance with approved guidelines.

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Knowledge and Attitudes of Pregnant Mothers Regarding Risk Factors During Pregnancy at Al-Dewania Maternity and Child Hospital

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Abstract

The preconception period considered an important time for women's health and an opportunity to develop a healthy lifestyle that can be useful both for the health of the mother and the newborn baby. A descriptive cross-sectional study is conducted throughout the period of (18th November 2018 to 10 April 2019) in order to assess the pregnant mothers knowledge and attitudes regarding risk factors during pregnancy; and also, determine socio-demographics of pregnant mothers knowledge and attitude. A non-probability "purposive sample" sample of (100) mothers is selected through the use of non-probability sampling approach. This sample is selected among those who reviews the hospital for receiving health care. Data are analyzed through the application of descriptive statistical data analysis approach that includes, frequencies, percentages, mean of scores, and standard deviation; and inferential statistical data analysis approach that include Chi-squared test and ANOVA. The study results indicate that majority of mothers knowledge were (47%) moderately, and (75%) were neutrally attitudes. As well as, most of demographic characteristics were significantly associated with mothers knowledge and their attitudes at p-value <0.05.

Keywords: *Pregnant, Knowledge, Attitudes, Risks Factors.*

Introduction

One of the important event in the human life is birth. Life starts in the womb of mother, when there is a union of single egg and sperm, it is called as conception and it marks the beginning of pregnancy. Conception occurs not as an isolated event but as a part of sequential process[1]. The sequential process includes gamete formation, ovulation, fertilization and implantation in the uterus. Pregnancy last, approximately for 10 lunar months, nine calendar months, 40 weeks or 280 days. Duration of pregnancy is computed from the first day of the last menstrual period until the day of birth[1]. Pregnancy is an enjoyable experience for pregnant mothers. Evidence shows that adequate nutrition, knowledge and attitude are essential to an individual's health and well-being, especially during pregnancy [2] .Every pregnancy is a unique experience for the women and each pregnancy that the women experience will be new and uniquely different[3]. Reproduction though considered to be an usual process in the life of a women, is stressful and can lead to the risk and threats in reproductive age group women unless, appropriate measures are taken in time, it may reach its peak and endanger the life of mothers[4]. In any community, mothers and children constitute a Priority group. In India, women of the child bearing age (15-44 years) constitute 19% and children under 15 years of age about 40% the total population of about 100 million. By virtue of their numbers, mothers and children are the major consumers of the health services of whatever form[5]. Understanding the common disorders of pregnancy in order to advise the women on strategic that help her to cope with the condition and minimize the effects she experiences. Although such disorders are termed as "minor disorders" they are far from minor for the woman, who is experiencing them [4]. stated that healthy mother brings forth the healthy child. So many of the risks can be controlled and prevented using existing knowledge and affordable tools to the primi-gravid mothers. Before providing the health education to the prim gravid mothers it is essential to

know what they want to know certain aspects of self and child health such as:

(a) Changes and effects of the changes in her own body.

(b) Protection of the baby in the uterus and how to keep him/her healthy.

(c) Adjustment to the expected motherhood and effects of pregnancy on her beauty and comfort is of grater concern in primi gravid.[5] A woman who is pregnant for the first time enters pregnancy with certain beliefs, attitudes & knowledge towards child bearing. Some of which are unscientific and unhealthy like eating papaya will cause abortion, consuming plenty of food and water will make the baby oversize and make deliveries difficult. These misconceptions need to be corrected for the sake of the child as well as the mother, through proper information[6]. Knowledge and attitude intervention in pregnant women it has been showed that as a package comprising the following interlocking system includes interventions, early screening, administration of a preventive prophylactic therapy and curative of the various detected risk conditions effectively on the basis of reduced maternal complications[7].

Methodology

Study Design: A descriptive cross-sectional study is carried in AL-Dewaniya Governorate to explore the risks factors of pregnant mothers and their knowledge and attitudes for the periods of (18th November 2018 to 10 April 2019) .

Study Sample: A non-probability "purposive sample" of (100) pregnant mothers who are attend the Maternity and Child Teaching Hospital in AL-Dewaniya Governorate.

Study Instrument: The study instrument was constructed depending on literature reviews and previous studies related to the anaphylactic shock. It is a questionnaire format for the research purpose and composed of two parts and these parts are:

Part I: Which composed of demographical characteristics.

Part II: This part is related Previous and Current Pregnant Mothers Health History related to Risk Factors.

Part III: Mothers Knowledge related to Risk Factors during Pregnancy.

Part IV: Mother's Attitudes towards Risk Factors of Pregnancy.

Data Collection the Method: The data is collected through the use of a developed questionnaire (Arabic version) and an interview techniques with those who visiting and stay in hospital. Each mothers is interviewed on individual base and each interview takes between (20-30) minutes.

Statistical Analysis: The information of the study are analyzed during the use of the "Statistical Package for the Social Sciences it called (SPSS -version 20)". The information of statistical analysis approaches are used in arrange to analyze and estimate the consequences of the study. A descriptive statistical data analysis approach used to describe the study variables: Frequencies, Percentages, and standard deviation.

Results and Discusion

Table (1): Distribution of Study Sample by their History Diseases Related to Risks Factors of Pregnancy

Risks Factors	Previous			Currently		
	Rating	F.	%	Rating	F.	%
Diabetes/Gestational Diabetes	Yes	6	6.0	Yes	5	5.0
	No	94	94.0	No	95	95.0
	Total	100	100	Total	100	100
Hypertension during pregnancy	Yes	13	13.0	Yes	16	16.0
	No	87	87.0	No	84	84.0
	Total	100	100	Total	100	100

Risks Factors	Previous			Currently		
	Rating	F.	%	Rating	F.	%
Anemia	Yes	23	23.0	Yes	29	29.0
	No	77	77.0	No	71	71.0
	Total	100	100	Total	100	100
Sexually transmitted Diseases (STDs)	Yes	13	13.0	Yes	12	12.0
	No	87	87.0	No	88	88.0
	Total	100	100	Total	100	100
Thyroid Diseases	Yes	0	0.0	Yes	1	1.0
	No	100	100.0	No	99	99.0
	Total	100	100	Total	100	100
Toxoplasmosis	Yes	4	4.0	Yes	2	2.0
	No	96	96.0	No	98	98.0
	Total	100	100	Total	100	100
Polycystic ovaries	Yes	17	17.0	Yes	6	6.0
	No	83	83.0	No	94	94.0
	Total	100	100	Total	100	100
Obesity	Yes	16	16.0	Yes	9	9.0
	No	84	84.0	No	91	91.0
	Total	100	100	Total	100	100
Hyper emesis gravidaram	Yes	3	3.0	Yes	11	11.0
	No	97	97.0	No	89	89.0
	Total	100	100	Total	100	100

This shows mothers history of diseases related to risks factors of pregnancy measured in previous of gestation and currently. Out of (100) mothers who participated in this study, it was found that (6%) (5%) having gestational diabetes previously and currently respectively, (13%) (16%) having hypertension, (23%) (29%) having anemia, (13%)(12%) with STDs, (1%) currently with thyroid disease, (4%)(2%) with toxoplasmosis, (17%)(6%) having polycystic ovaries, (16%)(9%) were obese, and (3%)(11%) having hyper emesis gravidaram respectively. This results reveals that the responses of pregnant mothers were assessed high mean scores and relative sufficiency (RS) at the items (1,5,6) and assessed moderate at the items (3,4,8). As well as, the items number (2,7,9) the responses were low knowledge. The overall knowledge related to risks of pregnancy were assessed moderate mean of score (1.95) and relative sufficiency (65%). The term of pregnancy is the period in which the fetus develops inside the mother's womb, and often of the duration of pregnancy is about forty weeks or nine months, so the duration of pregnancy account starting from the first day of the last menstrual cycle, it should be noted that it can be divided pregnancy into three stages of the period, so that represents the first third of the period between 1-12 weeks of pregnancy, while the second represents a third of the period between 13 and 28 weeks of pregnancy, while the third trimester includes the period between 29 and 40 weeks of pregnancy. When talking about pregnancy in general, it should be noted several aspects, including how it happened, and the mechanism of detection, as well as signs and symptoms associated with it. This chapter presents the discussion of the implications of data gathered and reported in chapter four, their relevance was identified in relations with literature as well as the findings of the study concerning the knowledge and attitudes of pregnancies.

Part I: Distribution of Study Sample by their Demographic Characteristics: The findings of present study found that out of (100) mothers who participated in this study, the highest percentage (30%) their age ranged (21-25) years old, (62%) residences in urban areas, (21%) of husbands were unable to red and writ, while conversely those wife are unlike their husbands, (25%) post graduated. Regarding occupation, the highest percentage (72%) of mothers were housewives and (58%) of their husband are a free work with Enough monthly income within monthly need. It's obvious among results, that the total participants were not smoking, and (55%) of their husband also were not smoke. Regarding consanguinity (52%) of mothers were not relative with their husband as a relationship between spouses (Table 4-1). This study was in a disagreement with a descriptive analytic study carried on (100) pregnant women who attend primary health care centers in Basra city in AL-Seef primary health care Center. Results revealed that (49%) of pregnant women their ages ranged between 15-24 years, (30%) were primary school education, (89%) from house wife[8].

Part II: Distribution of Study Sample by their History Diseases Related to Risks Factors of Pregnancy: The study results shows mothers history of diseases related to risks factors of pregnancy measured in previous gestation and currently. Out of (100) mothers who participated in this study, it was found that (6%) (5%) having gestational diabetes previously and currently respectively, (13%) (16%) having hypertension, (23%) (29%) having anemia, (13%)(12%) with STDs, (1%) currently with thyroid disease, (4%) (2%) with toxoplasmosis, (17%)(6%) having polycystic ovaries, (16%)(9%) were obese, and (3%)(11%) having hyper emesis gravidaram respectively. A cross-sectional study involving 354 pregnant women was conducted in Mbulu District in Tanzania regarding knowledge and attitude of pregnant women in rural areas. Their findings depicts that the risks factors of pregnancy were not during her pregnancy in that study[9].

Part III: The Mother's Knowledge Related to Risks of Pregnancy: The care of the mother during pregnancy is of great importance in maintaining the health and health of her fetus by providing healthy conditions for walking and reduce the proportion of complications that accompany pregnancy, which affect the health of mother and child, the body of women is undergoing major changes in the various organs and these changes are to provide the best conditions For the growth and development of the fetus, and may appear many complications during pregnancy, such as cases of poisoning of pregnancy and vomiting and nausea and changes in smell and taste, etc., which pose a danger to the health of pregnant and fetus. The results of the study are confirmed that the responses of pregnant mothers were assessed high mean scores and relative sufficiency (RS) at the items (1,5,6) and assessed moderate at the items (3,4,8). As well as, the items number (2,7,9) the responses were low knowledge. The overall knowledge related to risks of pregnancy were assessed moderate mean of score (1.95) and relative sufficiency (65%) Today, despite the openness of the world's open knowledge tools, they are often used in a side away from the health aspects. Those results come in the same line with a cross-sectional survey was conducted in 513 pregnant women randomly selected from the gynecological ambulatory services of five hospitals located in Naples, Italy. Their findings indicate that pregnant women lack knowledge regarding the main maternal risk factors[10].Also, the results of our study consisting with study conducted Southwestern Nigeria concerning knowledge and attitude of women and its influence on antenatal care attendance. Their results indicate the mothers with moderately knowledge[11].In addition, a study on knowledge conducted in Tanzania by cross sectional community based descriptive survey study. A pre-tested structured questionnaire was applied. results reveals that pregnant mothers were inadequate regarding risks pregnancy[12].In our society, once declare that a woman pregnant, the surroundings become experts and compete to advise on what to do, and what should not do, these tips are often harmful, but sometimes may find what works for. The results of attitude of mothers on risk factors influencing pregnancy outcomes in Abeokuta South Local Government Area, Ogun State. A descriptive statistic reveals that attitude of the mothers as revealed in this study showed that majority 59(59.6%) do not see anything wrong in being pregnant on yearly basis[14]. Furthermore, study has been investigated the attitude of women of childbearing age towards the legalization of abortion, Ethiopia. Their findings depicts that attitudes were moderately especially those who were adolescents mothers [15].

Conclusions

Most pregnancy risks did not affect pregnant women during pregnancy. A young adults woman's residences in urban areas post graduated and housewife and make a sufficient within the monthly need with early onset

the menstruation regularly and married in ideal age and mostly of them were one gestation. 6.1.6.Mothers have a moderate attitudes towards risks factors during pregnancy.Mothers knowledge has been influenced by their attitudes. Health education program regarding the enhances mothers' knowledge as well as their attitudes about pregnancy and apply in rehabilitation centers in health directorate. Knowledge is an important aspect in deals with risks factors during pregnancy, studies can be conducted to involve a national level and evaluate knowledge in rural areas.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Al-Dewania Health Directorate- Iraq and all experiments were carried out in accordance with approved guidelines.

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Molecular Detection of Giardia Lamblia Isolated from Cattle Feces

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Abstract

A hundred fesses samples were collected randomly from cattle fields in Babylon province. Using DNA extraction Kit, the DNA of these samples was extracted following the protocol of manufacturer. Nanodrop was used to check the DNA concentration, and then the Nested PCR was performed using specific primers to triosephosphate isomerase A and B of *Giardia lamblia***.** This study detected 16 positive isolate of the genotype *A* of *Giardia lamblia* that recorded 16% of total samples (100). whereas, the genotype *B* was found in 28 samples (36%). The Nested PCR technique was performed to direct and identify the wanted genotypes of *Giardia lamblia*. We recorded that the infection with type B were more common in young age group 1-12 months with percentage of 73% .While highest rate of the genotype A was detected in animal at age of 3-10 years with (62.5%). In addition, the result also revealed that the prevalence rate of overall infection of *Giardia lamblia* (genotype A and B) were significantly recorded in females (68%) more than males (32%).

Keyword: *Giardia lamblia, cattle, Molecular, genotyping, Babylon*

Introduction

Giardia lamblia is a global parasite that can be found in wide range of species and in both wild and domesticated mammals[(1,3)]. It is widely recognized that Giardiasis is a zoonotic diseases that could transfer between animal and human[(4)]. In ruminants, it could cause a significant problem include: weight lost, diarrhea and malabsorption, this might lead to dramatic economic losses in the livestock [(5,6).]

The prevalence rates of *Giardia* infection are variant from country to country and might be ranged between 9-73% in cattle, while its range in sheep between 1.5-38%[(7).]

There are two main stages of the *Giardia* in their life cycle, vegetative and resistant cysts to the environment. The infection occur once the active cysts are swallowed by host either through contaminated food and water within just several hours. In the proximal region of the intestine, the cysts are opening and two trophozoites are formed and released to invade the intestinal cells. Following this steps, the parasite attaches and grows in the small intestinal, particular the luminal lining cells, leads to diarrhea then eventually nutrient malabsorption. The trophozoites travel to the distal region of the intestine then forms a new cysts that then pass through the feces. The released cysts in the feces can survival in the difficult environment, this might allow the parasite to migrate and infect other hosts and new infection developed eventually [(8).] Most of the studies have emphasized the role of trophozoites for causing the infection and on the excystation and encystation. However, very few studies referred to the role of cysts in the infection. The morphological variants between the dormant cyst and motile trophozoite, suggested significant changes in the metabolism and *Giardia* might encysts inside host intestine [(9).]

Infection with *Giardia* diseases leads to decrease the growth rate of the calves, also infected calves shed a significant amount of active cysts or oocysts for several weeks for others[(10, 11)]. It was found that cattle consider as a major source of *Giardia* by contaminating the drinking water[(12,13).]

Light microscopy is mainly used to diagnosis *Giardia*, identify the oocysts and trophozoites in the fecal samples around the developing countries. Low accuracy is one of the disadvantage of using light microscopy in comparison with polymerase chain reaction and antigen identification of *Giardia*[14].

Morphologically, it is difficult to differentiate between trophozoites and cysts stages of Giardiasis infection using light microscopy. Also, it is quite challenging to distinguish between human and animal trophozoites and cysts stages. Therefore, a molecular examination is quite necessary for *Giardia* genotypes identification. The genotype A have been identified in the human as well as farm animals (goats, sheep, cattle and equines). Additionally, it is found in canines, felines and wild animal such as guinea pigs, beavers and loris. While genotype B have been recorded in rats beavers, chinchilla, canines, loris and human beings[15,18].

The current study is designed to detect and identify the *Giardia lamblia* using molecular genotyping of that isolated from cattle feces in Babylon province.

Materials and Method

Samples Collections:

Feces Sample Collection: Hundred fecal samples were randomly collected (28/1-12 months, 38/1-2 years and 34/3-10 years) from cattle in Babylon province. Samples were transferred to the sterile and dried plastic tubes then transported to the laboratory using cold box for examinations

Genomic DNA Extraction: Genomic DNA was extracted from fecal samples using stool DNA extraction Kit, Bioneer (Korea) after determining the target parasites using light microscope. The extraction was achieved according to the protocol that supplied from the company. DNA concentration was measured using Nanodrop spectrophotometer. All the DNA samples were then stored at -20 ˚C until needed.

Nested PCR Amplification: Genotyping of *Giardia lamblia* was detected using Nested PCR assay for DNA, which isolated from human and animal. The PCR techniques was performed according the method of (Minvielle *et al*., 2008).

The primers that used in this study was specific to triosephosphate isomerase gene for genotyping A and B. Sequences from NCBI-GenBank website was used to design primers (GenBank). Primer3 plus website is used to design and validate the required primers online. All the used primers in this study obtained from (Bioneer Company. Korea) as show in table 1.

Table (1): Designed primers of triosephosphate isomerase gene for genotyping A and B.

Nested PCR	Primer	Sequence		Amplicon
First round	TPIA	F	CGAGACAAGTGTTGAGATG	576 bp
		R	GGTCAAGAGCTTACAACACG	
	TPIB	F	GTTGCTCCCTCCTTTGTGC	208 bp
		R	CTCTGCTCATTGGTCTCGC	
Second round	N-TPIA	F	CCAAGAAGGCTAAGCGTGC	476bp
		R	GGTCAAGAGCTTACAACACG	
	N-TPIB	F	GCACAGAACGTGTATCTGG	140bp
		R	CTCTGCTCATTGGTCTCGC	

The master mix of the PCR was performed using (AccuPower® PCR PreMix kit. Bioneer. Korea). The PCR tubes were contained the following: pellet, MgCl2 1.5m M, Taq DNA polymerase, KCl 30m M, stabilizer, Tris-HCl (pH 9.0) 10m M, d NTPs 250µM and tracking dye. The PCR reaction was achieved depending to the provided protocol by company, which was 20µl total volume consist from 5µl of purified DNA plus 1.5µl of 10 pmole of reverse primer and 1.5µl of 10 pmole of forward primer. The volume was complete to the 20µl

with deionizer water. all the previous cocktail was mixed using Exispin vortex centrifuge (Bioneer. Korea).

The cocktail was placed in the thermocycler (Techne TC-3000. USA) and the setting condition was as following: initial denaturation temperature of 95 °C for 5 min; followed by 30 cycles at denaturation 95 °C for 30 s, annealing 52 °C for 30 s, and extension 72 °C for 1 minute and then final extension at 72 °C for 7 min as show in table 2. the PCR products were tested using 1.5% agarose gel that stained with ethidium bromide and then visualized under UV.

Table (2): Nested PCR thermo-cycler setting.

Nested PCR Step	Temperature	Time	Repeat Cycle
Initial Denaturation	95°C	5 minute	1
Denaturation	95°C	30 sec	30
Annealing	52°C	30 Sec	
Extension	72°C	1 min	
Final Extension	72°C	7 min	1
Hold	4°C	10 min	1

Statistical Analysis: Statistics analysis was performed using statistical package for social sciences (SPSS), and all the data were calculated and analyzed with chi square equation and the confidence limit was accepted at 95% ($p>0.05$).[19]

Results and Discussion

The first direct examination of the feces samples (100) from cattle in different ages was performed based on morphological characteristics using light microscope. The results showed that 50 isolates were *Giardia lamblia*. This results were confirmed later via nested PCR assay, which revealed that 63% of the positive samples (44) carry genotype B, while the rest of the positive samples have genotype A (table 3).

Table (3) : percentage genotyping of Giardia lamblia

Genotype	Total positive samples	Percentage (%)
A genotype	16/44	37%
B genotype	28/44	63%

The amplified gene products of genotype A resulted from using Polymerase Chain Reaction technique (PCR) were confirmed by running agarose gel electrophoresis. Direct detection of genotyping **A** of ***Giardia lamblia* isolates** according to ribosomal RNA gene (576 bp) and (476 bp) were shown in figure (1).

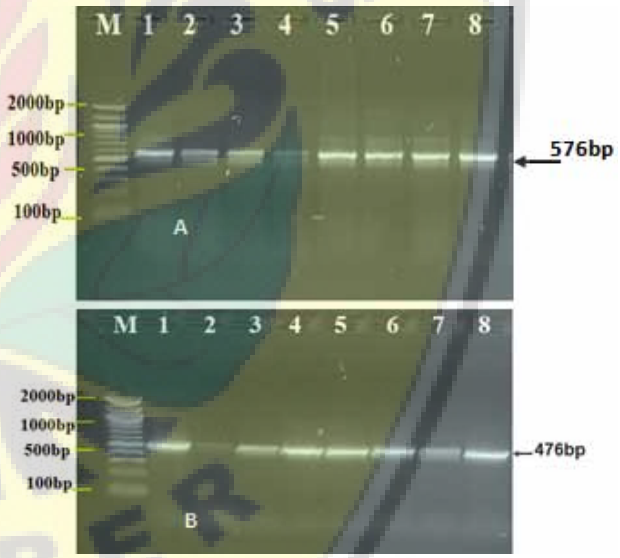

Figure (1): Agarose gel electrophoresis images

A) It shows first round of PCR product amplification of *Giardia lamblia* genotype A based on ribosomal RNA gene (576 bp. **B)** It shows second round Nested PCR product analysis of *Giardia lamblia* genotype A based on ribosomal RNA gene size 476 bp.. (M) DNA marker (100-2000 bp), Lane 1 (A) DAN control size 576 bp.), Lane 1 (B) DAN control size 476 bp. (2-8) DNA products of the positive sample of *Giardia lamblia*

Similarly, the amplified gene products of genotype **B** resulted from using Nested (PCR) were confirmed by agarose gel electrophoresis. Direct detection of genotyping**B**of ***Giardia lamblia*** **isolates** based on ribosomal RNA gene (208 bp) and (140 bp) were shown in figure (2).

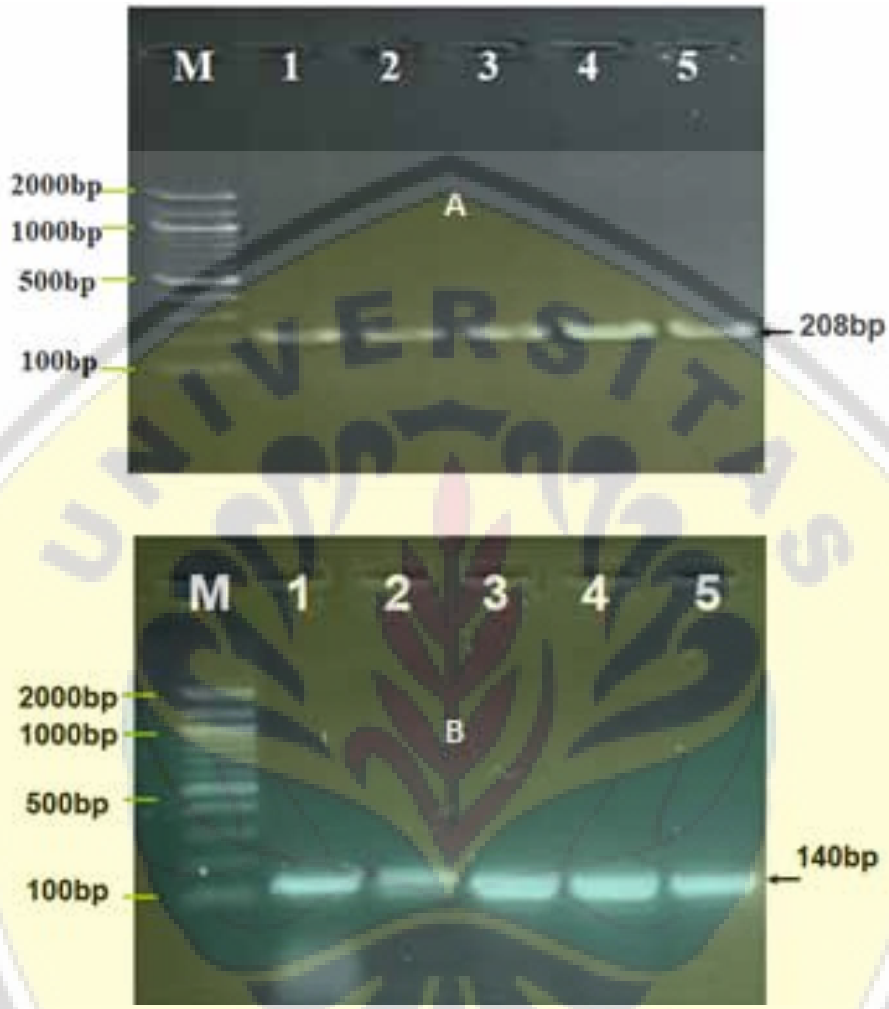

Figure (2): Agarose gel electrophoresis images

A) It shows first round of PCR product amplification of *Giardia lamblia* genotype B based on ribosomal RNA gene (208 bp. **B)** it shows second round Nested PCR product analysis of *Giardia lamblia* genotype B based on ribosomal RNA gene size 140 bp.. (M) DNA marker (100-2000 bp), Lane 1 (A) DAN control size 208 bp.), Lane 1 (B) DAN control size 120 bp. (2-5) DNA products of the positive sample of *Giardia lamblia*

Generally, the results revealed that the infection rate was at a high score (47%) in animals at the age of 1-24 months in comparison with (38%) at age (3-10) years (table 4). Moreover, the results appeared that the females more exposed to infection (66%) than the males with a domination of genotype B (3, 4)

Table (4): Prevalence of *Giardia lamblia* according to sex and age

Age	Sex		Total
	Male	Female	28 (46%)/13
1-12 Month	(4)	(9)	38 (47%)/18
Year1-2	(7)	(11)	34 (38%)/13
3-10 Year	(4)	(9)	

Molecular technology was used to detect the *Giardia lamblia* parasite that was agreed with 20 research, which used the same techniques for identification of *Giardia* in general. This study showed that 44% of study animals were infected with *Giardia lamblia*, in this percentage, 36% belongs to genotype A and 64% were genotype B. high prevalence of genotype B was in agreement with (21).Data analysis showed there were no significant association between gender, age with a variable independency. Previous studies, a low rate of infection of *Giardia* was recorded in comparison with this study (22) and (23), which were 5.45% and 10.27% respectively. This can be explained that these studies were conducted in different regions and countries or there were another factors regulate the infection of Giardiasuch as season of the study, environmental changes, number of collected samples, method that have been used to collect and examine the samples (24). In the present study, young animals between age group 1-2 years was the mostly infected group with percentage 47%, which shared a similar ratio as the group of 1-12 months old (46%). The majority of the infection ratio was scored to genotype B strain especially for the group of 2 year old, while genotype A was recorded in the age group 3-10 years with parentage of 62.5%. It was found that the highest prevalence of *Giardia* was noticed in cattle aged < 6 month In Baghdad region . While in East Azerbaijan-Iran, a high prevalence was recorded in calves less than two months old (25). It is perhaps that calves are more susceptible to the infection, or the infection transfers vertically to these calves from their infected mother. As these infected animal still sheds the *Giardia* cysts due to a low immunity in their bodies (26). Colostrum to the new calves does not offer a protection against *Giardia* and does not prevent the infection special if these calves still in contact with the their infected mother. This study indicated that the prevalence rate of infection with genotype A and B is higher in females 66% than male 34%, this finding agreed with (20). This may be due to the preganncy and milking which is more stressful process to the female that have a big impact on their immun system. However, several studies stated that there are no differancess between females and males in terms of infection.

Conclusion

This study revealed that infection with *Giardia lamblia* are gradually decreasing within the age progression. It may be because to a low development of the immune system in the newborn and calves. As well as, it could possibly that the calves may be exposed to a high number of oocysts come from cows that already infected. It has been suggested that there are several factors may regulate a spread of the infection such as: gender, crowd, size, age, climate.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Collage of Veterinary Medicine, Iraq and all experiments were carried out in accordance with approved guidelines.

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Prevalence of Hepatitis C among Patients Undergoing Hemodialysis in Dialysis Center in Al-Najaf Al-Ashraf Governorate

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Abstract

Objective: this study aimed to estimate prevalence of Hepatitis C among Patients Undergoing Hemodialysis (HD) in Dialysis Center at Al- Najaf Al- Ashraf Governorate, To Compare between Prevalence of HCV in AL-Sadder Medical City and AL- Hakeem General Hospital, to find relationship between Prevalence of HCV and related risk factor. A descriptive study design (retrospective design) was carried out through the present study in order to achieve the early stated objectives. From period 15th of February 2017 to 2ed of May 2017, A non-probability (purposive sample) of (103) patients with hemodialysis who were admitted to AL-Sadder Medical City and AL-Hakeem General hospital/Dialysis Centers for treatment were included in the study. Also The result claimed that there is a high significant relationship between the blood transfusion and the incidence of hepatitis C at p-value more than 0.001, as well as the result shows high significant relationship between the duration of hemodialysis and incidence of hepatitis C at p-value more than 0.001 Furthermore the study conclude that the half of patients are infected with HCV, and prevalence of hepatitis C virus associated with several factors, especially the long-term duration of hemodialysis, and history of blood transfusion.

Keywords: *Hepatitis C, Patients, Hemodialysis, Dialysis.*

Introduction

Hepatitis is a disease of the liver that causes inflammation and swelling, which represent a serious worldwide health problem, potentially resulting in permanent damage[1]. Viral hepatitis is a family of viral infections that affect the liver caused by at least five distinct viruses: hepatitis A virus (HAV), hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis D virus (HDV), and hepatitis E virus (HEV). The most common viral infection is hepatitis C[2]. It is associated with parenteral means so may occur due to sharing contaminated needles, needle sticks or injuries to health care workers, blood transfusions or sexual contact [5]. For this reason HCV most affected on patients who are severally receiving blood or receiving blood more than one time, individuals who are intravenous and inhalant drug users, hemophiliacs, and hemodialysis patients[20] Around 170 million people are suffer from HCV infection approximately 75% of them becoming a chronic infection which may progress and leading to cirrhosis, end-stage liver disease or liver cancer in 15% to 25% of patients also 350,000 deaths occur each year due to all HCV-related causes [12]. HCV frequent in patient receiving long-term dialysis in both developing and developed countries due to a failure to identify carriers of this disease or because of a lack of truly effective biosafety measures implemented in the dialysis units [(21), (6)]. Chronic hemodialysis (HD) most commonly method of dialysis which represent a lifesaving procedure used for patients who are acutely ill and require short-term dialysis (days to weeks) and for patients with ESRD who require long-term or permanent therapy [(5)]. Patients undergoing chronic HD are predominantly likely to contamination by HCV due to they can exposing to dangerous factors such as treatment duration, blood transfusions and the prevalence of virus in the HD unit, such as (HBV) and (HCV) viruses [(22)]. In Iraq, hepatitis is considered as a major health problem in patients

undergoing hemodialysis. The number of patients who are admitted to Iraqi hospitals in 2013 was 29059 and this number decreased in 2014 to 25803 patients [18]. In Al-Najaf City, the numbers of patients who were admitted to Al-Sadder medical city at renal center in 2015 are 330 and this number grated and reached in 2016 to 440 patients [19].

Methodology

A descriptive study (retrospective design) was carried out through the present study in order to achieve the early stated objectives. The Study conducted in Al-Najaf City/Al-Najaf Al-Ashraf Health Directorate/Al-Sadder Medical City and Al-Hakeem General Hospital/ Dialysis Centers from period 15th of February 2017 to 2ed of May 2017. A non-probability (purposive sample) of (103) patients with hemodialysis who were admitted to AL-Sadder Medical City and AL-Hakeem General hospital/Dialysis Centers were included in the study. An assessment tool were used to determinate the prevalence of HCV for patient undergoing hemodialysis. The final copy consists of the following parts:

Part 1: Patient Demographic Data: The first section of the questionnaire included demographic information which includes gender, age and name of hospital.

Part 2: Clinical Data: The second section consists of the questionnaire related to duration of dialysis, time of dialysis per week and number of blood transfusion before and after diagnosis.

Part 3: Laboratory Test: this part include HCV test which may positive or negative

The data were collected through the utilization of the developed questionnaire, and by means of structured interview technique with the subject who individually interviewed, and each subject was interviewed in the same way by using the similar questionnaire for the subjects of the study sample at the dialysis center. The data collection was carried out from April 20th, to 28th may, 2017.

Results and Discussion

Table (1) The Study Sample clinical characteristics

Clinical data	Rating and Intervals	Frequency	Percent
Duration of dialysis	≤ 1	2	1.9
	2 - 11	13	12.6
	12 - 21	24	23.3
	22 – 31	21	20.4
	≥32	43	41.7
	Total	103	100.0
	Mean std. deviation)/30 (23.5)		
Times of dialysis per week	1	1	1
	2	55	53.4
	3	46	44.7
	4	1	1
	Total	103	100.0

The study result according to table (1) shows that (41.7%) of patients have history of renal failure undergoing hemodialysis for ≥ 32 months and dialyzing two time per week.

Table (2) The Study Sample Distribution according to Laboratory Test

Diagnosis of hepatitis	Name of Hospital				
	AL-Sadder Medical City	%	AL-Hakeem General Hospital	%	Total %
Positive	29	28	25	24.4	52. 4
Negative	35	34	14	13.6	47. 6

This table demonstrate that (28%) of patient undergoing hemodialysis in AL-Sadder medical city infected with hepatitis C, and (24.4%) of them from AL- Hakeem General Hospital.

Table (3) Distribution of the Hepatitis Patients According to the Blood Transfusion Frequencies

Frequent of blood trans.	Intervals	Incidence	%
Blood transfusion before diagnosis of HCV	No blood transfusion	8	15.38
	1- 5	33	63.46
	6- 10	9	17.31
	11 and more	2	3.85
	Total	52	100

Concerning with the above table (63.46%) of patient undergoing hemodialysis infected with hepatitis C after receiving blood more than one pint.

Table (4) Relationship between the Blood Transfusion and the Incidence of Hepatitis

Frequent of blood trans.	Intervals	Incidence		Value	Df	P-Value
		Positive	Negative			
Blood transfusion before diagnosis of HCV	No blood transfusion	10	49	69.701[a]	3	0.001 HS
	1- 5	33	0			
	6- 10	9	0			
	11 and more	2	0			

The study results indicate that there a considerable association between blood transfusion and the incidence of hepatitis C.

Table (5) Mean differences between the incidence of Hepatitis according to the duration of hemodialysis

Main variable	Incidence of hepatitis	N	Mean	Std. Deviation	Sig.
Duration of hemodialysis/per month	+VE	54	38.5741	25.94668	t-value (3.87) d.f. (101) p-value (0.001) HS
	-VE	49	21.7143	16.71327	

This table demonstrate that there is a high substantially association between the blood transfusion and the duration of hemodialysis at p-value more than 0.001.

The study shows that the majority of the research sample are females. This result agrees with study result of [11] and Athbi, and Jasim, (2015) in their studies they[1] found that the majority of study subject's sex are females. While these result disagreed with the studies done by[1,5]. They pointed in their studies that the majority of study subjects are male. In regarding to age, the study indicates that most of patients are within age group (45 ≥) years old. [5,6] they pointed in their study that the majority of the study subjects are within (40-60) age group, Also Ghazzawi, *et al*., (2015), emphasized in their study that the majority of the study subjects are within (41-60) age group, also [5] found in their study that the majority of the study subjects are within (60-69) age group, while this result disagree with [11] they emphasized that the majority of the study subjects who infected with HCV are within (31-35) age group. The researcher believe that the reason that make patients with renal disease at risk to acquiring HCV are prolonged vascular access and the potential of exposure to infected patients and contaminated equipment also many risk factors associated with increases the spread of hepatitis C infection are: age of the patient, duration of hemodialysis, family history of hepatitis C, history of blood transfusion, history of kidney transplant and dental procedures and other factors. In addition to number of Cases, the study result indicate the number of cases with HCV who undergoing HD 62.1% from

AL-Sadder Medical City and 37.9% from AL-Hakeem General Hospital this result matched with [10] they found in their study that the large number of patients with renal failure undergoing HD at high risk to seroprevelanc of hepatitis C virus. The researcher believe this is due to the large distance of renal center in Al-Sadder hospital, routine of work in this center is overtime as well as large number of hemodialysis machine in AL-Sadder Medical City some of them are specialized for patients with HCV. In regarding to duration of dialysis the study shows that the mean duration of dialysis in months 30 ± 23.5 that ≥ 32 this result agree with Ghazzawi, *et al*., (2015) they revealed in their study that the duration of dialysis 68 months were associated with increasing risk of acquiring hepatitis C. [7] they revealed the duration of dialysis ≥ 86 months. In addition Kumar, *et al*., (2011) also agree with our study that they show the mean duration of dialysis 36.67 ± 31.68. In regarding to times of dialysis per week, the study shows that the times of dialysis per week is majority of study sample are two times per week, this result disagree with Makhlough, *et al*., (2017) they revealed in their study that the majority patients underwent hemodialysis three times a week . Also this result disagreement with Jamil, *et al*., (2016) they show that the high present of patients underwent once dialysis weekly. In regarding to Diagnosis of hepatitis, the study show that 52. 4% of patients are positively diagnosis by laboratory tests and 47. 6 are negative this result matched with study done by[7] they pointed in their study that 64% infected with HCV and 36% were negative, also this result conducted with result of study done by Makhlough, *et al*., (2017) they found that 63.6% are positive while this result disagree with result Anwar, *et al*., (2016) they show that the majority of patients are negative. In our study the prevalence of HCV increased significantly with increasing the number of blood units transfused this result matched with [1] show in their study that there an association between HCV and the blood transfusion. Study results indicate an association between blood transfusion and the incidence of hepatitis C at p-value more than 0.001 this result in agreement with[1] they pointed in their study that a significant relationship between the blood transfusion and prevalence HCV at $P < 0.3$ as well as Bastiani, *et al*. (2014) An important cause of HCV infection in hemodialysis is the practice of transfusion of blood and/or blood components. Jamil, *et al*., (2016) they found the majority of patients with HCV have a history of blood transfusion. Amen, (2013) he stated in their study that the hemodialysis patients are at high risk for viral hepatitis infections due to the higher number of blood transfusion sessions range about less 5 pints to more 20 pints.

Conclusions

The prevalence of viral hepatitis among women is higher than that of men. The spread of viral hepatitis in patients with renal failure over 3 years who dialysis more than 2 times a week. The spread of viral hepatitis in the Al-Sadder hospital more than the Al-Hakeem hospital. The spread of viral hepatitis is associated with several factors, especially the long-term duration of hemodialysis, and history of blood transfusion.As general that half of hemodialysis patients are infected with HCV.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Faculty of Nursing, University of Kufaand all experiments were carried out in accordance with approved guidelines.

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The Clinicopathological Characteristics of Endometrial Carcinoma in Iraqi Women: Cross Sectional Study

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Abstract

Aim of the Study: The current study included a sample of Iraqi women from various centers in Baghdad and Al-Diwaniyah province with an established diagnosis of endometrial carcinoma aiming at highlighting the main clinicopathological features of this malignant tumor. In this study, the authors retrospectively collected information about women affected by endometrial carcinoma during the last 3 years, form January the 1st 2015 to December the 31st 2018. Information was retrieved from clinical reports registered at Al-Yarmouk Teaching Hospital laboratories and Al-Diwaniyah teaching Hospital laboratory and also from some private laboratories in Baghdad and Al-Diwaniyah province, Mid-Euphrates region of Iraq. At the end of the study we were able to collect information about 27 cases of endometrial carcinoma. The information included age of women, size of tumor, myometrial invasion, involvement of ovaries, cervix, and fallopian tubes, lymphovascular invasion and pelvic lymph node involvement. Majority of cases of endometrial carcinoma were initially diagnosed in women postmenopausally and that most of cases were of endometrioid variety, low grade and early stage.

Keywords: *Endometrial carcinoma, Iraq, clinicopathological characteristics*

Introduction

When malignant tumors affecting the body of the uterus are taken into consideration, endometrial cancer is often considered as it is the most common form seen at this site; however, sarcoma is also seen in the body of uterus, but it represents a rarity[1]. In term of prevalence, endometrial cancer is the sixth most frequent malignant tumor globally[2]. It is also one of the recognized causes of women death; even though it is the 14th leading cause of women mortality[3]. The annual incidence rate is highly variable across the world with highest incidence being recorded in western countries and the lowest incidence being reported in Middle east and some Asian countries[4]. In general, the annual incidence rate is in the range of 1 to 30 per 100000 across the globe [4]. From histological perspective, the most prevalent subtype is the endometrioid one, followed by the less frequent serous and papillary serous tumors and lastly by the rare clear cell variety[5]. Indeed, histological recognition between type 1 endometrioid and type 2 serous is essential for proper management approach [5]. The risk factors for the development of endometrial carcinoma are numerous. Estrogen when act unopposed by progesterone is a well established risk factor as evident by high prevalence rate of disease in association with early menarche, late menopause and the use of postmenopausal hormone replacement therapy [6]. Hypertension and diabetes mellitus are among well known risk factors. Positive family history of endometrial carcinoma is also associated with higher risk of endometrial carcinoma. Obesity also plays a role since high BMI is associated with more than one third of endometrial carcinoma worldwide [6]. The endometrioid subtype usually arise on the top of uninterrupted endometrial proliferation in the sequence of simple then complex endometrial hyperplasia followed by atypical changes and formation of intraepithelial neoplasia and finally by frank stromal invasion[7]. The prognosis of the disease depends primarily on the grading and staging of the tumor[8]. The current study included a sample of Iraqi women from various centers in Baghdad and Al-Diwaniyah province with an established diagnosis of endometrial carcinoma aiming

at highlighting the main clinicopathological features of this malignant tumor.

Patients and Method

In this study, the authors retrospectively collected information about women affected by endometrial carcinoma during the last 3 years, form January the 1st 2015 to December the 31st 2018. Information was retrieved from clinical reports registered at Al-Yarmouk Teaching Hospital laboratories and Al-Diwaniyah teaching Hospital laboratory and also from some private laboratories in Baghdad and Al-Diwaniyah province, Mid-Euphrates region of Iraq. At the end of the study we were able to collect information about 27 cases of endometrial carcinoma. The information included age of women, size of tumor, myometrial invasion, involvement of ovaries, cervix, and fallopian tubes, lymphovascular invasion and pelvic lymph node involvement. The study was approved by the institutional approval committee. Data were then transferred into an Office Excel worksheet (2010) for descriptive and analytic statistical arrangement.

Results and Discusion

The age characteristics of women with endometrial carcinoma are shown in table 1. No case was reported with an age of less than 50 years and the age range was from 51 to 75 years; the mean age was 60.11 ±6.71 years. Majority of the cases have been reported at 50-59 years age interval, followed by 60-69 years age interval and some cases were reported above 70 years of age, 14 (51.9%), 9 (33.3%) and 4 (14.8%), respectively. The clinicopathological characteristics of the study group are shown in table 2. The main histological type was endometrioid and it was observed in 25 cases (92.6%), followed by papillary serous type which was reported in 2 case only (7.4%). In most of the cases the depth of myometrial invasion was less than half; more than half myometrial invasion was reported in minority, 23 (85.2%) versus 4 (14.8%), respectively. Lower uterine segment (LUS) involvement was seen in 21 (77.8%); however, cervix was clear in all cases as well as ovaries and fallopian tubes. All endometrioid cases were of grade II (moderately differentiated adenocarcinoma) whereas serous subtypes are intrinsically grade III tumors and all cases were of FIGO stage I; stage IA was the dominant followed by stage IB, 22 (81.5%) versus 5 (18.5%), respectively. No case had pelvic lymph nodes involvement; however, lymphovascular invasion was recorded in 5 (18.5%).

Table 1: Age characteristics of the study group

Age (Years)	Value
Mean ±SD	60.11 ±6.71
Range	51-75
< 50, *n* (%)	0 (0%)
50-59, *n* (%)	14 (51.9%)
60-69, *n* (%)	9 (33.3%)
≥70, *n* (%)	4 (14.8%)

n: number of cases; SD: standard deviation

Table 2: Clinicopathological characteristics of endometrial cancer of women enrolled in the present study

Characteristic		n	%
Histological type	Endometrioid	25	92.6
	Papillary serous	2	7.4
Myometrial involvement	less than 50%	23	85.2
	More than 50%	4	14.8
LUS involvement	Negative	6	22.2
	Positive	21	77.8
Cervical involvement	Negative	27	100
	Positive	0	0
Fallopian tube involvement	Negative	27	100
	Positive	0	0
Ovarian involvement	Negative	27	100
	Positive	0	0
Grade	I	0	0
	II	25	92.6
	III	2	7.4
FIGO Stage	IA	22	81.5
	IB	5	18.5
	II	0	0
	III	0	0
	IV	0	0
Pelvic LN involvement	Negative	27	100
	Positive	0	0
Lymphovascular invasion	Negative	22	81.5
	Positive	5	18.5

Indeed endometrial carcinoma is one of major malignant tumors affecting women worldwide; however, in our country it is overwhelmed by the far more common breast cancer. However, it is responsible

for significant mortality in elderly women as it has been observed during daily gynecological practice. In the present study, the mean age of participating women was 60.11 years and all women were older than 50; cases above 70 years of age accounted for minority of cases. In a study which included 985 cases of endometrial cases [9], the reported mean age of normal weight women was 67.1 years which is somewhat higher than that reported in the current study; whereas, the reported mean age of obese women was 56.3 years which is lower than that reported in the present study. In another study [10], the reported age range of women with endometrial cancer was between 50 to 74 years which is very close to the range reported in the current study. In the United states, the disease primarily target postmenopausal women with a median age at time of diagnosis of 62 years [10]; this median age is very close to that reported in the current study. At time of menopause, the equilibrium between serum estrogen and serum progesterone becomes in favor of estrogen, so that even in small amount, the unopposed estrogen hormone predisposes the endometrial mucosa to malignancy by enhancing endometrial proliferation and development of endometrial hyperplasia [11]. In addition, the use of estrogen as a postmenopausal hormone replacement therapy increases the risk of atypical endometrial hyperplasia according to the observation of a number of studies [12-14]. In addition, postmenopausal women may suffer from diabetes, hypertension, obesity and lack of exercise, which are well known risk factors associating endometrial carcinoma [6]. In the current study, the majority of cases were of endometrioid variety. In addition majority of cases were of low grade and were of stage I disease in favor of god prognosis. Indeed, worldwide, the majority of these neoplasms are well differentiated; endometrioid subtype that present with stage I disease and behave with an excellent prognosis [15]. Nonetheless, nonendometrioid histological subtypes are critical because they usually present with advanced stage and are of poor prognosis[16,17]. Fortunately, even cases with serous papillary carcinoma, in the present stage, were of stage I; however, these non endometrioid tumors are considered of high grade carry less favorable prognosis in comparison with endometrioid variety [18].

Conclusion

Majority of cases of endometrial carcinoma were initially diagnosed in women postmenopausally and that most of cases were of endometrioid variety, low grade and early stage.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Al-Diwaniyah child and maternity hospital and all experiments were carried out in accordance with approved guidelines.

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The Efficacy of Misoprostol in Controlling Postpartum Hemorrhage in a Sample of Iraqi Pregnant Ladies

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Abstract

Aim of the Study: This study was carried out aiming at exploring the efficacy of misoprostol in prevention of postpartum hemorrhage in a sample of Iraqi women. The present cross sectional study was carried out in the Maternity and Child Teaching Hospital in Al-Najaf province during the period from June the 1st 2006 to December the 30th 2006. The study included three groups, the first group included 56 pregnant women who received oral misoprostol, the second group included 144 pregnant ladies who received intramuscular ergometrin and the third group included 140 pregnant ladies who received oxytocin intramuscularly. No woman in the misoprostol developed blood loss fulfilling the definition of postpartum hemorrhage since all women lost less than 500 ml in average. The difference in blood loss among all groups, misoprostol, methergin and oxytocin was statistically insignificant ($P > 0.05$). Women in misoprostol group needed no manual removal of placenta on the contrary to 8 women in methergin group and 8 women in oxytocin group who needed manual removal of placenta; the difference with this respect was highly significant ($P < 0.001$). Misoprostol results in no hemodynamic disturbance and no significant side effects.

Keywords: *Misoprostol, post partum hemorrhage, Iraq.*

Introduction

Loss of minute amount of blood by pregnant ladies at time of delivery is common and uneventful; however, significant blood loss may complicate both vaginal delivery and cesarean section [1]. This condition was defined, earlier as loss of ≥ 500 cc of blood during vaginal delivery or ≥ during cesarean section within first 24 hours of birth [2,3]. This type of bleeding that happens within first 24 hours is referred to by some authors as primary postpartum hemorrhage in contrast to the prolonged bleeding that happens beyond 24 hours of birth [4]. The definition has been further revised and updated by the American College of Obstetrics and Gynecology in 2017 and the new definition has took in addition into consideration the pathophysiological impact rather than the absolute amount of bleeding alone so that postpartum hemorrhage was defined at aggregated blood loss of > than 1000 cc complicated by clinical picture of hypovolemia regardless of the route of delivery [5]. The problem of postpartum hemorrhage has under focus because the high rate of mortality associated with it [6]. Pregnancy related complications are responsible for premature women death that has been estimated to be around 500,000 women annually; 25% of those women die because of massive postpartum hemorrhage [7]. Postpartum hemorrhage is estimated to complicate approximately 5% of pregnancies in developed and underdeveloped regions of the world and is associated with significant mortality and morbidity [8]. Postpartum hemorrhage has been attributed to a number of causes such as uterine atony, cervical or vaginal tear, vaginal hematoma, uterine angle extension,retained placenta and adherent placenta[9]. Death in women with postpartum hemorrhage has been attributed to a variety of complications such as disseminated intravascular coagulopathy, hypovolemic shock, acute renal insufficiency and acute respiratory distress syndrome [10]. Therefore, early recognition and prompt management of postpartum hemorrhage is mandatory in order to reduce the incidence rate of mortality and morbidity associating this catastrophic pregnancy related complication. In addition to maintenance of blood volume by blood transfusion [11], arrest of bleeding is a major therapeutic goal in management of postpartum hemorrhage [12]. It is

better however to prevent postpartum hemorrhage in high risk group [13]. Many agents have been tested with this regards and one of these agents was misoprostol [14]. Misoprostol is a synthetic prostaglandin E_1 analogue which is extensively for a number of indications in the clinical practice of gynecology and obstetrics such as abortion management, medically indicated abortion, ripening of cervix prior to surgical interventions, labor induction and the control of bleeding at delivery[15].In spite of the widely accepted use of misoprostol for the prevention of maternal mortality caused by anticipated postpartum hemorrhage, a number of reports has raised the issue of adverse side effects and even some rare reports of deaths in association with the use of misoprostol during the third stage of labor [16].

Patient and Method

The present cross sectional study was carried out in the Maternity and Child Teaching Hospital in Al-Najaf province during the period from June the 1st 2006 to December the 30th 2006. During this period 340 term pregnant ladies have been enrolled. Those women were all at first stage of labor when admitted to the hospital. Exclusion criteria included: previous or scheduled cesarean section, anemia with Hb < 9 g/dl, history of antepartum hemorrhage, hypertensive women, multiple pregnancy, undetectable fetal heart sounds, presentation other than cephalic, history of bronchial asthma, diabetic women, women with cardiac problems and history of seizure. Women were then randomly allocated into 3 groups according to the drug given to prevent antepartum hemorrhage. The first group of women was given the tested drug misoprostol in a dose of 400 mg given orally, the second group of women was given the standard oxytocin dose of 10 IU intramuscularly and the third group of women received the standard 0.4 mg methergin (methylergometrine maleate) intramuscularly. The main outcome to be evaluated was blood loss during and shortly after labor; other outcomes included changes in blood pressure, hemoglobin concentration, need for additional oxytocic agents and side effects related to drugs. The study was approved by the institutional approval committee and a verbal consent was obtained from all participating women after full illustration of the goals and the procedures related to the current study. Data were analyzed using SPSS version 23 and Microsoft Office Excel 2010. Quantitative variables were expressed as mean, standard error of mean and range whereas categorical data were expressed as number and percentage. One way ANOVA and Chi-square tests were the main statistical tools used in the current study. The level of significance was considered at $P \leq 0.05$.

Results

Demographic characteristic of women enrolled in the current study are outlined in table 1. There was no significant difference in mean age among all groups ($P> 0.05$). In addition there was no significant difference in mean gestational age among all study groups ($P> 0.05$). Frequency distribution of women according to parity revealed insignificant difference among all enrolled groups ($P> 0.05$). Mean systolic and diastolic blood pressure measurements were within normal range for all groups and there was no significant difference among all groups ($P> 0.05$). There was also no significant difference in mean hemoglobin level and packed cell volume (hematocrit) level among all groups ($P> 0.05$). Moreover, there was no significant difference in mean body temperature among study groups ($P> 0.05$), table 1. Variables related to outcome after delivery are shown in table 2. Mean volume of blood loss was less than 500 ml within first2 hours following delivery for all women in all three study groups. No woman has encountered blood loss of 500 ml or more. Regarding umbilical cord management, manual removal of placenta was indicated for 8 (5.6%) in methergin group and 8 (5.7%) in oxytocin group, but no women in misoprostol group needed manual removal of placenta; this difference was highly significant from statistical perspective ($P< 0.001$). In addition, no woman needed blood transfusion in all groups. There was also no significant difference in mean length third stage of labor among all groups ($P> 0.05$). Blood pressure, heart rate, hemoglobin and PCV levels were all comparable among all study groups ($P> 0.05$); however, post labor body temperature of women in misoprostol group was significantly higher than both methergin and oxytocin groups ($P < 0.05$); nevertheless the mean temperature was within normal rage and not within febrile range, table 2.Mean changes in body temperature, blood pressure, hemoglobin and PCV are shown in table 3. The changes in blood pressure, hemoglobin and PCV were not significant ($P > 0.05$). The rise in body temperature in case of misoprostol was significantly higher in comparison with both methergin and oxytocin ($P < 0.05$); however; the rise did not exceed reference ranges of normal body temperature at physiologic states.

Table 1: Comparison of outcome variables among study groups

Characteristic	Misoprostol Group *n* = 56	Methergin Group *n* = 144	Oxytocin Group *n* = 140	P
Blood loss (ml)				
Mean ±SEM	214.2 ±9.42	211.3 ±5.14	214 ±6.5	0.904 † NS
Blood loss > 500 cc	0 (0.0)	0 (0.0)	0 (0.0)	---
Umbilical cord management				
Control cord traction	56 (100.0)	136 (94.4)	132 (94.3)	<0.001 HS
Manual removal of placenta	0 (0.0)	8 (5.6)	8 (5.7)	
Length of 3rd stage (minutes)	5.6 (0.31)	6.1 (0.33)	6.14 (0.32)	0.572 ¥ NS
Blood transfusion	0 (0.0)	0 (0.0)	0 (0.0)	---
Further oxytocic drugs	4 (7.1)	16 (11.1)	16 (11.4)	0.647 ¥ NS
Systolic BP post	122.14 ±3.41	123.75 ±1.5	123.71 ±1.88	0.287 † NS
Diastolic BP post	75 ±2.87	75.83 ±1.27	76.71 ±1.62	0.652 † NS
Hb after delivery	9.98 ±0.31	9.84 ±0.2	9.87 ±0.16	0.920 † NS
PCV after delivery	34 ±0.95	33.91 ±0.66	33.77 ±0.63	0.968 † NS
Temperature after delivery	37.14 ±0.07	36.9 ±0.02	36.95 ±0.02	<0.001 † HS

n: number of cases; SEM: standard error of mean; BP: blood pressure; Hb: hemoglobin; PCV: packed cell volume (hematocrit); †: Independent samples t-test; ¥: Chi-square test; NS: not significant at $P \leq 0.05$; HS: highly significant at $P \leq 0.01$

Table 2: Changes in temperature, blood pressure and hemoglobin concentration in study groups

Characteristic	Misoprostol Group *n* = 56	Methergin Group *n* = 144	Oxytocin Group *n* = 140	*P* †
Temperature	↑	↑	↑	0.011 S
Systolic BP	↓	↑	↓	0.356 NS
Diastolic BP	↓	↓	↓	0.981 NS
Hb	↓	↓	↓	0.937 NS
PCV	↑	↓	↓	0.986 NS

n: number of cases; BP: blood pressure; Hb: hemoglobin; PCV: packed cell volume (hematocrit); †: Independent samples t-test; NS: not significant at $P \leq 0.05$; S: significant at $P \leq 0.05$

The main findings in the current study can be summarized within the following few statements. No woman in the misoprostol developed blood loss fulfilling the definition of postpartum hemorrhage since all women lost less than 500 ml in average. The difference in blood loss among all groups, misoprostol, methergin and oxytocin was statistically insignificant ($P > 0.05$). Women in misoprostol group needed no manual removal of placenta on the contrary to 8 women in methergin group and 8 women in oxytocin group who needed manual removal of placenta; the difference with this respect was highly significant ($P < 0.001$). Misoprostol results in no hemodynamic disturbance and no significant side effects. The value of misoprostol in the treatment and prevention of postpartum hemorrhage has evolved over time because of its long shelf life and variable ways of administration. Therefore, it is more suitable for under-resourced situations [17,18]. The issue of using misoprostol in treating postpartum hemorrhage is dated back to 2007, when researchers have supported the use of misoprostol as a second line measure in the absence of other first line measure that are routinely used in obstetric practice or when these routine measures fail to control bleeding [19]. In 2005 a systemic review about the use of misoprostol use in treatment of postpartum hemorrhage was published and it included three

randomized control clinical trials[20]. These randomized controlled clinical trials compared the effect of misoprostol, given by various routes, in controlling postpartum hemorrhage with the effect of either placebo or other routinely used medication such as oxytocin and methergin. Indeed, several studies encouraged the use of misoprostol in managing postpartum hemorrhage[21-24]. There is a study that regarded misoprostol inferior to oxytocin in controlling bleeding complicating labor and encouraged its use only in setting when routine drugs are unavailable. Other authors concluded that the use of misoprostol added nothing to placebo in controlling postpartum hemorrhage. In view of conflicting results, obtained from previous studies, the current study was justified and the results of the present study favor the use of misoprostol in prevention of postpartum hemorrhage especially with the advantage of being given orally.

Conclusion

Misoprostol was as effective as both methergin and oxytocin in prevention of postpartum hemorrhage with the advantage of being given by oral rout.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Maternity and Child Teaching Hospital in Al-Najaf province and all experiments were carried out in accordance with approved guidelines.

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Verbal language disorders in autistic children

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Abstract

The research aims to identify the measurement of verbal language disorders in children of autism if the researchers adopted the descriptive approach. The research community consists of three centers for autism. The members of the society reached 120 children. The sample consisted of (45) children. Verbal is composed of two domains: receptive language disorders and expressive language disorders. The first field comprises 34 paragraphs and the second field (200)paragraphs, then extracting the psychometric properties of each one represented by honesty and persistence. The results showed that autistic children suffer verbal language disorders for both male and female sexes.

Keywords: *Verbal language disorders in autistic children.*

Introduction

The care of children is the cornerstone of a strong family. The building has been grounded. In order to create children, it is healthy and successful. It is necessary to pay attention to them and raise them. However, raising children in general and children with special needs requires care and attention[1]. One of the groups with special needs and who need attention and care so we believe that educational and scientific conferences have paid great attention to the children of this category[2]:Autism is one of the most difficult developmental disorders is a form of behavioral disorders, which is surrounded by a lot of mystery that is related to the causes of infection or diagnosis or treatment method is a widespread developmental disorders because it begins in the early years of life is represented in each of the disorders that begin early, The child's various developmental aspects cause negative effects on these aspects. It may affect the child's cognitive, social and emotional development and overall behavior so that autistic children have a special growth growth that differs from the normal pattern. In our country, Iraq has a large share of this disorder, as no one of us is aware of what caused by the aggression and wars of lack of food and medicine in addition to pollution, which was a direct and indirect cause of the increase in the number of disabled, including children of autism. In recent times in the centers of all governorates, especially in the province of Babylon (three centers), and this undoubtedly represents a social problem of concern to the entire community because of the huge problems, at the level of public health and social welfare and education services as well as the nature of the problems of the retarded themselves, Pay attention Special Education and Care Teams.[7] The issue of language disorders is one of the most recent topics in the field of special education. It is very clear that the beginning of the sixties and communication through speech and language is a complex process but the nature of humanity that develops with the non-linguistic communication of the child through crying and smile and gestures and others and includes aspects of knowledge and hearin[8]. Verbal Language is the means by which the individual in general and the child expresses in particular the thoughts and feelings conveyed by his thoughts and feelings. The language of the child is the main way of his mind so that he can know his nature and his thoughts. The child has a sense of language and the way in which he develops his ideas. This is an important step in the path of mental maturity. Children come to the kindergarten with a different degree of proficiency in understanding the language and a different ability to use it. A group of them is very mature In every aspect of Zahir language and another team has not completed their maturity and therefore can not easily express what is going on in his mind ideas as well as that we may find a child on a large degree of progress in terms of areas of growth more than it is in the language of natural growth.[9] Autistic children suffer from verbal language disorders, language

may be absent or may grow without maturity or with weak language composition with repetitive speech. Where children face autism difficulties in the ability to communicate in different levels and levels are the weakness of language expression or delay in speech and sometimes used autistic words strange from the writing and depends on the repetition always or repeat the last word heard from the sentence and also finds some difficulty in the use of pronouns[10]. Problems related to the inappropriate use of language, such as moving from one subject to another, inability to explain the sound tones and physical expressions associated with the language, as well as problems related to loudness or lowness that do not fit the situation, as well as problems related to receiving language. The latest statistics indicate that the prevalence of autism has increased to about 1: 90 children to become one of the most prevalent disorders and development. The prevalence rate has increased in the current millennium from 10% to 17%According to the American Centers for Disease Control and Prevention (CAC, 2012), according to the American Society of Pediatrics in March 2012 (2012), the prevalence of autism disorder is about 1.88 children and is therefore more prevalent than cerebral palsy and Down syndrome. About 23% in the last two years, almost ten times the reported prevalence rate in the past four decades. This result explains the improvement in diagnosis and awareness. Studies show that autism disorder is more prevalent among boys than girls and is estimated at about 4-5 times an estimated 1:54) of the boys, 1: 252 of the girls. The studies emphasize the need for extensive and extensive attention by researchers and research centers in the countries of the world with autistic children, especially with regard to appropriate procedures and method for diagnosis and detection of members of this group. Despite the global interest in the children of this group, most Arab countries, including Iraq, Which are offered to autistic children and through which these children can be treated and rehabilitated. The aim of this study was to develop a language training program to improve the skills of expressive language in children with language disorders at the age of (5-7) years in Jordan on a sample of (30) children were randomly divided into two equal groups each group (15) Each group was subjected to the implementation of the training program for fifteen months at the rate of twelve sessions per month, and after the statistical treatment using T-test and correlation coefficient, the results of the study showed the following: There are differences in the development of the skills of expressive language among the children of the experimental group and the control group and for the benefit of the experimental group in the development of the sequence of events and skills knowledge of the function of tools and skill development vocabulary and development of the skill of training to build sentences and the researcher to several recommendations, including the need for the preparation of other language training programs targeting all types of disorders Language, and involving parents in their numbers.

Methodology

The current research consists of (3) autism care centers affiliated to the Directorate of Social Welfare in the province of Babil and Karbala for the year 2018-2019, with 120 students as shown in Table 1.

Table 1. Autism care centers affiliated to the Directorate of Social Welfare in the province of Babil and Karbala for the year 2018-2019

Sn.	Name of the Center	Male	Females	Total
1.	Raja Center	40	15	55
2	Imam Ali Center	28	7	35
3	Babylon Specialized Center	18	12	30
	Total	**86**	**34**	**120**

Research Samples:

Sample of Statistical Analysis: The sample of the statistical analysis of the scale consisted of verbal language disorders from (105) teachers and teachers from the centers of Babil and Karbala Babel governorate (83%) were chosen by the method of the number of (105) teachers and teachers distributed in (3) center.

The Basic Sample: After the appropriate statistical analysis procedures for the research tool, did not delete or modify any paragraph of the scale verbal language disorders and thus adopted the sample of statistical analysis as a final sample of application and the sample reached (105) students and they make up (83% of the research community). They were deliberately chosen.

Scale of Verbal Language Disorders: The researchers prepared a measure that measures the verbal language disorders in autistic children, which included two areas: the field of expressive language and the language of receptive language. The researchers claimed that the test paragraphs should be clear, understandable

and suitable for the sample members. They have the ability to distinguish between them, On two areas:

(104) and the number of paragraphs (32) and the language of receptivity and the number of paragraphs (20) paragraph have been given alternatives (apply to a large extent, apply to a medium, do not apply) and grades (2, 1, 0) And the mean mean (52) where the minimum grade of the scale (0)

Statistical Analysis of Verbal Language Disorder Measurement Clauses:

To analyze each of the test paragraphs, the researchers followed these steps:

1. Discriminatory Force of Verbal Disorders Scale:

The discriminatory power of the paragraphs has been verified using the method of the two radical groups according to the following steps:

1. Determine the total score obtained by each member of the sample statistical analysis of the size of (105) students.
2. Arrange the total grades obtained by the members of the sample descending order from the highest degree to the lowest degree.
3. The percentage of (27%) of the forms with the highest scores, and the percentage (27%) of the forms with the lowest grades.In the analysis of the standard vocabulary, Kelley recommended that 27% of the individuals in both extreme groups be excluded and the average 46% excluded. In order for the value of the discrimination coefficient to be consistent from one sample to another, (100) in all extreme groups. The discriminant force of each paragraph of the scale was calculated by using the coefficient of discrimination to test the significance of the statistical differences between the average scores of the upper and lower groups. The number of members of the upper group was 27, the lowest was 27 students, Extract the results using the discrimination equation H that all paragraphs were so distinctive not ruled out any paragraph of it.

Results and Discusion

To identify the level of verbal language disorders in students of autism. After the application of the search tool on the basic sample, after collecting the data obtained from the application of the scale of language disorders in children of autism of the sample statistical treatment indicates that the mean of the scores of students reached (88.67) degree, and a standard deviation of (13,685) With the mean mean of 52 for the language disturbance scale. In order to test the significance of the difference between the arithmetic mean and the mean mean, the T test equation was used for one sample, at the significance level (0.05) and the freedom score (51) as shown in Table (2).

Table (2). T value for the significance of the differences between the mean and the mean mean of the verbal disorders.

Statistical significance level	T-Score		Degree of Freedom	Standard deviation	Working mean	Sample	Arithmetic mean
	Tabulated value	Calculated Value					
0.05	1,96	5.757	51	13.678	52	105	88.67

The above table shows that the calculated T value was (5,757), which is greater than the scale value of (1.96), and this difference is statistically significant at (0.05). That is, members of the research sample of autism students suffer from verbal language disorders. The result can be explained by the cognitive theory that, as the child progresses, his or her language becomes more advanced and complex. Due to the lack of linguistic ability of linguists, they become unable to understand the most complex language that requires advanced thinking skills. Linguistic disorders and their apparent appearance, as well as theories that emphasize developmental aspects in certain areas of the child's brain, are among its most famous thinkers, Berg Brich, Kaplan Kaplan, and Warner Werne. The delay in the stages of mental and sensory development leads to slow learning, as this child seems to others unable to understand or recognize the vocabulary of language and its visual and audio codes, Because of the incomplete growth of the functions of parts in the brain to the degree

that qualify them to work at full capacity and efficiency. In the light of the above theoretical propositions, we have problems with the verbal language of students in special education classes.

Conclusion

The members of the society reached 120 children. The sample consisted of (45) children. Verbal is composed of two domains: receptive language disorders and expressive language disorders. The first field comprises 34 paragraphs and the second field (200) paragraphs, then extracting the psychometric properties of each one represented by honesty and persistence. The results showed that autistic children suffer verbal language disorders for both male and female sexes.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon/Faculty of Basic Education/Department of Special Educationand all experiments were carried out in accordance with approved guidelines.

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Effectiveness of an Educational Program on Nurses' Knowledge and Practices Regarding Nursing Interventions of Chest Tube Drainage System in Ibn Alnafees Teaching Hospital

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Abstract

This study aims to evaluate the effectiveness of an educational program on nurses' knowledge and practices regarding nursing interventions of chest tube drainage system in Ibn Alnafees teaching hospital. As well also aims to assess nurses' knowledge and practices regarding these interventions, and to find out the relationships between nurses' knowledge and practices. A quasi- experimental design was used in the present study with the application of a pre-test/post-test approach for the study group and control group. Data collection was done at two times: baseline data (before any intervention was provided to the study group) and 21 days after giving the educational program (in the study group). The period of the study was from 15th December, 2018 to 11th February, 2019. A non-probability purposive sample was randomly selected from nurses who were working in surgical units, intensive care unit, thoracic operating room, and open heart operating room. The results of this study shows that there is a highly significant differences related to nurses' knowledge and practices regarding nursing interventions for chest drainage system; between pre & post-test in the study group, while there is a trivial or no differences between pre & post-test in the control group.

Keywords: *Effectiveness, Educational program, Nursing interventions, Chest tube; Drainage system.*

Introduction

Breathing is spontaneous; so we don't think too much about its importance, just when we develop a respiratory problem, deficiency of sufficient ventilation, and respiratory system impairment can rapidly become a life-threatening condition, in addition there are several clinical situations that may require the use of chest tubes [1].Chest tubes aren't placed in the lungs but in the pleural space; a potential rather than actual space between the parietal and visceral pleura, the parietal (outer) pleura covers the chest wall and diaphragm, it's contain a small amount (about 50 ml) of serous fluid that coats the opposing surfaces, allowing the visceral and parietal pleurae to glide over each other without friction while enabling the pleural surfaces to adhere to each other, the ability to adhere creates negative pressure within the pleural space, which becomes more negative as the visceral and parietal pleura are pulled in opposite directions during inspiration, in addition the negative intra-pleural (and thus intrapulmonary) pressure generated causes air to flow from positive (atmospheric) pressure into the lungs [2]. Expiration increases intrapleural and intrapulmonary pressures to the point where they exceed atmospheric pressure, creating an opposite pressure differential and causing air to flow out of the lungs into the surrounding atmosphere, a breach in pleural integrity creates a separation between the parietal and visceral pleurae, allowing air or fluid to fill this potential space, the visceral pleura collapses inward along with the lungs, while the parietal pleura recoils outward along with the chest wall. [3] The nursing interventions for the patient with chest tube drainage systems need to efficient knowledge and skills, nurses are responsible for the safety care giving, so they must be skillful practices about chest tube drainage system nursing interventions. [4]

Materials and Method

A quasi- experimental design was used in the present study with the application of a pre-test/post-test approach for the study group and control group after implementation of educational program. Data collection was done at two times: baseline data (before any intervention was provided to the study group) and 21 days after giving the educational program (in the study group). The period of the study was from 15th December, 2018 to 11th February, 2019.

Setting of the Study: The study was conducted at Ibn Alnafees teaching hospital in Baghdad city, this hospital was the designated site for data collection, because it is specialized hospital for cardiothoracic and vascular surgeries, which facilitated the process of data collection.

The Sample of the Study: A non - probability purposive sample was randomly selected from (60) nurses who were working in surgical units, intensive care unit, thoracic operating room, and open heart operating room. The sample divided into two groups (30) nurses considered as study group, and another (30) nurses considered as control group. The study group was exposed to an educational program, while the control group was not exposed to the program. Random allocation of the sample was done to avoid bias selection and to control for potential confusing.

Instrument of the Study: To evaluate the effectiveness of the educational program on nurse's knowledge and practices, a self-administered questionnaire was developed to assess the knowledge; it was constructed through the review of related literatures and previous studies. The questionnaire was applied before and after implementation of the program, and used as a mean of data collection; mainly it consisted of three parts:

Part 1: The socio- demographic characteristics of the nurses: This part is concerned with the collection of demographic data obtained from the nurses through an interview questionnaire sheet which include (6) items relative to age, gender, marital status, educational level, years of employment, and training courses in thoracic diseases.

Part II: Nurses' Knowledge regarding basics of thoracic anatomy and chest tube: The second part of the questionnaire consists of (48) items (30 true and false questions and 18 items multiple choice questions) divided into five main domains which are:

A. Knowledge of nurses regarding basics of thoracic anatomy which consist of (6) items.

B. Knowledge of nurses regarding chest tube and chest drainage system which consist of (6) items.

C. Knowledge of nurses regarding chest tube indications, contraindications, and complications which consist of (6) items.

D. Knowledge of nurses regarding nursing role in the insertion and removal of chest tube, which consist of (15) items.

E. Knowledge of nurses regarding nursing interventions for chest tube drainage system, which consist of (15) items.

Part III: Nurses' practices regarding chest tube and chest drainage system:

The third part of the questionnaire consists of (28) items divided into two main domains which are:

A. Observational checklist for nursing practices regarding nursing interventions of chest tube drainage system.

B. Observational checklist for practical demonstrations regarding nursing interventions of chest tube drainage system.

These items are rated according to Likert scale; always applying (3), sometimes applying (2), never applying (1), the level of scale which is scored as a total of three practices of event is observed for each respondent, three correct practices out of the three trails are valued as (3) always applied; (2) sometimes applied practices (applied in one or two observation), (1) never applied practices. The time practices checklist of each nurse for each practices took about 30-60 minutes, the same practices test are used for baseline and 1-month follow up test.

Validity Of The Instrument: Constant validity determined for questionnaire through these of (14) panel experts who are faculty members from college of nursing and surgeons. The experts were asked to review the questionnaire for content with clarity. Some changes were employed according to their suggestions and valuable comments.

Reliability Of The Instrument: Pilot study was carried out from (22th of November, 2018) to (12th of December, 2018). Ten nurses were randomly selected from Ibn Alnafees Teaching Hospital; the nurses in the pilot study had the same criteria of the original study sample. The results of the reliability present alpha correlation coefficient were (r= 0.784) which considered statistically acceptable.

Statistical Method

The analysis of the data was used through descriptive statistics (frequencies, percentages, and the arithmetic mean and standard deviation) and statistical inferential (t-Test) in order to find the differences between the study group and the control group.

Results of the Study

Table (1): Distribution of the study samples (study and Control) according to their years of experience and training courses.

Variable	Groups	Study group		Control group	
		Freq.	%	Freq.	%
Years of experience in nursing	1 - 5	11	36.67	9	30
	6 - 10	5	16.67	5	16.67
	11 - 15	4	13.33	6	20
	16 - 20	6	20.0	6	20
	21 - 25	1	3.33	2	6.67
	26 - 30	2	6.67	1	3.33
	31 - 35	1	3.33	1	3.33
	Total	30	100	30	100
	MS ± SD = 2.75 ± 0.67				
Participation in training courses regarding thoracic diseases	Yes	4	13.3	6	20
	No	26	86.7	24	80
	Total	30	100	30	100
	MS ± SD = 1.83 ± 0.37				

Freq. = frequency, % = percentages, SD = standard deviation, MS= Mean of score

Table (1): shows that the general years of experience in the study group ranged from 1-5 years are (n = 11; 36.67%) followed by those who have 6-10 years (n = 5; 16.67%) and who have 11-15 years (n = 4; 13.33%) respectively. While regarding the general years of experience in the control group almost the same proportion that ranging from 1-5 years are (n = 9; 30%), followed by those who have 11-15, and 16-20 years (n= 6; 20) for both of them, and then those who have 6-10 years (n=5; 16.7%). Both of the study and control groups, less than two third of participants (n = 4; 13.3%) (n = 6; 20.0%) reported that they had specific training courses regarding thoracic diseases.

Table (2): Comparing the significance between the two periods (pre and post-test) related to nurses' knowledge in the study and control groups.

Main Domains of Knowledge	Study Group		t test	P value at 0.05	Control Group		t test	P value at 0.05
	Pre Mean	Post Mean			Pre Mean	Post Mean		
Nurses knowledge regarding basics of thoracic anatomy	1.27	1.81	10.27	0.00 (HS)	1.22	1.26	0.86	0.20 (NS)
Nurses knowledge regarding chest drain and chest drainage system	1.33	1.78	6.93	0.00 (HS)	1.28	1.32	0.54	0.29 (NS)
Nurses knowledge regarding chest drain indications, contraindications, and complications	1.29	1.76	6.76	0.00 (HS)	1.24	1.26	0.43	0.33 (NS)
Nurses knowledge regarding nursing role in the insertion and removal of chest drains	1.40	1.80	5.98	0.00 (HS)	1.33	1.38	0.71	0.24 (NS)
Nurses knowledge regarding nursing interventions for chest drainage system	1.47	1.87	5.79	0.00 (HS)	1.40	1.45	0.57	0.28 (NS)
Overall Domains	1.35	1.80	10.93	0.00 (HS)	1.29	1.33	0.81	0.21 (NS)

*At $p < 0.05$; HS= Highly Significant; NS= Not Significant; MS= Mean Score; SD= standard deviation; Sig.= Significance.

Table (2): shows that, there is no significant difference between both groups (study and control) at pre-test. Participants› knowledge in the study group has increased significantly at the post-test score; at $p < 0.01$. On the other hand there is no improvement in participants› knowledge concerning these items at post-test in the control group.

Table (3) Comparing the significance between the two periods (pre and post-test) related to nurses' practices in the study and control groups.

Main Domains of Practice	Study Group		t test	P value at 0.05	Control Group		t test	P value at 0.05
	Pre Mean	Post Mean			Pre Mean	Post Mean		
Nursing practices regarding nursing interventions of chest tube drainage system	1.36	2.45	14.94	0.00 (HS)	1.36	1.37	0.22	0.41 (NS)
Practical demonstrations regarding nursing interventions of chest tube drainage system	1.26	2.65	10.46	0.00 (HS)	1.26	1.28	0.24	0.40 (NS)
Overall Domains	1.31	2.52	11.09	0.00 (HS)	1.31	1.33	0.22	0.42 (NS)

HS= Highly Significant; NS= Not Significant

Table (3): shows that there is a highly significant difference between pre & post-test in the study group, while there is trivial significant difference between pre & post-test in the control group.

Table (4): Association Significance between Nurses' Socio-Demographic Characteristics with their Overall Knowledge and Practices.

Correlation	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Age	-.440-	.417	-.810-	-1.055-	.303
Gender	.245	.568	.119	.432	.670
Marital status	-.066-	.501	-.030-	-.131-	.897
Educational Level	-.066-	.423	-.042-	-.155-	.878
Years of experience in nursing	.521	.464	.877	1.122	.274
Participation in training courses regarding thoracic diseases	.038	.702	.012	.054	.958

B = unstandardized coefficients; Std. Error = standard errors; Beta = standardized coefficients; t = t-statistics; Sig. = significance

Table (4): shows that; there is no association between nurses' knowledge and practices, and their socio-demographic characteristics (age, gender, level of education; years of experience, training sessions, and marital status).

As shown in Tables (1 and 2): The results demonstrated that the highest percentages of the participants in study group are male (53.3%) while (46.7%) are female. This goes in the same line with the control group where (56.7%) are male and (43.3%) female, it shows no statistical differences association between nurses' knowledge and gender (at p value 0.670). The majority of the participants in the study and control group (56.66%) are in age group of (20-25) and (26-30) years respectively and there are no statistical differences between nurses' knowledge and practices with their age (at p value 0.303). These results supported by (Al-Ganmi, 2014) when showing that about (52%) of the nurses were in the age group of (20-25) and (26-30) years respectively, and that's totally agreed with [18] that stated there were no statistical differences between nurses' knowledge and practices with their age (at p value 0.232), and with [7] (at p value 0.888). another study done by[2] are consistent with these results, which indicated that majority of the sample at age group 20-27 years old and there is no relationship between nurses knowledge and practices with their age (P = 0.501). Some studies results disagree with the recent study when describing that the majority of the study sample (58.3%) who worked in ICUs were old age, there were no statistical differences between nurses' knowledge regarding their age (p value 0.840) [13,16] Most of the participants in the study group are married (66.7%), and almost the same proportions of the married participants are in the control group (70%), no statistical difference between nurses' knowledge and practices with their marital status (p value 0.897). The study results supported by[5] in Baghdad city which show that most of the participants in the study and control groups were married (68%). Another study by [7] are consistent as well with these results when indicating that most of participants in the study group are married (62.5%) and (65%) in control group[19, 20].

Conclusion

Nurses' knowledge and practices regarding nursing interventions of chest tube drainage system has been improved after implementation of the educational program in the study group, which reveal that the effectiveness of the provided program was highly beneficial.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Nursing/University of Baghdad and all experiments were carried out in accordance with approved guidelines.

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Design and Implementation of Physiology Lab Management Blood Analysis System

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Abstract

The objective of this work is to build a database that provides a records of blood disease and accurate statistics as an important source of medical information and to provide assistance to the laboratory worker by conducting electronic blood tests, serial and fast steps and printing the results of the analysis electronically to facilitate the work and make communication between the official of the laboratory and the patient easier and faster and more accurate by using electronic blood analysis system. Where this system to conduct basic screening tests for determining certain blood disorders (anemia's, abnormal bleeding and clotting, inflammation, infection and inherited disorders of red blood cells, white blood cells, platelets, hemoglobin (HBC), and cell production (hematopoiesis)). In this work we propose a system which can manage the user for each action performed and justifying the authorizationused to create a secure and easy log in. The Physiology lab Management System is tested through verification and validation (V & V) that was one of testing elements to uncover errors that were made inadvertently as it was designed and constructed.

Keywords: *electronic blood tests, blood analysis experiments, session, SQL, ASP.NET, verification and validation (V & V), alpha test,beta test.*

Introduction

A blood test is a laboratory analysis performed on a blood sample that is usually drawn from capillary skin punctures (finger, toe, heel), dried blood samples, arterial or venous sampling using a subcutaneous needle. Blood samples are obtained from the patient by the biologist lap staff in laboratory to perform tests on blood for the purpose of diagnosing diseases of blood disorders[1]. Blood samples may be tested by automated or manual hematology instrumentation and evaluation for the purpose of building a database that provides a record of blood disease and accurate statistics as an important source of medical information. This site is specialized in blood analysis experiments, which consist of eight experiments:

1. The experience of blood groups (ABO): The benefit of this experiment is to know the type of platoon (A+, A-, B+, B-, O+, O-, AB+, AB-) [2].
2. The experience of the white blood cell count (WBC): The benefit of this experience is the knowledge of the severity of bacterial and viral infections in the infected person, except in cases where the WBC grows a large number of more than 50 thousand [3].
3. Red blood cell count (RBC): The benefit of this experience is the detection of anemia and anemia.
4. The experience of platelet count: The benefit of this experience is to know the lack of the number of platelets causing the lack of manufacture of blood clot in the event of any injury, it can lead to bleeding for a long time.
5. Experience of measuring the time of red blood cell deposition (ESR): The benefit of this test is used to detect rheumatic diseases and arthritis [4].
6. Hemoglobin Hormone Estimation Test (HBC): This test is used to detect anemia or increase blood (Polycythemia).
7. Test of Blood Stimulation (PCV): The Benefit of this Examination The identification of abnormally low levels of blood accumulation may indicate

anemia, as well as unusually high levels may indicate polycythemia.

8. Experience of Blooding Time estimation: The purpose of this experiment is to know the time of normal and abnormal bleeding, hereditary hemorrhage (hemorrhagic diseases)[5].

The language used in this site is (C# with ASP. net) therefore to provide some of the characteristics that distinguish it from the rest of the programming languages:

- It is fast compared to others because it translates, not interpretation.
- Security, where there are mechanisms to reduce the penetration of sites that have been programmed through them.
- A large and large code library is a dot net library.
- Frequent tools.
- Advanced integrated environment is the Visual Studio.

In this work we used SQL with ASP.NET. Where the database is a collection of information or organized data which is easy to retrieve, manage and update, Therefore, databases allow us to create interactive sites contain a lot of information, which consists of a table or more[6].

The need for a system to assist the laboratory officer. The program has the last steps and accurate results and a report of this work, through which the results of these tests and their natural and non-natural conditions, which are used in the case of statistics. This system includes several people for each individual work according to its specific privacy

- The admin has the privacy and absolute management of the site.
- The laboratory officer is able to manage the report.
- The patient is able to see the results of his blood tests.

There are many projects in this Field, but I did not find a project that serves the biological laboratory, so this project was designed and implemented to serve the medical field and improve the biologist lab performance. The main features are:

- Administration.
- Employee Information.
- Patient Information.
- Experience.
- Reports.

This is the first electronic system for the biologist lap, this software was done from scratch and based on the paper style system that the office was using, this software will speed up the work and make it more flexible and accurate with better database and it reduces the employee's effort. The following will discuss the paper system.

For an analysis of the patient is the official of the lab by filling in a report (paper form) with personal information about the patient.

An official of the laboratory takes a sample of the patient and then performs an analysis manually Then writes the test result of the report of the patient and are printed manually.

Requirement and Analysis: In this work we design the UML diagrams like Use case, a use case can be described as a specific way of using the system from a user's (actor's) perspective [7]. Use cases are best discovered by examining the actors and defining what the actor will be able to do with the system [8].

Identification of Use Cases:

- Use case "is a set of scenarios that describe the interaction between the user and the system. The usage case diagram "Use Case Diagram" shows the relationship between "actors" and "use cases". The two main components of the "Use Case Diagram" are "use cases" and "actors".
- The "actor" represents the user or another system that will interact with the system you modeled.

The use of "use case" is an external view of the system to review some of the actions a user can take to complete the task.

1. Account management: Site Manager has the privacy and absolute management of the site can create a new account for the lab or the patient and the deletion of any account.
2. Receiving feedback: The user sends comments and observations about the site and about the services provided in the laboratory. These comments are received by the webmaster and are able to delete the unintentional comments.

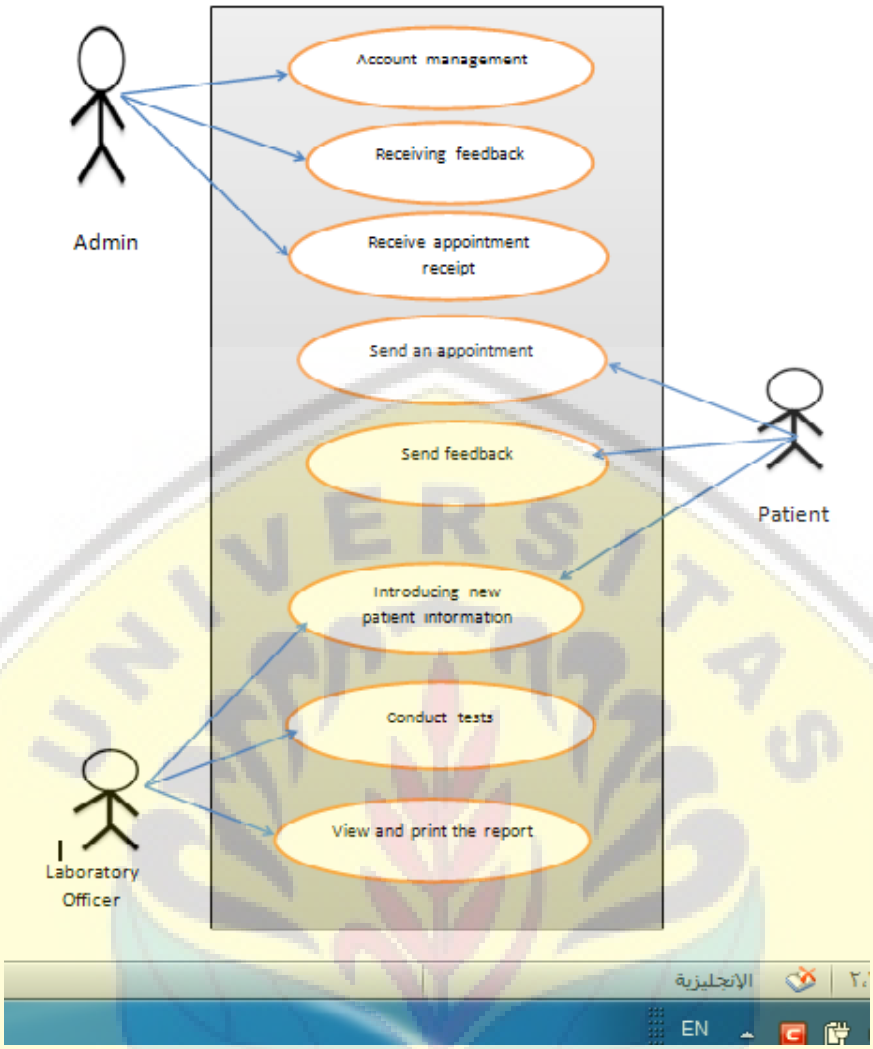

Figure 1: Use Case

3. Receive appointment receipt: Appointment booking shall be within the patient's account until it is more reliable. Send a reservation to the manager of the website. If the date is already booked, the reservation will be deleted.

Patient:

1. Send an appointment: The patient is registered with an account and is booked for a specific date the booking are then sent to the site manager because he has absolute authority over the site if the reservation is canceled, the reservation will be canceled and the patient will be sent to another date.
2. Send feedback: The user may send a comment and comments about the site and the services provided in the laboratory and also reach these comments to the director of the site to see them for the purpose of taking advantage of these views in order to upgrade the level of service and accurate results.
3. View and print the report: After testing the patient and showing the results of the test, he can log in to his account and see the report and can print it.

Laboratory Officer:

1. Introducing new patient information: The laboratory employee dictates a special form called the report with general information about the patient (patient's name, age, address) It identifies the name of the test performed by the patient and saves this information.
2. Conduct tests: After filling the patient's report with information, the laboratory employee begins the experiment and saves the results.

3. View and print the report: The laboratory staff shall inform the patient of the report and search for the patient through his or her triple name or through the address and print the result.

System Design: In order the design and implementation of a physiology lab management system designed to access as we are shown in figure 1 by the Admin/Patient/Laboratory Officer to provide assistance to the laboratory worker. In this work the flowchart used to clarify the processes that take place in this system starting from the start of the program to the end and each person on this site special operations, according to the authority specified to him using the site as shown in figure 2.

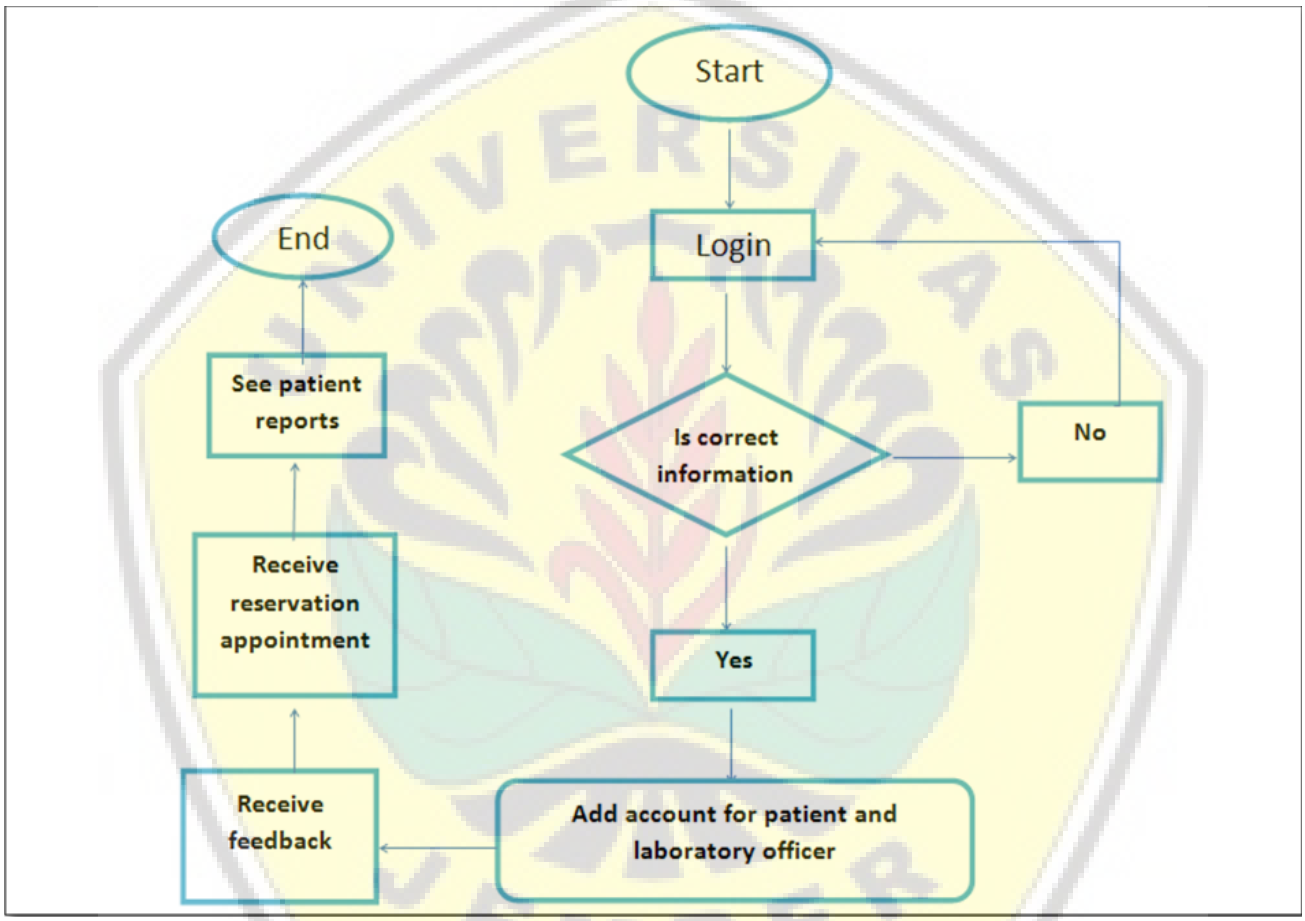

Figure 2: Admin login flowchart

In this project we used SQL with ASP.NET. The report table used to enter new patient information, including the patient's name, patient's age, email, address, name of the experiment to build a database that provides important information on the patient's condition.

The programming interfaces are designed using ASP.NET Language is an open-source server-side web application framework designed for web development to produce dynamic web pages as shown in figure 3.

Figure 3: Homepage

This page contains several choices when clicking on the home page shows the interface of the program where the program starts, and when you click on the tips and guidance goes to the page contains general information about the laboratories and tests, When you click on the test report, the user will receive a full report of all test results and when clicking on the site containing general information about the program designer. The login page records the user's name and password to move to his own account which consists of three accounts (Site manager account, laboratory staff and patient). Each account transfers the user to his page according to the user's specified powers (session)

In ASP.NET Session user can store and retrieve values while the user navigates ASP.NET pages in a Web application. The session can therefore be used to create a secure and easy login by setting a session variable to contain this user account information and allowing the user to browse secure parts of a Web site as long as the session variable is not null. These variables, which are accessed by using the session, are unique to each session instance. A complete security session state of patient information and laboratory information security is provided after a specified period of time. This is because these variables can be adjusted so that they are automatically ended after a specified time and impose the system to log out and return back to main page of inactivity even if the session is not over.

The laboratory employee presents the patient's report by entering his triple name or place of residence in the search and print report.

The patient is able to send an appointment for the test date through this page and send the booking, if the reservation is canceled, the reservation will be canceled and, a new appointment date will be sent to the patient.

Experiment: A questionnaire form was designed and sent to the sample of workers in blood analysis laboratories inside and outside the University of Babylon. The sample consisted of 66 persons divided according to the following age groups (22-30,31-35, Greater than 36) years old.

The questionnaire asked them the following questions :Is the system useful? Are the reports issued by the system in addition to your area of work? Is the system easy to use? Has the system helped save time and effort? Does the system meet the laboratory requirements? Is the program a real guide to be adopted in the Blood Analysis Laboratory?

Results and Discusion

The Physiology lab Management System is tested to uncover errors that were made inadvertently as it was designed and constructed. Verification and validation (V & V) are one of testing elements. Verification refers to set of activities that ensure that system correctly implements a specific function. Validation refers to different set of activities that ensure that system that has been built is traceable to user requirements. In this system we used a process called alpha and beta testing to uncover errors that only the end-user seems able to find.

Alpha test is conducted at developer site by end-users, in this process, we are recording errors and usage problems. The beta test is conducted at end – users sit, end user records all problems and reports these to the developer to find and recover errors and make modification in orderly and effective manner.

The questionnaire form in this work was designed to process the (v & v) testing and alpha & beta testing, the result statistics from questionnaire to the sample consisted of 66 persons was the biologist lap divided according to the following age groups (22-30,31-35 and Greater than 36) years old, we found the following as we are shown in figure (4). From this figure we found that 6% Greater than 36 from workers in biologist lap 9% for (31-35) and 85% for 22-30.

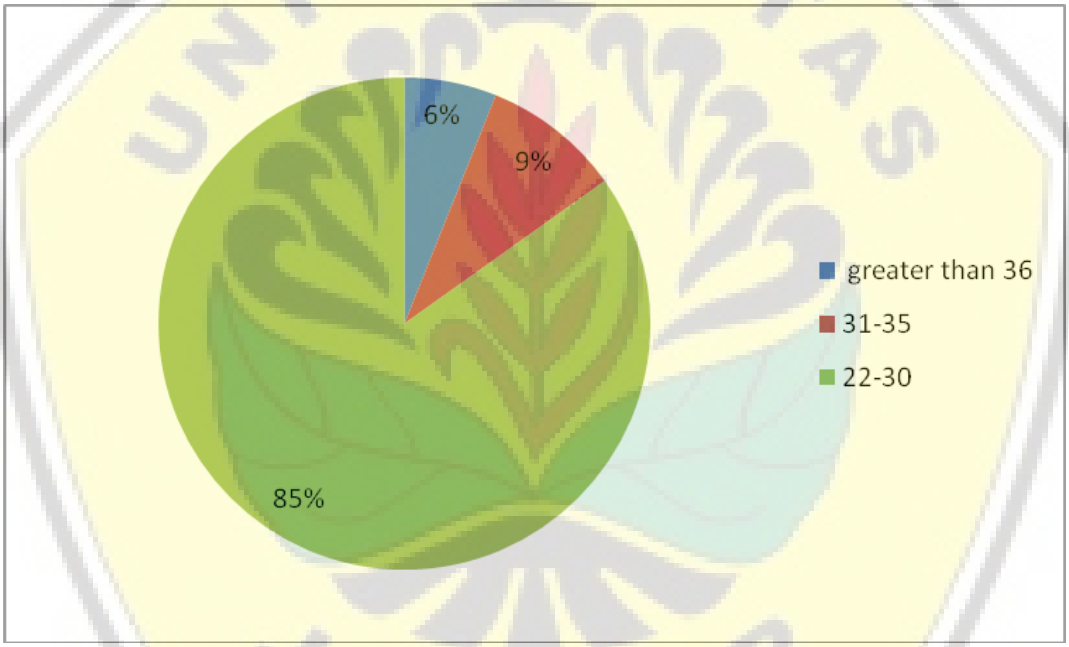

Figure 4: The percentage of responses by questionnaire according to age group

Table 1: A questionnaire 's Questions & responses

	A questionnaire's Question	Yes	Medium	No
1	Is the system useful?	52	13	1
2	Are the reports issued by the system in addition to your area of work?	27	29	10
3	Is the system easy to use?	36	23	7
4	Has the system helped save time and effort?	40	25	1
5	Does the system meet the laboratory requirements?	40	21	5
6	Is the program a real guide to be adopted in the Blood Analysis Laboratory?	34	25	5

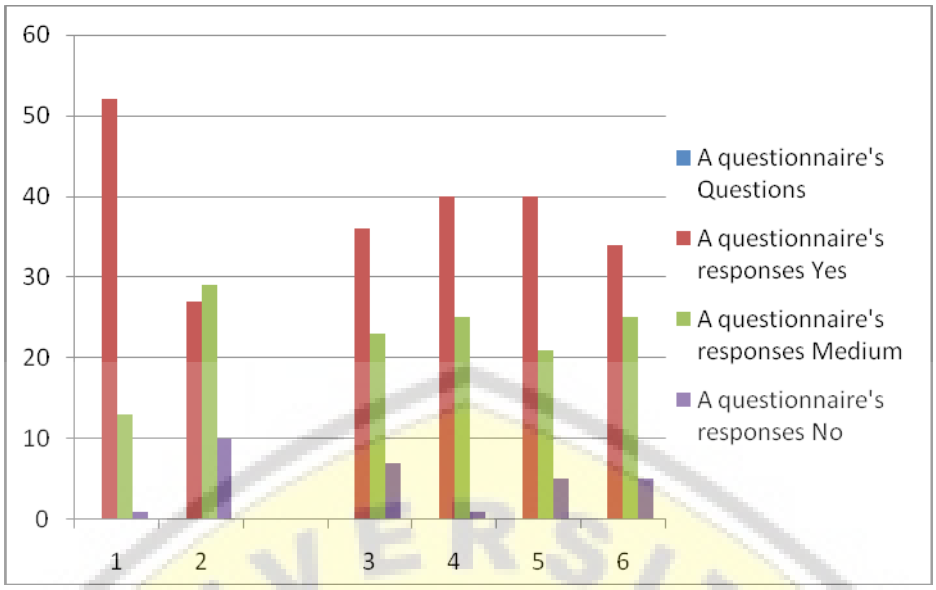

Figure 5: The percentage of A questionnaire's Question & responses

Conclusion

This work was carried out in a laboratory and was worked out by the laboratory employee and found good results in the ease of use and navigation between the pages of the site and the experiments were conducted and the results were withdrawn and the accuracy and high speed, which provided the laboratory staff of the easy to enumerate normal and abnormal diseases. In this work (session) used to create a secure and easy login to provide a complete security session state of patient information and laboratory information security after a specified period of time because the session can be adjusted so that it is automatically destroyed after a specified a specified time and impose the system to log out and return back to main page. The purpose of this system is to provide the registry with satisfactory cases and accurate statistics, which are an important information source for health organizations and the Ministry of Health, through which the database can be built. It provides important information on the patient's condition, which helps to extrapolate the future and identify blood disorders, diseases for the most prevalent based on the current database.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon, Collage of Information Technology, Iraq and all experiments were carried out in accordance with approved guidelines.

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Effectiveness of an Educational Program on Nurses Knowledge about Chemotherapy Hazards at Al-Habbobi Teaching Hospital in Al-Nasiriyah City

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Abstract

A quasi experimental study design (One-group Pretest-Posttest) study has been carried out at Oncology Center at Al-Habbobi Teaching Hospital in Al-Nasiriyah City from the 26th of Des. 2018 to 14th of March 2019 to implement the Effectiveness of an Educational Program on Nurse`s Knowledge about Chemotherapy Hazards, who are working in Oncology Center and to find out the relationship between the nurses' knowledge towards chemotherapy hazards and their demographic characteristics. To achieve the objectives of the present study, non- random (purposive) sample consists of 47 nurses working in Oncology Center have participated in this study. The data are collected through using constructed questionnaire designed for the purpose of the study, which consists of three parts: The first part is related to the demographic characteristics like nurses' age, level of education, marital status, years of experience in oncology ward, and years of employment. The questionnaire is used in pretest before conduction of the program, after the application of the program post test which is done after one month and half from first post-test repeated doing of participants of this study.

Keywords: *Nurses Knowledge, Chemotherapy Hazards, Educational Program*

Introduction

Cancer is a cause death or cases many complication for patients with it, which can attack adjoining parts of the body and invade to other organs. This process is called to as metastasis. Metastases are the main cause of death from cancer, leading it to of death worldwide[1]. Cancer Chemotherapy refers to the wide range of therapeutic options used in the treatment of malignant diseases, including categories such as cytotoxic drugs, biologics, immunotherapy's, targeted drug therapies, hormonal treatments, and high dose chemotherapy regimens supported with hematopoietic stem cell transplant[2]. Cancer chemotherapy encompasses cytotoxic, cytostatic and biologic agents used to modify the body's response to malignant disorders. These agents can be highly toxic and present specific risks for patients, health care providers and care-givers. As such, the care of patients receiving these drugs requires specific knowledge, skill and judgment within an environment that supports quality practice .Recommendations for the safe handling of hazardous drugs have been available for more than twenty years [3].Evidence for continued risk of occupational exposure is abundant; however, nurses' use of the recommended precautions is not universal. This may be related to a lack of information or to a lack of serious concern for the potential hazards .Over ten and one half million healthcare workers are potentially exposed to hazardous drugs in the workplace. While most drugs defined as hazardous are cytotoxic agents used in the treatment of cancer, many drugs used for other indications and in other patient populations are equally unsafe World Health Organization, 2014. According to the National Institute for Occupational Safety and Health, there is documented evidence of

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contamination of the work environment with hazardous drug HDs, which increases the potential for exposure by nurses, pharmacists and other healthcare workers when these agents are handled inappropriately[4]. A study shows that especially nurses are exposed while preparing and administrating the CDs (chemotherapy drugs) . The level of knowledge of the nurses about antineoplastic drugs is not satisfactory [5]. The awareness of the nurses handling the CDs (chemotherapy drugs) is of concern because it is important in raising standards of safety. In service training is a very effective tool to increase the level of knowledge. This study revealed also the necessity of the improvement of the work environment and the availability of the protective equipment [6]. As the primary prevention measures involve the least possible exposure to CDs (chemotherapy drugs), information regarding the updated guidelines should be disseminated both at the practice and administration levels[7]. For that reason nurses' information about the possible toxicities and the protection measures used while preparing and administering these drugs is gaining more and more importance.

Results and Discusion

There are highly significant differences between two periods (Post 1and post-2 tests) for all items of the Nurse`s Knowledge about Chemotherapy Hazards at Oncology Wards of the Study Sample, which reflects that the nurses' knowledge was affected by educational program when analyzed by (t-test). there are highly significant differences among the three period (pre,post-1and post-2 tests) for of the Nurse`s Knowledge about Chemotherapy Hazards at Oncology Wards of the study sample in all Items and this reflects that the nurses' knowledge was affected by educational program when analyzed by ANOVA. There is no statistically significance at pretest period at p. value 0.05. At posttest-1period statistically significance differences at p. value 0.05 and highly statistically significance differences at posttest-2 period at p.value 0.001. Relative to the table (1) the majority of the study sample at the middle age ranged (25 - 29) years. And they are accounted for (19) nurses with percent (40.4%)with age mean (27) years. This result agree with Wafaa, (2015), that show the majority of study sample with mean age (42.4). This may be because the Department of Oncology wishes to bring middle-aged nurses to be more effective and tolerant to treat and care for patients. In regarding to gender it is noticed that (61.7%) of the study sample are female and the remaining are male. This result is similar to study done by Najma, (2012), they reported that the study population consisted of (35) nurses more than half (80%) of them were female and (20%) male . This may be because of the desire of the Department of Oncology to bring large numbers of graduates of the Faculty of Nursing and medical institutes as they are more knowledgeable and scientific in the treatment of patients, and it is known that most graduates of the collage of Nursing and medical institutes from women, this results is supported by Nezar A., (2014), Who shows that the female rate is higher than the male rate. Table (3) shows that there are highly significant differences between two periods (Post 1and post-2 tests) for all items of the Nurse`s Knowledge about Chemotherapy Hazards at Oncology Wards of the Study Sample, which reflects[11] that the nurses' knowledge was affected by educational program . The health education was effective on study group in present study (Table 3), through the high percent of the nurses responses for knowledge concerning chemotherapy hazards between pre and post health education and majority[12] of nurses responses for the posttest were have been passed compared with pretest.

Conclusion

During the course of the present study data analysis and logical discussion and interpretation of result, the effectiveness of the Education Program was determined. However, the study concluded that: A poor level pretest reflects of knowledge and practice. After posttest 1 the nurses› knowledge level reflects very well and nurses› practice level shows a very good level of practice. Nurses› knowledge and practice become very good after posttest.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Community Nursing College of Nursing-University of Baghdad, Iraq and all experiments were carried out in accordance with approved guidelines.

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In Vitro Assessment of Some Properties of Biocompatable Polymer Dental Implant Consisting from Poly Ether Ketone (Peek) and Silicon Carbide Nanofiller

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Abstract

Polyetheretherketone (PEEK) is growing in popularity WITH an increased interest in the use of polyether ether ketone (PEEK) for orthopedic and dental implant applications due to its elastic modulus close to that of bone, biocompatibility, and its radiolucent properties PEEK with high chemical resistance, radiolucency, mechanical characteristics compared to those of human bones. Aim of this study this study was done to evaluate the PEEK and PEEK composite dental implant through mechanical and morphological evaluation. PEEK composites (PEEK and SiC with selected weight percentage ratios of (0, 1.5%, 3%, 4.5%, 6%). were fabricated using a compounding by melt blending by (Internal Mixer) at 365ºC, 5min. technique, The study involved Samples preparation (sheets) cutting and machining into desire shapes according to ASTM standards,for mechanical tests which includes tensile strength,elastic modulus and flexural strength,physical tests which include DSC, TGA, FTIR. Morphological test that include SEM, and EDX mapping. The results obtained from the experiments showed that the tensile strength, elastic modulus and flexural strength polymer composite consisting from polyetheretherketone and Silicone Carbide nanofiller implant increased comparing with pure PEEK with better distribution of nano filler particles in PEEK composite (concentration 1.5%, 3%, 4.5%) in the scanning electron microscope examination and EDX mapping

Keywords: *PEEK, PEEK composite, SiC nanofiller.*

Introduction

There is an increased interest in the use of polyether ether ketone (PEEK) for orthopedic and dental implant applications due to its elastic modulus close to that of bone, biocompatibility, and its radiolucent properties PEEK with high chemical resistance, radiolucency, mechanical characteristics compared to those of human bones In addition, it can be repeatedly sterilized and shaped by machining and heat contouring to fit the contour of bones(1) PEEK has been used for load bearing orthopedic applications such as spinal cage, dental implant, and screws . Despite these excellent properties, PEEK is still categorized as bioinert due to its very low reaction with the surrounding tissue, which limits its potential applications(2). Impregnating bioactive materials into PEEK has become an attractive approach for improving its mechanical properties(3). Silicon carbide (SiC) ceramics have a great potential for a number of industrial applications due to their high mechanical strength, low thermal expansion coefficient, low value of relative density, high chemical inertness, oxidation and corrosion resistance(4). Recently, bulk porous silicon carbide ceramics have attracted increasing interest in medical applications as materials with high biocompatibility, for the production of orthopedic and dental implants. Silica-based ceramics are another group of bioactive products, which exhibit better

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biodegradability in comparison to HA ceramics, Silicon carbide (SiC) ceramic is one of the members of this group which is light weight and has excellent mechanical properties, It has been used in the manufacture of composite bone scaffolds, for example with a coating of bioactive glass**,** PEEK composites were produced for different applications. The most important application is load bearing implant application[5].

Methodology

Preparation of Polymer: The specimens were prepared in five groups, the preparation method included preparing the polymer composite of PEEK and SiC with selected weight percentage ratios of (0, 1.5%, 3%, 4.5%, 6%).

Mixing Procedure: The polymer composite was made by mixing of PEEK polymer with SiC nano filler with the following proportions (0, 1.5%, 3%, 4.5%, and 6%). The polymer composite was fabricated via a series of processes as follow: Mixing, compounding and compression molding.

1. Mixing between nanoparticles and polymer granule was achieved by sonication instrument firstly, the mixing was carried out manually by adding the selected percentage of SiC with alcohols then sonication for 15 minuts for better distribution of the nano particles the mixing time continued for (15min) followed by put in an oven for drying at (150 °C) for 15 minuts[6].

Figure (1): Specimen Design

2. Mixing and compounding was achieved in an internal mixer (Haake) figure (2-8), the temperature set at 365°C and mixing speed at 70 rpm., the polymer granules added gradually through special opening about 60gm for each mix, The time needed for compounding was about (5) min. after each mix the melted polymer were taken out of the internal mixer and allowed to cool down to room temperature without any further temperature control.

Specimen Preparation:

A. Tensile Test: Tensile test was performed with an Intron 5567 tester(Universal test machine), carried out at room temperature, at a cross head speed of (5 mm/min), and gauge-length, 50 mm. The prepared sheets were cutted with CNC machine to the required shape of tensile test specimen**,**samples were cut according to ASTM D 638- Type3 (ASTM Standard 2011), as shown in Figure (2), the final result represents the average value for the eight tested specimens. Figure (1) shows the standard specimen for tensile test.

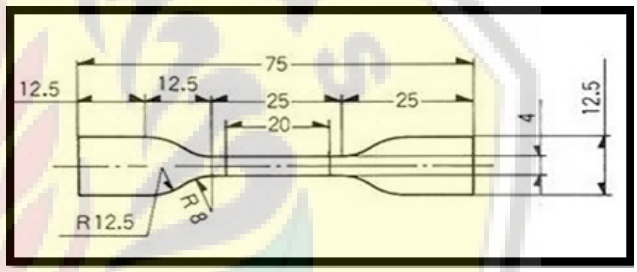

Figure (2): Specimen Design

B. Flexural Tests: Flexural test was performed according to ASTM D790-03 at room temperature by using a three-point test instrument, using the Universal testing machine with velocity (1.28 mm/ min). The sample will be cut at length of at least 65 mm, width was about 10 mm and thickness will be not less than 2.5 mm. Flexural modulus and strength were calculated from the load displacement diagrams. Eight specimens were used for most tests, and the final results represent the average values for Eight specimens, as it was reported.

Physical tests and Structural Characterization:

A. Differential Scanning Calorimeter (DSC): In this test some characteristic were evaluated, such as melting temperature, crystallization temperature, glass transition temperature, and heat of fusion, etc. The procedure of this test was carried out using samples, weigh about (10.96 mg) heated first from room temperature to 400ºC; with 45ºC/min. heating rate in order to erase the thermal history of the sample, thereafter cooled from 400ºC to room

temperature with a rate of 10oC/min, and then heated second in a cycle to 400ºC at 10ºC/min, all in N2 atmosphere. Each sample was subjected to double heating and cooling cycles under a dry nitrogen purge, and data were recorded during the heating and cooling cycle[7].

B. Thermo gravimetric analysis (TGA): In this test, thermal stability has been discussed, including the resistances of thermal degradation and flammability of SiC nanoparticles. by heating from room temperature to 700oC, at heating rate of 20oC/ min in N2 atmosphere [7] . This test was done on a small samples weigh 12.6 mg put in a small crucible of alumina and the weight loss as a function of temperature was measured, the test was performed by using DSC/TGA (STA System) METTLER – TOLLEDO.

C. Scanning Electron Microscopy (SEM): SEM was used to reveal the microstructure of nanoparticles powders samples, neat PEEK, nanocomposites samples. It was used to diagnose the phases and nanoparticles distribution of samples, SEM (LEO, model 1455VP, UK), with an accelerating voltage of 10–20 kV, the uniformity of distribution and the particle size of the nanoparticle in nanocomposites were also inspected. Before observation, in order to avoid charging during electron irradiation, the composite samples were fractured in liquid nitrogen and covered with (Au) using a gold sputter coating.

D. Fourier Transform Infrared (attenuated total reflection) analysis (ATR/FTIR): Thin films (100 microns) shown of the neat PEEK, selected sample from nanocomposite samples These films were used for crystalline structure characterization on a Brucker ATR/FTIR spectrophotometer (model IFS48, Germany) (spectral range 4000–300 cm-1 and resolution 2 cm- 1) .

E. Elemental Analysis with EDX: SEM supported by EDX (energy dispersive X-ray analysis) technique was performed to determine the composition polymer composite the main principle of spectroscopy is that each element has a unique atomic structure allowing a unique set of peaks on its electromagnetic emission spectrum, it depends on the interaction of some source of X-ray excitation and a specimen for the emission is the characteristic X – ray of the elements contained in sample which was detected by the detector. The received signal from the detector was analyzed.

Results

Mechanical Tests:

Tensile Strength: Table (1-1) shows descriptive statistics Mean values, standard deviation, Standard error, maximum and minimum of tensile strength test result of pure PEEK, G1(peek +1.5%Sic), G2 (peek+3%Sic), G3(peek +4.5% SIC), G4 (peek+6%Sic) respectively as a function of nanoparticle weight percentage, it show increase the tensile strength values of the PEEK polymer composite comparing with pure peek with increase the percentage or volume fraction of the SiC nano composite reach to maximum value at G3 group which represent the PEEK with 4.5% SiC nano filler .

Table (1): Descriptive data of tensile strength test (N/mm^2) with F-test by ANOVA of tensile strength test, *P<0.01 High significant

Groups	Descriptive statistics				Comparison	
	Mean	S.D.	Min.	Max.	F-test	p-value
Pure peek	1444.625	93.399	1312	1576	42.660	0.000
G1	1662.625	69.953	1565	1762		
G2	1716.000	16.878	1698	1753		
G3	1927.500	111.024	1819	2086		
G4	1766.250	50.933	1680	1829		

The average data of the tensile test results modulus table 1-2 showed that elastic modulus are increased with increasing the weight percentage of nano powders PEEK polymer composite comparing with pure peek reaching to its maximum value in G3 group, the inclusion of nanoparticles in first group has raised the tensile strength by 15% and for the composite sample, G3(peek +4.5% SIC) group which its tensile strength value raised by 33% comparing with pure PEEK**.**

Table (2) The elastic modulus of PEEK, G1, G2, G3, G4 groups nanocomposites as a function of SiC nanoparticles content in the composite .

0	Pure peek	G1 peek +1.5%Sic	G2 peek+3%Sic	G3peek +4.5%SIC	G4 peek+6%Sic
Elastic modulus	4.1791	5.5904	6.2507	7.4771	6.2373

Flexural strength The highest mean value is recorded by the G3 group, while the lower value was in PEEK control group, it is observed that increased of SiC nanofiller content in polymers (PEEK: X% SiC), lead to increase the values of flexural strength for polymer composite except group G4 which show decrease in the flexural strength value. Statistically F-test show a highly significance difference in the transverse strength among the groups.

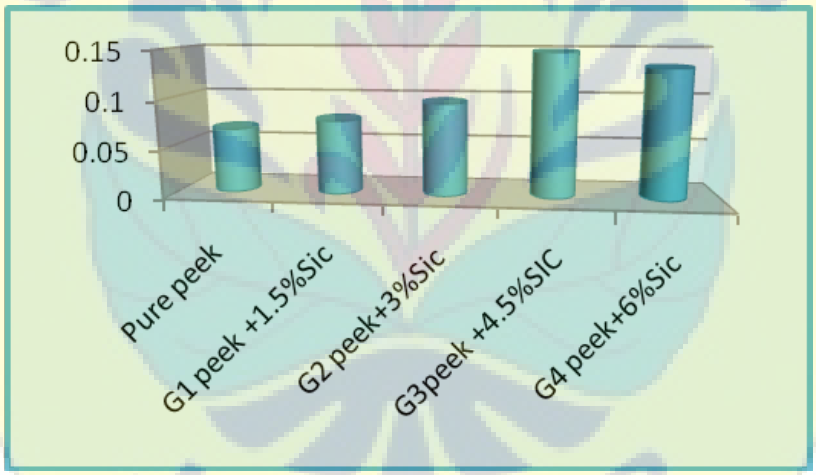

Figure (3): Bar chart showing the flexural strength values for the PEEK, G1, G2, G3, G4 groups

Physical tests and Structural Characterization:

A. Differential Scanning Calorimeter (DSC): (DSC) was used to analyze crystallization and melting temperatures of polymer nanocomposites which can be determined from the curves accordingly. The percentage of crystallinity can be determined by dividing crystallization enthalpy (ΔHc) (integrating the area under exotherm peak) and dividing it with ΔHco, (the theoretical crystallization enthalpy of 100% of PEEK). That shown in equation

$$Xc\% = \frac{\Delta Hc}{\Delta Hc^{o}} Wpolymer \times 100 \ldots\ldots\ldots (3-1)$$

Where, ΔHc refers to heat of crystallization of the specimen, ΔHco fusion heat for pure crystalline PEEK which is 130 Jg-1 [Tg 2011] and *W* for the weight composition of the polymer, DSC the crystallization temperature (Tc) of PEEK has been raised slightly when SiC nano filler was added, this indicate non significant changes in the properties of material

B. Thermo gravimetric Analysis (TGA): TGA characterization has been carried out in nitrogen atmospheres to analyze the thermal stability of the composites and the effect of time and heat on the stability of the nano filler which show that it can withstand the time of processing especially during mixing up to 20 minuts. The degradation curves of pure PEEK, and Sic are illustrated in figure (1-3).

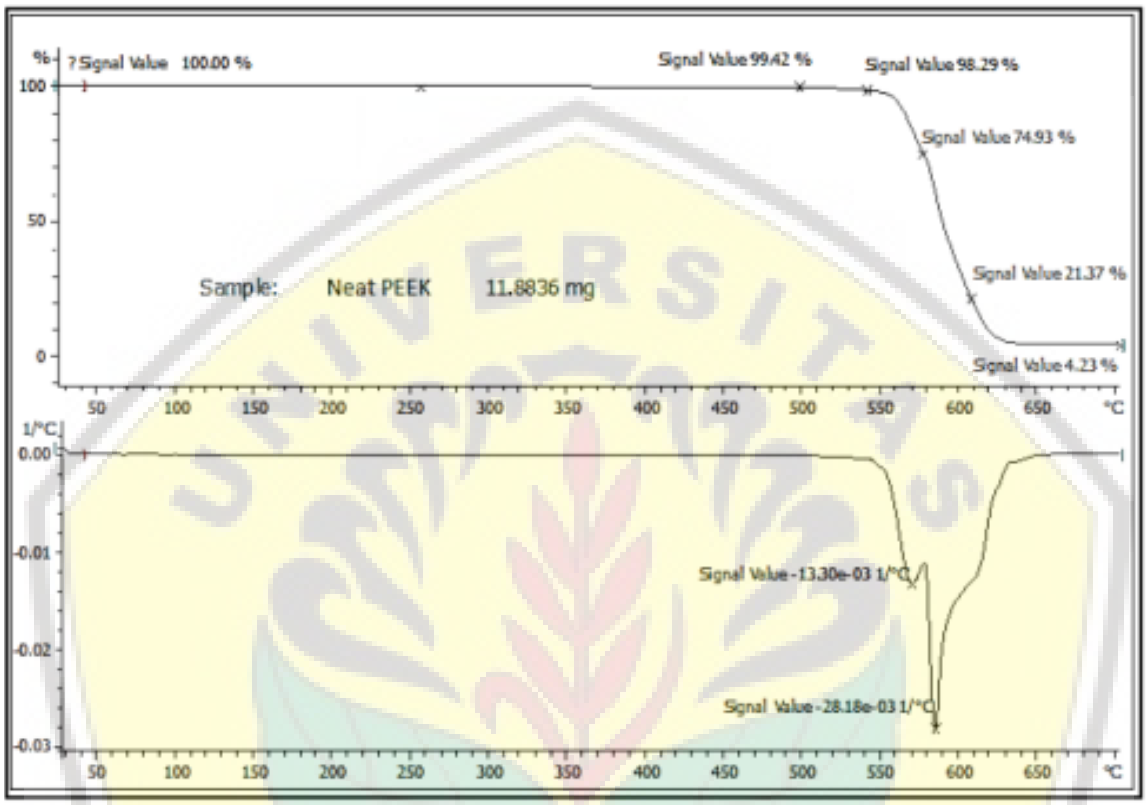

Figure (4): Thermo gravimetric analysis (TGA) for peek

C. Fourier Transformation infrared FTIR analyses. IR mode: The FTIR analysis confirms the structure of Poly ether+ ether ketone with the same absorption bands for the polymer composite in the other groups.

D. Scanning Electron Microscopy SEM: The scanning microscopy image of SiC nano-particles. The nanoparticles form some agglomerates, the particles are irregular in shape and the distribution of the particles is such that they are loosely packed and are approximately at the range between 500 nm to 1-3 μm long, the cryo- fractured surface morphology of neat PEEK was homogenous accompanied by smooth surfaces and no voids or defects, the surface morphology of G1, G2, G3 group with 1.5,3,4.5% of SiC nanoparticle content in composites which exhibited a homogenous morphology with uniform dispersion of the nanoparticle, it can be observed that different sizes of spherical shaped of nanoparticle material were dispersed randomly in PEEK matrix with very few of micro-cavities structure, this indicates a fairly interaction between the components, morphology of G4 group with 6% of SiC nanoparticle content in composites, the dispersion of the SiC nanoparticle in PEEK was much less than the previous groups,with more aggregation behaviors of SiC nanoparticle

figure (4).

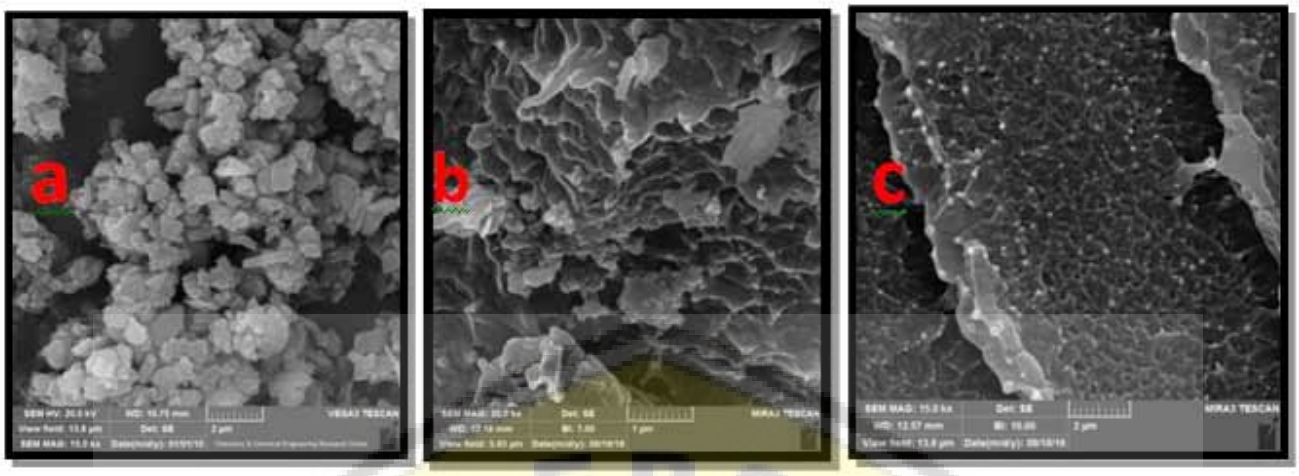

Figure 5: SEM of a. pure PEEK, b. G3 polymer composite, c.G4 polymer composite

E. Scanning Electron Microscopy (SEM) with Energy Dispersive X-Ray Analysis (EDX): EDX mapping for the peek composite group G1 group and G3 group figure (1-5a,b) with magnification of 25000 x show uniform distribution of the nano silicone carbide filler that indicate good mixing procedure while in G4 group PEEK composite figure (1-5c)) show the presence of agglomerates in concentration of 6% SiC

Figure (6): SEM with EDX mapping of PEEK composite a.G1, b.G3, c.G4material 25000 x where the red spots represent the SiC Nano filler

Discussion

There is an increased interest in the use of polyether ether ketone (PEEK) for orthopedic and dental implant applications one of the major reasons to gain interest into PEEK was its closely matched stiffness to bone. This mismatch in stiffness may cause a stress shielding and may lead to bone resorption[8,9]. SiC nanostructures are promising candidates in the field of biomedical device, Moreover, the unusual properties of nanoparticles affect the various interactions take place between nanoparticles and the polymer matrix designing to reinforced the polymers to attain desirable macroscopic material properties by combining materials at a microscopic

level[10]. For the tensile strength mean tensile strength at break show increase in its values of the PEEK polymer composite (G1, G2 G3) with increase the percentage or volume fraction of the SiC nanofiller reach its maximum value at G3 group that represent the PEEK with 4.5% SiC nano filler, the incorporation of the hard nanoparticles powders into the polymer matrix which leads to restricted the movement of polymer chains and, accordingly, increases the tensile strength and elastic modulus for nanocomposite material[11] Group G4 with 6% content of nano SiC show decrease in the value of tensile strength and elastic modulus this may be due to incorporation of nano filler may lead to agglomeration of the filler in some parts of the polymer matrix that proved in the electron[12-17].

Conclusion

polymer composite consisting from polyetheretherketone and Silicone Carbide nanofiller sow improved in its mechanical properties (tensile strength, elastic modulus and flexural strength) comparing with pure PEEK, with the concentration of (1.5,3,4.5%) of nano filler with good distribution the filler confirmed by SEM, EDX examinations.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Dentistry, University of Baghdad, Baghdad, Iraq and all experiments were carried out in accordance with approved guidelines.

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Cholinesterases Activities in Diabetic and Hyperlipidemic Patient

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Abstract

This this study aims to find whether the elevation or the reduction of ChEs levels can be related to the diabetesmellitus and/or dyslipidemia. This study is considered as case-control comparative study. The human plasma and erythrocyte cholinesterase activity was tested in 5 group. Groups 1 and 2 were type 2 hyper- and normo- lipidemic diabetic patients respectively with good control of diabetes. Groups 3 and 4 were type 2 hyper- and normo- lipidemic diabetic patients respectively with inadequate control of diabetes. Group 5 included patient with hyperlipidemia only. The control group consisted of apparently healthy subjects with no history of diabetes or hyperlipidemia or exposure to anti-ChE insecticides or drugs. Also fasting serum glucose, Hb A1c and the serum lipid profile were estimated in these groups. The results indicate that there is a relation between the BChE and diabetes, but no such relation could be seen with AChE. Also there is similar relation between the dyslipidemia and the both types of the ChE. The combination of inadequately controlled diabetes with dyslipidemia can cause elevation in both types of ChE enzyme but less than that of dyslipidemia alone.

Keywords: *Cholinesterases - Diabetes - Hyperlipidemia -AChE- BChE.*

Introduction

Cholinesterases (ChE) are enzymes that catalyze the hydrolysis of the acetylcholine into choline and acetic acid to allow a cholinergic neuron to return to its resting state after activation[1]. There are two types of cholinesterases enzymes. 1. Acetylcholinesterase (AChE), also known as true or erythrocyte cholinesterase, found primarily in the erythrocytes and some neuralsynapses. Pseudocholinesterase (BChE), also known as plasma cholinesterase, butyrylcholinesterase with a lower specificity for acetylcholine, found primarily in the plasma, liver, glia and many other tissues[2,3]. The physiological functions of plasma ChE are not known, but one idea is that they protect the body from natural anti-ChE agents (e.g. physostigmine, a plant alkaloid) encountered during the evolution of species. Also it has been shown that BChE is involved in lipid/lipoprotein metabolism[4]. Diabetes mellitus (DM) is defined as an elevated blood glucose associated with absent or inadequate pancreatic insulin secretion, with or without concurrent impairment of insulin action[5]. Hyperglycemia is a common end point for all types of diabetes mellitus and is the parameter that is measured to evaluate and manage the efficacy of diabetes therapy[5-7]. There are two major types of lipids in the blood, cholesterol and triglycerides (TG). They are carried on four types of lipoproteins: chylomicrons, low-density lipoprotein (LDL), very low density lipoprotein (VLDL) and high density lipoprotein (HDL). The primary function of lipid particles is fat transport to the liver and adipose storage areas[8]. The lipid abnormalities are prevalent in DM because insulin resistance or deficiency affects the key enzymes and pathways in lipid metabolism[9]. Diabetic dyslipidemia is generally characterized by increased plasma TG and LDL-C, and decreased HDL-C concentration[10]. Much research indicates that the BChE activity is increased in certain metabolic disorders like hypercholesterolemia, hypertension, obesity and type 1 or type 2 diabetes[11-15]. In these studies, BChE activity correlates strongly and positively with serum levels of low density lipoprotein (LDL)-cholesterol and triglycerides (TG) and inversely with serum high density lipoprotein (HDL)-cholesterol.

All these observations suggest a relationship between BChE activity and lipoprotein metabolism, but the rationale for this connection is unclear. On the other hand other researchers indicated the opposite[16,17], as their results indicated that the relationship between serum lipid/lipoprotein metabolism and BChE activity in diabetes lacks any strong supportive evidence[17-19]. So there is a controversy about the level of plasma and erythrocyte ChE that may be increased or decreased or even remain normal in diabetic and in hyperlipidemic patients [17]. However, other studies have suggested BChE may not have a direct pathophysiological role in the development of metabolic syndrome and diabetes[19]. This study's objective is to find whether the elevation or the reduction of ChEs levels can be related to the DM and/or dyslipidemia. Such a relationship could be considered as a diagnostic parameter for such diseases, if proved.

Materials and Method

This study is a case-control comparative study. The study took place in Al-Wafaa Center for Diabetes. The subjects included in this study were male and females, whose age not less than 30 years. The human plasma and erythrocyte cholinesterase activity were tested in 5 groups (30 patients for each group). Groups 1 and 2 were hyper and normo-lipidemic type 2 diabetic patients respectively (duration of diabetes and hyperlipidemia was not less than 3 years) with Hb A1c = 5-8% (indicating a good control of diabetes). Groups 3 and 4 were hyper and normo-lipidemic type 2 diabetic patients respectively (duration of diabetes and hyperlipidemia was not less than 3 years) with Hb A1c >10 (bad control of diabetes). Group 5 were patients with hyperlipidemia only whose duration was not less than 3 years. The control group consisted of apparently healthy subjectswith no history of diabetes or hyperlipidemia or exposure to anti-ChE insecticides or drugs. Patients taking any medications other than oral hypoglycemic and antihyperlipidemic drugs (as these drugs have no effects on the ChEs levels) orexposed to anti-ChE insecticides or drugs were excluded. Also patients were excluded if they had chronic cardiac illness (ischemic heart disease, heart failure, cardiac arrhythmias), chronic liver disease (hepatic failure, active hepatitis, liver cirrhosis), renal complications and any other chronic debilitating illness. Blood samples were collected in 5 ml EDTA-treated test tubes then centrifuged at 3000 rpm for 15 min. The erythrocytes and plasma were separately kept on ice for ChE assay. The rest of the sample was used for the glucose and lipid profile assay. In our work we used the modified electrometric method for the assay of ChE activity, validated in humans[20,21]. The reaction mixture in a 10 ml beaker contained 3 ml distilled water, 0.2 ml plasma or erythrocytes and 3 ml pH 8.1 barbital-phosphate buffer[22]. The pH of the mixture (pH1) was measured with glass electrode using pH meter, then 0.1 ml of aqueous solution of acetylthicholine (7.5%) was added to the reaction mixture which was incubated at 37°C in water bath for 20 min. At the end of the incubation period, the pH of the reaction mixture (pH2) was measured. The enzyme activity was calculated as follows:

ChE activity (ΔpH/20 min.) = (pH1-pH2)-ΔpH of blank: The blank contained no blood aliquot. The barbital-phosphate buffer solution consist of 1.24 g sodium barbital (BDH), 0.163g potassium dihydrogen phosphate, and 35.07g sodium chloride (BDH) dissolved in one liter distilled water [20,21]. The pH of the buffer was adjusted to 8.1 with 1N HCL.

Fasting serum glucose (FSG) was estimated by glucose–oxidase–peroxidase colorimetric method (spectrophotometer (Optima) Japan) [23], by using a kit supplied by Biocon company (Germany). Glycated hemoglobinHb A1c was measured in whole blood sample by ion-exchange resin quantitative colorimetric determination [24], using a kit supplied from Stanbio (USA).Determination of serum TC concentration was done by the enzymatic colorimetric method [25], using total cholesterol BIOLAB kit (France). Determination of serum TGs concentration was done by the enzymatic colorimetric method [26], using triglycerides BIOLABO kit (France).Determination of serum HDL-c concentration was done by the precipitation method [27], using HDL-c BIOLABO kit (France). Low density lipoprotein cholesterol (LDL-c) was calculated by Friedewald formula [28].

LDL-c = TC – (HDL-c + TGs/2.2)

VLDL-c calculated according to the following foemula.

VLDL-c = TGs/2.2 (mmol/l)(29)

Analysis of variance (ANOVA) followed by the least of significant difference test (LSD) *post hoc* test was used as the statistical method. Additionally, simple Student's t-test was used for the comparison between the means of all groups (30). The level of significance was set at $P<0.05$.

Results and Discusion

Table 1 represent the results of the FSG, Hb A1c, TC, TGs, HDL-c, LDL-c VLDL-c, BChE, and AChE of the control and the tested groups. The current study demonstrated that Group 1 shows significant alterations and changes in the lipid profile since the patients were already hyperlipidemic, the Hb A1C also showed elevation as compared with control group, although the FSG was slightly elevated, this could be attributed to the lipid profile derangements which may affect the liver parameters. In this group the BChE was also significantly elevated with no change in AChE.Published data suggest association between BChE activity and lipid metabolism and weight and body mass index (BMI) [31,32]. Moreover, mean BChE activity tends to be higher in obese subjects than in nonobese individuals. Obese humans have high plasma BChE activity, whereas starved humans have low plasma BChE activity [33].Group 2 shows little change in the lipid profile parameters as there is a little elevation of LDL and decrease in HDL, this can be attributed to the eating habits of fats in our locality. Also in this group the BChE shows a significant elevation as compared with the control group.Group 3 like Group 1 shows remarkable changes in the lipid profile as they were initially diagnosed as dyslipidemic patient, also the FSG and Hb A1C were significantly elevated as they were uncontrolled diabetic patients. The ChE shows different picture in this group as the BChE was significantly elevated higher than all other diabetic groups and the control group, also the AChE in this group was elevated significantly. This may explained by the inadequate diabetic control (elevated FSG and Hb A1C)[34] and having dyslipidemia[35,] co-existence of diseases may affect lipid metabolism and its hemostasis causing abnormality and remarkable change in BChE (more than that of the other groups), resulting in changing the hemostasis between the two types of the enzyme (from their site of production) that may cause change in the AChE level. The results by Mushtaq*et al*., indicated altered levels of AChE and BChE both in Alzheimer's disease (AD) as well as in T2DM imply that those two enzymes may be playing a pivotal role in the pathogenesis of the two disorders. AD and T2DM are both characterized by elevated levels of AChE and BuChE in the plasma[36].

Table 1: FSG, Hb A1c, TC, TGs, HDL-c, LDL-c, VLDL-c, BChE, and AChE values of the control and the tested groups.

Parameters	Control	Group 1	Group 2	Group 3	Group 4	Group 5
FSG mmol/L	5.64±0.73	6.36±0.69	6.11±1.24	9.71±1.90*	9.24±0.94*	5.98±0.37
Hb A1C %	5.23±0.45	7.25±1.32*	6.46±1.38	11.82±0.88*	10.91±0.15*	5.86±0.52
TC mmol/L	4.72±0.74	7.88±1.93*	5.12±0.93	7.72±1.41*	5.13±0.83	8.21±1.83*
TGs mmol/L	2.05±0.81	3.70±1.06*	2.10±1.01	3.51±0.82*	1.82±0.94*	3.80±1.31*
HDL mmol/L	1.39±0.31	1.09±0.26*	1.28±0.27*	1.07±1.42*	1.21±1.37	1.01±0.21*
LDL mmol/L	2.67±0.65	4.37±1.99*	2.69±1.04	3.73±0.87*	2.71±0.74	4.71±0.82*
VLDL mmol/L	0.30±0.18	1.54±0.48*	0.42±1.26	1.62±0.86*	0.52±0.14*	1.81±1.01*
BChE Δ pH/20 min	1.34±0.07	1.63±0.11*	1.47±0.09*	1.71±0.02*	1.46±0.04*	2.01±0.07*
AChE Δ pH/20 min	1.01±0.06	1.10±0.04	1.07±0.13	1.56±0.10*	1.13±0.09	2.61±0.04*

The values are represented as means ±SE
*Significantly different from the respective control (0) group, P<0.05

Conclusion

There is a relation between the BChE and diabetes (as there is an elevation of its level in all diabetic groups), but no such relation could be seen with AChE. There is similar relation between the dyslipidemia and the both types of the ChE. The combination of poor control of diabetes and dyslipidemia can cause elevation in both types of ChE enzyme but less than that of dyslipidemia alone (i.e. the diabetes may reduce the effect of the dyslipidemia on the production of the two types of the ChE, as seen in group 3, or the diabetes and dyslipidemia are both affecting the ChE level in different ways -each

one act alone- as the diabetes is affecting BChE only and the worse dyslipidemia is affecting both ChE types).

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Pharmaceutical Chemistry, College of Pharmacy, University of Mosul, Mosul, Iraq and all experiments were carried out in accordance with approved guidelines.

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The Impact of the Formal Strategy of the Theory of Cognitive Burden in Acquiring the Concepts of Middle School Students

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Abstract

The present research aims to identify the effect of the formal strategy based on the cognitive burden theory in acquiring the historical concepts of the fourth literary students. The research was conducted on the fourth grade students. The school was randomly selected (Al-Mahaweel Preparatory School for Girls with 61 students). The researcher used the experimental method as the most suitable method for this research. The experiment was applied to the two research groups with a period of (1) years. 8 weeks), and used the pat The statistical method (t-test, kai square (k2), coefficient of paragraph distinction, coefficient of paragraph difficulty, effectiveness of wrong alternatives, Pearson correlation coefficient, Spearman-Brown correlation coefficient). The researcher found that there was a statistically significant difference between the two groups of research in the post-acquisition experiment in favor of the experimental group.

Keywords: *Formal strategy, cognitive burden, historical concepts, preparatory stage.*

Introduction

Education comes as a mainstay in the building and individualization of the individual as it includes the types of activities that affect the individual and his preparations, behavior, mental orientation, intelligence and skills, and the installation of its effects on his personality in physical, mental and psychological dimensions [1]. The duty of education is the responsibility of building a scientifically educated person who must possess a degree of knowledge and awareness of the general issues related to the various spheres of life so that he can make the right decision regarding the situations and problems he has faced in a society that is constantly changing and evolving [2] Current era And the impact of this development in the field of education and teaching method. It is also reflected in the need to teach the teacher to acquire modern teaching skills, which may facilitate the process of learning and teaching, and promote his role as a guide, facilitator and facilitator of the teaching process through modern and unconventional teaching method [3]. In recent years, several educational theories have emerged, based on a number of method and strategies used in teaching. These theories include the theory of cognitive burden John Sweller. A University of New South Wales University of Psychology, where this theory is based on the concepts of information processing in memory and the development of schematics and the mechanism of procedural knowledge [4]. The cognitive burden is the total mental activity that occupies the capacity of the working memory during a certain time[5]. Based on this theory, the theory emphasized that limited working memory capacity is one of the obstacles to learning, and that these obstacles must be addressed through the change of traditional learning and teaching designs. Therefore, the theory of the cognitive burden of many of the design of learning and education is based on knowledge of cognitive engineering[6]. One of these strategies (formal strategy) aimed at expanding the limited working memory through the use of visual learning or audio learning[7]. Historical concepts form a broad base based on the use of a single type of historical material, where the understanding of the teachers of the events is determined by the depth, breadth and diversity of their achievements of the concepts. As the learner gains from concepts, new attitudes and experiences lose their difficulty and thus the learner is able to interpret and think well[8]. Thus, the acquisition of students of historical concepts is one of the most important fundamentals of the study of history, in turn, constitute the necessary basis for the cognitive behavior of learners

and it constitutes an important educational goal at all levels of study because they contribute significantly to the learning process[9]

Methodology

The researcher followed the experimental approach in the conduct of the research because it is characterized by two reasons: It is the only type that directly try to influence a particular variable and also he can test the validity of hypotheses about the so-called reason relationship and the following table shows this:

Research community and design: The research society included fourth grade students in the preparatory and secondary day schools in Mahaweel district/Babil governorate.

The sample of the study was randomly selected. The Mahaweel Girls' Preparatory School was the site of two groups, one of which was chosen randomly to be experimental group, and the other group was a total of 63 female students with 31 experimental students. The following table shows the following:

Table (1). Distribution of students of the research sample before and after exclusion on the two research groups

Group	Division	Number of female students before exclusion	Number of students excluded	Number of female students after exclusion
Experimental	A	32	1	31
Control	B	33	1	32
Total		**65**	**2**	**63**

The control of extraneous variables: Although the researcher investigated the equivalence of the two sets of research in variables that I think affect the course of the experiment, they tried to avoid the effect of some extraneous variables in the course of the experiment. These variables are: Accidents associated with the experiment: The sample was randomized and the two groups were confirmed. The maturity factor: Because the duration of the experiment was uniform between the two research groups, and the age of the students in both groups was close, this will affect the experimental measures. The researcher worked to limit this factor because it affects the dependent variable during the course of the experiment.

Research tool: Test the acquisition of historical concepts and designed the researcher tested the research and then was presented to a group of experts and specialists and after the amendment and then test students.

Determine the purpose of the test: The purpose of this test is to measure the acquisition of fourth-grade literary female students of historical concepts.

Determination of the objectives of the test: The researcher identified behavioral goals that are (60) behavioral goals after setting the purpose of the test.

Determination of the test paragraphs: The test paragraphs were formulated in their preliminary form and consisted of (20) paragraphs divided into three levels (definition, discrimination, application)

Test instructions: The instructions for the test and how to answer (selecting one correct alternative to the paragraph, answering all paragraphs, the time period for answering, typing the triple name, the class and the division in the assigned space).

Correcting the test answers: After the test paragraphs have been formulated, a standard has been set to correct the answers, with one score for each correct test paragraph, zero for the wrong answer, and the left over paragraph that the student answers. Therefore, The historical concepts are (60) degrees and the minimum is (zero).

The truth of the test: Honesty: It is to measure the test in what is put for it

In this way, the researcher relied on the veracity of the test to verify that the test verbs actually measured the

behavioral objectives. It can be defined as the simplest and most reliable types of honesty and used in the tests because it is the easiest in terms of its procedures and its reliance on the logic guaranteed by the test and its relevance to the measured attribute.

Statistical analysis of the test paragraphs: The test paragraphs were analyzed as follows:

A. Coefficient of difficulty paragraph: It means the proportion of the number of students who answered the paragraph answered correctly to the total number and called the amount of this ratio "difficulty coefficient". If the value of the amount increases, it indicates the ease of the paragraph, and if the value of the value decreases, it indicates that the paragraph is difficult. After calculating the difficulty factor for each test paragraph, it was found to be between 0.39 and 0.7, All the test paragraphs were acceptable, as Sawalma (2009) noted, that the test paragraphs were good if their coefficient of difficulty was between 0.20-0.80. The test paragraphs are therefore acceptable and applicable in terms of difficulty factor.

B. The power of paragraph discrimination: Is the ability of the paragraph to distinguish between the upper group (the students with the high grades in the test) and the minimum (students with low grades in the test) that means the ability to distinguish individual differences between students who know the correct answer and students who do not know the correct answer (Dulaimi and Adnan, (E), (1972: 66). When we calculated the specific force of each paragraph of the test using the parity equation, it was found to be between 0.33 and 0.52. Ebeal (1972) 20-0.80).

C. The effectiveness of wrong alternatives: The wrong alternative is effective when the number of students selected in the lower group is more than the number of students who chose the same alternative in the upper group. All alternatives were found to have attracted more female students in the lower group than the upper group students, and thus were recognized to be retained.

Statistical Means: The researcher used the following statistical means:

1. Frequency and percentage of the calculation (Honesty reaches an 80% virtual honesty ratio).
2. Pearson equation to extract the coefficient of stability, reaching (0.86).
3. The researcher used the Spearman-Brown equation to correct the coefficient of stability (0.92).
4. The researcher used the square Kay (Ka 2) to indicate the differences between the two groups of research at the parity of the academic achievement of parents and the calculated value of parents (0.791), less than the value of (k 2) table of (7.815) and freedom degree (3) 0.05), as in Table (1). The calculated value of mothers (1.461) is less than the value of (ka2) of the table (7,815) and the freedom level (3) at the level of (0.05) as in Table (3).

Table (2) Value of (Ka2) for the academic achievement of parents

Group	The number	Reads, writes and initials	Middle school	Preparatory and Institute	College and above	Values (Ka 2)		The degree of freedom	Level of significance (0,05)
						Calculated	Tabular		
Experimental	31	10	7	8	6	0.791	7.815	3	Not a function Statistic
Control	32	8	6	10	8				

Table (3) Value (k2) for the academic achievement of mothers

Group	The number	Reads, writes and initials	Middle school	Preparatory and Institute	College and above	Values (Ka 2)		The degree of freedom	Level of significance (0,05)
						Calculated	Tabular		
Experimental	31	9	7	6	9	1.461	7.815	3	Not a function
Control	32	11	6	9	6				

I also used (k2) to demonstrate the validity of the concept acquisition test paragraphs.

Table (4) The time life calculated in months

Group	Number of sample	Average	standard deviation	degree of freedom	T value		Statistical significance 0.05 Not a function
					Calculated	Tabular	
Experimental	31	191.03	4.14	61	0.826	2.000	
Control	32	190.13	4.56				

The researcher used the t-test to show the first grade of the history of the Arab Islamic civilization for the fourth quarter, the experimental average of the experimental group (66.32) and the standard deviation (18.17) and the difference (330.15), while the arithmetic average of the control group (67.47) and the standard deviation (17.18) and variation (295.15). When we used the t-test to find out the difference between the grades of the students in the first course, it was found that the difference is not statistically significant at the level of 0.05. The calculated T value is 0.277, (2,000) and a degree of freedom (61) This indicates that the two groups are equal in the grades of the first course The history of the Arab-Islamic civilization and the table (6) illustrate this:

The average results were that the average grades of female students, the experimental group that studied the formal strategy, was 42.97. The difference was 79.74 and the standard deviation was 8.93. The average score of the students in the control group was 35.3, the difference was 111.94 and the standard deviation was 10.58. 3.211. It is smaller than the value of T table (2.000) at the level of significance (0.05) and degree of freedom (61). This is the superiority of students of the experimental group on the control group and thus reject the zero hypothesis developed by the researcher and accept the alternative hypothesis. The students of the experimental group, which studied the history of the Arab Islamic civilization for the fourth grade literary according to the formal strategy on the students of the control group, which studied the same article in the traditional way in the acquisition test. This result can be attributed to:

1. The formal strategy has benefited the students of the experimental group by observing the increasing degrees of testing the acquisition of historical concepts, as they outperformed the students of the control group.
2. This strategy is appropriate to the level of students of this stage because they enjoy mental and intellectual maturity and the ability to analyze and summarize.
3. The formal strategy led to the excitement of students and their interest and suspense for the material history and their desire to know the subject or prepare them, which increased their education of the subject matter.
4. The subjects studied during the experiment may be suitable for the use of formal strategy, which led to increased understanding of students in these subjects.
5. The novelty of the strategy has encouraged students to study history and increased their desire to know the concepts.

Conclusion

The research was conducted on the fourth grade students. The school was randomly selected (Al-Mahaweel Preparatory School for Girls with 61 students). The researcher used the experimental method as the most suitable method for this research. The experiment was applied to the two research groups with a period of (1) years. 8 weeks), and used the pat The statistical method (t-test, kai square (k2), coefficient of paragraph distinction, coefficient of paragraph difficulty, effectiveness of wrong alternatives, Pearson correlation coefficient, Spearman-Brown correlation coefficient). The researcher found that there was a statistically significant difference between the two groups of research in the post-acquisition experiment in favor of the experimental group.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Babylon University - Faculty of Basic Education and all experiments were carried out in accordance with approved guidelines.

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Effect of Black Seed Oil on Some Physiological Parameters in Female Rats Treated with Aflatoxin B_1, B_2

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Abstract

This study was conducted in order to determine the effect of Black seed oil on the reduction of the negative effects of the Aflatoxin B_1, B_2 produce from *Aspergillusflavus* in white rat females and effect it's on the physiological blood parameters. The results of isolation and initial diagnosis showed *Aspergillusflavus* and *Aspergillusniger* in all samples studied percentage (100%) and isolated from the seeds of rice while the percentage of the emergence of fungi *Penicillium*spp and *Trichothecium* spp and *Rhizopus*spp rates ranged (50, 45, 14)% respectivelyof the samples studied. The results showed that Black seed oil had a significant effect on the physiological parameters of blood. The rate of white blood cells (WBC) increased to (15×10^3 and 21×10^3) cells/mm^3 when treated with Aflatoxin B_1 (AFB_1) and Aflatoxin B_2 (AFB_2) compared to control treatment. The results showed that the Black seed had decreased the rate of white blood cells when used with aflatoxin (AFB_1+ 800) and (AFB_2 + 800)mg/kg oil to (11.5×10^3 and 7.5×10^3 cell/mm^3 respectively .

Keywords: *physiological parameters, Aflatoxin B1, B2.*

Introduction

Aflatoxins are a group of mycotoxins, which are toxic metabolites produced by fungi during their growth in various food and cereal crops [1]. These metabolic compounds have relatively low molecular weights, where contamination of human food and animal feeds from the field to the consumer. The human exposure to Aflatoxins leads to serious diseases according to the dose exposed to it as liver cancer, bone abnormalities, embryonic mutations and fetal deformation as well as its effects on sexual efficiency. In studies conducted a significant correlation between human cancers and the contents of food contaminated with aflatoxins[2]**.** In a study conducted by [3] suggests that aflatoxin has effects on physiological blood parameters, including lowering the number of white blood cells. Mohsen (2006) found that *A.flavus* and *A. niger* had effects on white rat tissue by decrease in body weight weight of ovaries in the rat and a significant increase in the weight of the uterus as well as in the thickness, and cause infertility. *Nigella sativa* is a plant belonging to the family Ranunculaceae. It is used to treat head pain, bladder and kidney stones, chest pain and nausea. It also has a role in reducing the blood sugar level in test animals, also it have a role in reducing blood pressure and the tension of the presence of glycoserin and saponin, which is useful in the treatment of spasticity either directly or in the form of oil [4] *It* is medicinal plants containing antimicrobial agents and germs. and has an effective role in the treatment of chronic asthma, chronic colds, and used against gastrointestinal bacteria and currently as a disinfectant for harmful intestinal flora for young children and adults [5]. Due to the lack of available studies on the effect of oils and plant extracts on some fungi producing toxins within the body of the organism, this study was conducted, which included:

1. Isolates and identification *Aspergillusflavus* of rice seeds .
2. Identification *Ability Aspergillusflavus* on the production of aflatoxin B_1, B_2 .
3. Test the efficiency of different concentrations of the Black seed oil on the growth of isolated fungi in laboratory.

4. Studying the effect of different concentrations of Black oil on some of the physiological parameters of blood. In the Albino rat, it is infused with aflatoxins.

Method

1. Potato extract and dextrose Agar (PDA) The medium was prepared according to the procedure of (Colle et al; 1996)
2. Coconut extract Agar medium. The medium was prepared according to the procedure of (Dianese and Lin, 1976).
3. Isolation and Diagnosis of *A.flavus* from Rice Seeds

The seeds of rice were brought from the local markets of the city of Najaf in the year 2017 and using the sterilized seeds for isolation of *A. flavus* according to procedure of (Fennel and Raper,1965, AL-Ansii1999).

4. Testing ability of *A.flavus* on the production of aflatoxin,steps were followed according (Wyllie and Morehouse 1977;Mohsenand Risan 2009)
5. Preparation of concentrations of the Black seed oil and study the effects in medium

In this experiment, two concentration (200, 800) mg \ L were mixed with the sterile PDA after cooling. all dishes were vaccinated with 0.5 cm disc from the fungus at the center of the dish. Their last rate fungi and calculate the amount of orthogonal inhibition according to equation:

In this experiment used 16 animals divided into 7 groups:

1. Two rats were injected orally with 0.5 ml of aflatoxin B_1 and Black seed oil at a concentration of 200 mg/ kg of 0.5 ml daily for one week.
2. Two rats were injected orally with 0.5 ml of aflatoxin B_1 and Black seed oil at a concentration of 800 mg/ kg of 0.5 ml daily for one week.
3. Two rats were injected orally with 0.5 ml of aflatoxin B_1 daily for one week.
4. Two rats were injected orally with 0.5 ml of aflatoxin B_2 and Black seed oil at a concentration of 200 mg/ kg of 0.5 ml daily for one week.
5. Two rats were injected orally with 0.5 ml of aflatoxin B_2 and Black seed oil at a concentration of 800 mg/ kg of 0.5 ml daily for 1 week.
6. Two rats were injected orally with 0.5 ml of aflatoxin B_2 per day for a week.
7. Included 4 rats without any dosage as control treatment.

Two days after the last dose, the animals were sacrificed, The blood was collected to calculate some physiological blood parameters.

8. **Blood parameters:**
    1. Estimation of leucocytes count: The blood cell count method and the Turks solution were used to calculate the total number of white blood cells (Brown, 1976).
    2. Estimation of Red Blood corpuscles : The blood cell count method and the Hymes fluid solution were used as a dilution solution for total red blood cell count (Hall and Malia, 1984).
    3. Hemoglobin Estimation: Hemoglobin Meter and Drabkinfluid as a dilution solution were used to estimate hemoglobin concentrations in the blood sample (Sood, 1996).
9. Statistical analysis.

All experiments were carried out according to (C.R.D) as single-factor experiments. The averages were compared with the least significant difference of L.S.D and below the level of significance (0.05) (Al-Rawi and Khalaf Allah, 1980).

Results and Discussion

1. **Isolation and diagnosis of fungi associated with rice seeds:** The results of isolation and diagnosis showed an *A. flavus A.niger,* (100%) of the studied samples, followed by *penicilliumspp*, *Trichotheciumspp and Rhizopusspp* (50, 45, 14)% respectivelyfor the studied samples. Figure (1).

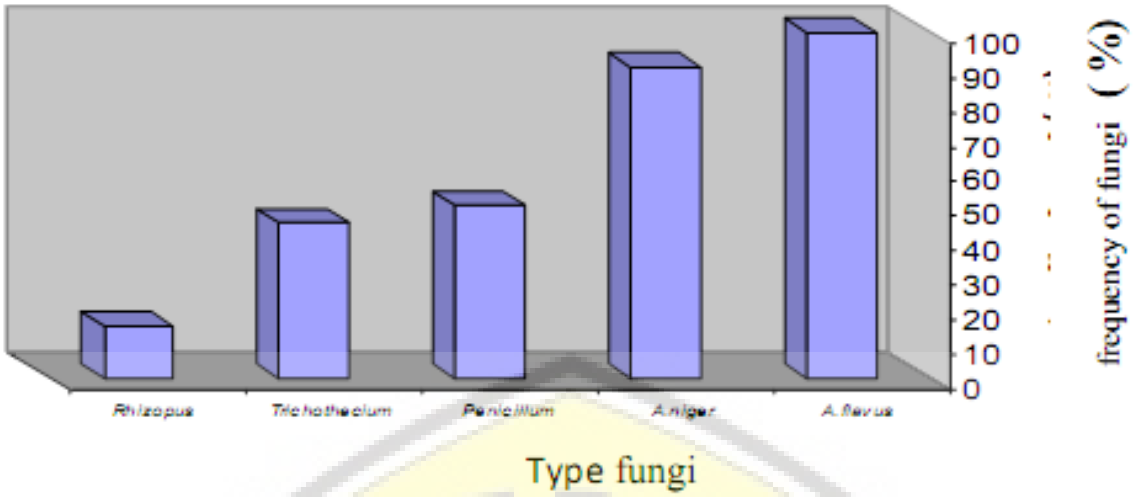

Figure (1): Frequency of fungi isolated from rice seeds

2. *Aspergillusspp* is due to simple dietary requirements as well as its ability to produce a large number of non-homogenous reproduction units..As well as the increase in the proportion of carbohydrates and easy to be represented in rice as the fungus *A.flavus* prefer carbohydrate materials on oily materials in addition to the moisture content if referred to *Aspergillus* with a wide range of temperatures and humidity as well as poor storage and accompanied by the production of toxins at different temperatures[5].

3. Evaluation of the efficacy of Black seed oil in reducing the effects of aflatoxin B_1, B_2 in white rats females. **White Blood Cell Count:** Figure (2) shows that AFB_1, AFB_2 had a negative effect on the white blood cell count its reached (210 × 10^3, 15 × 10^3) cell/mm ^{3} compared to the control treatment of (5.5 × 10^3 (cell/mm^3. The Black seed oil has a positive effect in reducing the rate of white blood cells in which it is used with a (AFB_1+ 800) and (AFB_2 + 800) mg\ kg reaching to (11.5 × 10^3, 7.5× 10^3) cell/ mm^3 respectively compared to control group.

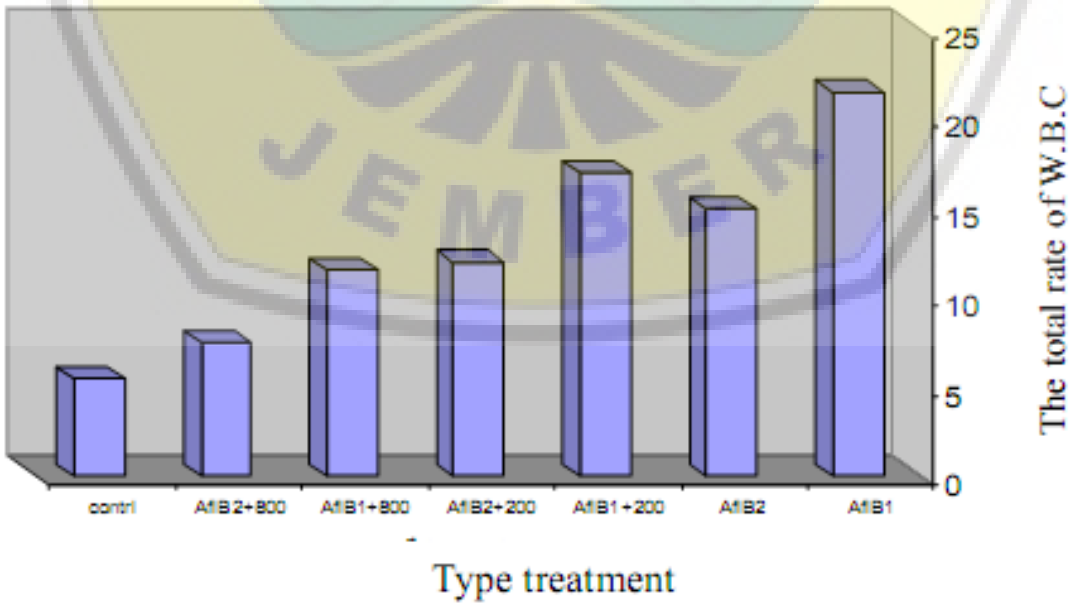

Figure (2): White blood cell count in animals treated with aflatoxin and Black seed oil in different concentrations

The increase in rate of (WBCs) is due to metabolic products by *A.flavus*, causing excessive secretion of immune response factors Tumer necrosis factor,Interleukin-6, cytokines especially that responsible for the occurrence Primary inflammation and immune regulation [6]. The excessive production of these components is important reason to increase the number of (WBCs) in the treated rats or a result of increasing the number of acidic blood cells that work to offset or remove toxic substances from the body, (Pearce and Pearce, 2013), confirming that metabolic products affect the immune system response.

In addition, the dosage of poultry with a different dose of the metabolic products of *A.flavus, A. fumigatus* led to an increase in the number of (WBCs) and anemia thus lead to stimulate the body's immunity and increase the number of acid cells in response to the exotic substances in the body which acted as competitive inhibitors of the enzymes responsible for the synthesis of red blood cells (Croopman et al., 2003)

Red blood cell count (RBC): Figure (3) indicates a reduction in RBC to (1.5.2.5) cells/mm^3, respectively for rats treatment in AFB_1, AFB_2. While RBC was observed to increase to (3.3.4.5) cells/mm^3 when treated with (AFB_1+ 800) and (AFB_2 + 800) mg\ kg respectively, while (8) cells/mm^3, in the control treatment .

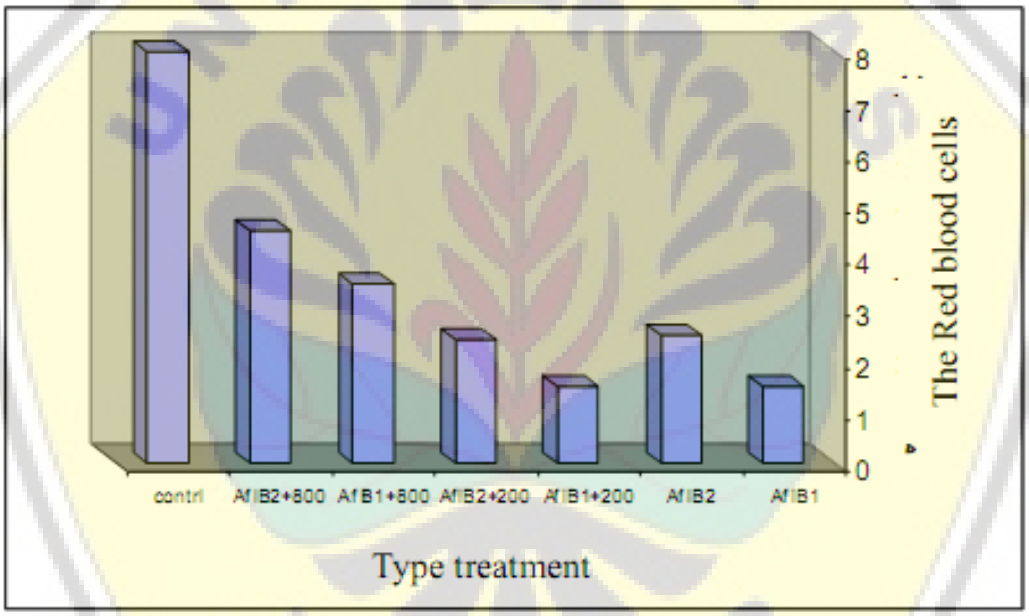

Figure (3): Red blood cells in animals treated with aflatoxin and Black seed oil with different concentrations

The fungal toxins sometimes act as competitive inhibitors of enzymes responsible for the bio-synthesis of (RBC). The ability of the seed oil to play an important role in increasing the rate of hemoglobin and increase the number of (RBC) due to its effect in the activation of bone marrow and spleen responsible for the manufacture of (RBC) [8].

In a study conducted by Mohsen etal (2009), the toxic effects of *Aspergillusparasiticus* and *Bipolarismicropus* in white rats showed a reduction in the weight of animals treated with fungi, where (10.2, 7.2) % respectively The results indicated that the preparation of white blood corpuscles was increased in the blood of animals treated by *A.parasitcus*, which amounted to (6600) cells/ml, while reached (10500) cells/ml in the blood of animals treated with the *B.micropus* and at the same time did not change values ESR in all transactions in addition to the high Hb values was (15-18) % for animals treated with *A.parasiticus* and *B.micropus* compared to the control treatment of (13) %. either the level of P.C.V has risen to (45, 52) % on the respectively.

Hb Concentration Rate: Figure (4) refer that

AFB_1, AFB_2 had a negative effect on the concentration of hemoglobin as the rate was reduced to (3, 5) g/100 ml respectively compared to the control treatment of (15 g/100 ml) on the other hand, a positive effect on a significant increase in the concentration of hemoglobin concentration in animal blood treated with (AFB_1+ 800) and (AFB_2 + 800) mg\ kg respectively to (11.9) g/100 ml compared to control treatment.

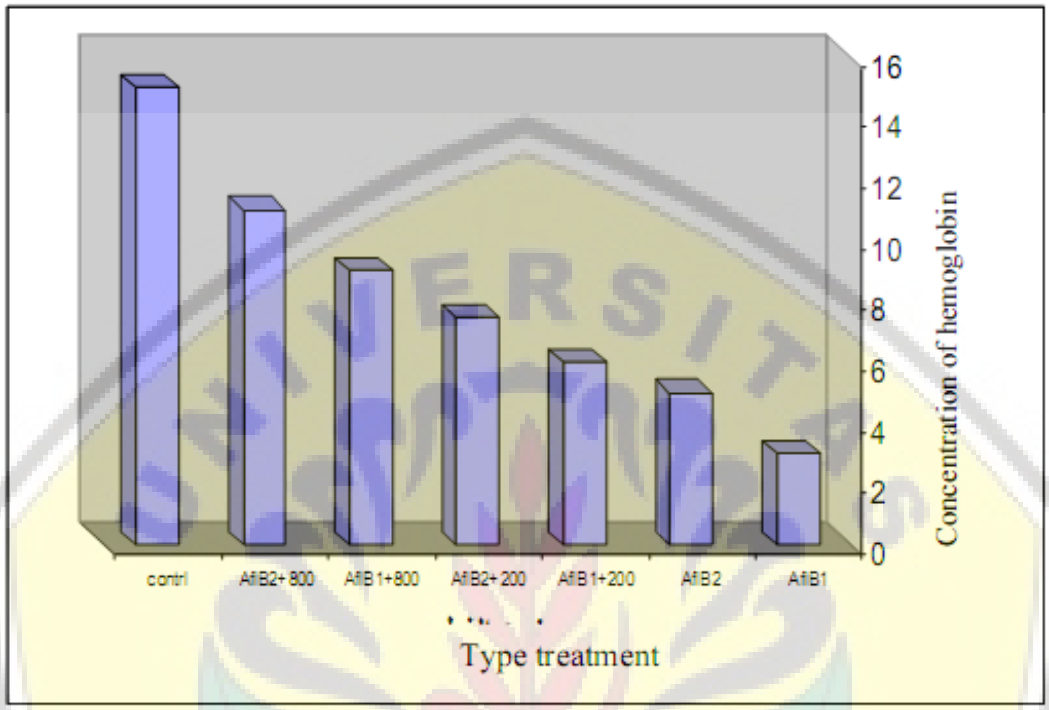

Figure (4) Concentration of hemoglobin in animals treated with aflatoxin and Black seed oil with different concentrations

The high rate of hemoglobin in the use of black seed oil with aflatoxin is due to lowering the level of hemostatin in the blood. In addition, low levels of hemoglobin in animals treated with aflatoxins (B_1, B_2) cause increased production of immune response factors, including cytokines in in animals that gave toxins, which have increased oxidation in the cell, increasing the free radicals that attack red blood cells, Hemoglobin deficiency or aflatoxin has a strong correlation with blood proteins responsible for the synthesis of red blood cells, which results in a small amount of it. It also affects the blood balance [9-13].

On the other hand, in an experiment with the use of the grain of the pond led to an increase in the concentration of hemoglobin in laboratory animals and increase the immunity of the body through lymphocytes and protein and kidneys and globules to contain the grain of the pond on the most important elements of iron, which enters the construction of hemoglobin and copper[14-19]. The reason attributed to raise the proportion of hemoglobin when used The oil has the most effective substances Nigellone, Nigelline, which has the medical effect in addition to the matter of phosphorus and carotene (vitamin A generator) [20-25].

Conclusion

The results showed that Black seed oil had a significant effect on the physiological parameters of blood. The rate of white blood cells (WBC) increased to (15×10^3 and 21×10^3) cells/mm^3 when treated with Aflatoxin B_1 (AFB_1) and Aflatoxin B_2 (AFB_2) compared to control treatment. The results showed that the Black seed had decreased the rate of white blood cells when used with aflatoxin (AFB_1+ 800) and (AFB_2 + 800)mg/ kg oil to (11.5×10^3 and 7.5×10^3 cell/mm^3 respectively

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Sciences/University of Babylon/Iraq and all experiments were carried out in accordance with approved guidelines.

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Measuring the Therapeutic Calendar of the Elbow Joint According to the Rate of Change of Rehabilitation Exercises

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Abstract

The importance of physical fitness by the safety of the affected parts is of great importance, it works to restore the joint function appropriately if the diagnosis is appropriate according to the nature, type and severity of the injury in addition to the level, the goal of the research is the calendar through the exercises articulation elbow attachment, By (10) injured players, and that the type of rehabilitation exercise indirectly helps to restore work as a simple comfort without complicating the work of the muscle part of the injured, and by achieving the goals and obtain the positive results, the researchers have to pay attention to the side application Exercises that match the nature of the level of injury in order to restore the work of the injured part gradually.

Keywords: *Measurement, therapeutic calendar, elbow joint injury.*

Introduction

The great attention given by nations and peoples to the subject of human health and the establishment of special standards for the human body that the health level of society is a measure of the progress of each nation, and the most prominent[1] science examined in this area is the science of therapeutic sport through its various therapeutic means to treat injuries and Rehabilitation of injuries resulting from some excessive use or friction and bruises and others[2], where the strength is one of the most important manifestations of the individual health, and has long been successful scientific research to provide several studies to find the optimal method and the best both to retain or return the body to its natural composition. Physical fitness contributes to the development of the individual in several different aspects, including physical, which is reflected positively on the health side through the direct impact in the functional organs[2], as many studies and research that there is a close link between physical fitness and public health, The health and safety of the body's organs and their adequacy in the performance of their functions to the fullest. The importance of fitness for the public health of the individual is confirmed by many studies conducted in different parts of the world. The rate of infection occurs in those who work in occupations and work requiring movement and activity less than people who work in offices and for long periods without movement and this activity represents our physical aspect is an important element to maintain and maintain the integrity[3] of the devices by maintaining a certain level of fitness, and the other side Physical exertion may have other positive outcomes by utilizing energy to stimulate the organs by moving the organs in order to perform all sports activities, as well as other vital functions such as cellular building process, growth process, and tissue reconstruction in the body[4]. The research problem came through the follow-up of the field researchers and for several years his participation in several courses for sports injuries and field follow-up to the level of injuries that occur during the matches and the acceleration and through his meetings with many of the workers in this field in the sports clubs, noted the lack of scientific research that dealt with this type of injuries[5] As well as lack of interest in the diversification of exercises and method applied after the diagnosis of injury in the annex Tennis, as well as most handball players do not give enough physical exercise in both preparation stages or before the start of the game, which is Which is one of the most important elements to avoid sports injury and also lack of interest by the trainers to give a variety of ways to achieve the dimensions of mobility greater than required by the joint during the deliveries and delivery as well as scoring in various aspects of handball game.

Methodology

Research Methodology: The way in which a human finds a logical scientific method consistent with reality to realize the truth of the scientific facts, which is the way to acquire the real knowledge ... The curriculum is one of these method that regulate the side or the intellectual steps taken by the researchers To solve a certain problem.[1] The research in all scientific fields resort to the selection of a curriculum that is appropriate to the problem The nature of the problem requires a specific approach to reach the truth, it is the primary tool to collect information and impose hypotheses and set goals to solve the problem and access to it. Therefore, the descriptive approach is used in the survey method. This approach is considered an appropriate method for studying social phenomena[5]. It presents data on the reality of these phenomena and the relations between their causes and their results.

The research community and its design: Among the procedures that the researchers are interested in is the selection of the community and the sample that is being tested. The research community is identified as the tennis players in the specialized handball schools in the governorates of Iraq (10) who are injured for the sports season (2017-2018) (100%) of the research community. The researchers conducted a homogeneity of the research sample in order to determine their distribution under the Kaus curve as shown in Tables (1) and (2).

Table (1) shows The homogeneity of the sample according to normal distribution

Variables	Measuring Unit	Statistical		Median	Skewness
		Mean	Standard Deviation		
Titration of the ball between the characters (15) time	Time	13.14	1.56	12.58	0.068
Accuracy correction	Degree	7.20	1.39	7.500	-1.30
Proper handling (30) time	Degree	13.10	4.90	12.50	0.280
Throw the ball to the farthest distance	Degree	10.84	1.76	10.30	0.767

Tests Used:

Test of plutonium ball spherical distance (15) meters[4]:

- Name of test: plump ball zigzag (15) meters.
- The aim of the test: to measure the level of skill Albatba.
- The tools needed: 5 high profile, stopwatch, handball.
- Method of performance: Five characters are shown on the ground in a straight line, the first is from the starting line (3) meters and the distance between the characters is 3 m.
- The player stands behind the starting line when the signal starts to flatten the ball with running in the form of winding between the flags back and forth until the finish line.

Registration: Calculates the recorded time back and forth from the start to the student's graduation

Test (handling from head level to flat wall (30 ths) from distance (3 m).

Purpose of the test: Measuring the handling skill.

- The tools: flat wall, handball number (3), measuring tape, stopwatch, adhesive tape.
- Performance and calendar specifications: The player stands in front of a line drawn on the ground about 3 m away from the wall and with the word (start) the player handles the ball from the level of the head to the wall and received it and the most number of times during (30 seconds). Calculate the correct number of times the ball is handled and delivered to the wall.

Test accuracy of correction on overlapping rectangles.

Test the accuracy of the drawing on overlapping rectangles.

- Purpose of the test: Measurement accuracy.
- Tools: Five tennis balls, wall in front of paved ground. Draws on the wall three overlapping rectangles whose dimensions are the bottom border of the large rectangle rising from the ground by 180 cm, drawing a line on the ground that is about 5 meters from the wall.
- Performance specifications: The student stands behind the line, and then straighten the five balls (consecutive) on the rectangles trying to hit the rectangle small student the right to use any of the hands in the correction.
- Registration Method:

1. If the ball hit the rectangle (inside the rectangle or on the lines specified for him) is calculated for the student (3) degrees.
2. If the ball hit the middle rectangle (inside the rectangle or on the lines specified for him) is calculated for the student (2) degrees.
3. If the ball fit the large rectangle (inside the rectangle or on the lines specified for him) is calculated to the student one degree.
4. If the ball came out of the three rectangles calculated for the student zero.

Test Ball Throwing

Purpose of the test: Measure the explosive force of the arms of the arms and trunk.

- Tools: medical ball weighing (3 kg), measuring tape.
- Performance specifications: The laboratory stands behind the starting line, holding the medical ball trying to throw it to the farthest point
- Registration: The distance is calculated to the farthest point recorded by the laboratory.

Main Experience: The researchers prepared a curriculum for the duration of this curriculum is (6 weeks) by three units per week for the duration of the unit from 10-1,50 minutes depending on the nature of the program which is a physical exercise intended to restore the work of the injured joints gradually according to the intensity used and the program began after the stage The appropriate diagnosis through the resonance of the magnet with the appropriate rest period through the opinion of the specialist doctor and these exercises are performed without the use of any devices or any tools and applied to the first group of (10) injured players. These exercises were used for the purpose of achieving the desired level of physical, where the start of the use of exercises in a streamlined and gradual from easy to difficult as required by the severity of the program and began to work hard (10%), according to the opinion of the doctor as the injury type The second was known as the intermediate injury, and the gradient in the intensity required according to the gradient increase in an orderly manner, taking into account the nature of rest that must be proportional to the nature of intensity used during the rehabilitation program, and the size of the frequencies on the first day (10) This is the first period after the positive rest. These exercises are a sense of the work of the joint after the rest period. These exercises during this day are a group of movements performed by the patient to include movements of the joint and muscles surrounding the work. Joint with the element of the exercises and tandem with the movements of the rotation that occur to us some contractions in the muscles surrounding the injured joint as well as the exercises and tandem that allows the appropriate range of motor during this intensity used and all these exercises result from a set of physical characteristics of the goal Is the sense of the detailed work of the injured facility, and then begin the process of increasing the intensity required with the necessary repetitions and in a proportional fit with sufficient rest appropriate to the intensity used until we reach the injured player at the end of the rehabilitation period to a severity of up to (90%).

Statistical: The researcher used the SPSS ver20 program to process the data. The following treatments were extracted from the program: * - arithmetic mean * - standard deviation * - torsion factor (t) for interrelated samples.

Results and Discusion

Both tables show that the amount of differences in the group of exercises that were applied to the members of the research sample as well as the statistical ratios that clearly show the amounts of the significance of the change due to the application of rehabilitation exercises, which have a positive effect in improving the level

of injury which result from a number of reasons, The rehabilitation programs carried out by the members of the research sample showed a clear percentage of differences between the two tests, which helped to reconstruct and adapt the muscles working in the elbow joint. It can give relative reactions in the development of these muscles of the affected arm, Repeat and strengthen. The training exercises in sports injury are of great scientific importance in terms of the use of any type of injury because the actual practice of exercises mainly stimulate blood circulation and that such activity in the circulatory system significantly helps the flow of lymphatic fluid, which has the most role in the structure of the joint, And the amount of movement produced by these exercises improve the movement of muscles, which leads to an improvement in nutrition within the tissues, which is one of the positive indicators of therapeutic exercises, and this in turn leads to increase the functional efficiency of the affected part through the amount of improvement of nutrition d Remove the tissue as an appropriate reaction to the exercises used.Exercise also plays an important role in acquiring the appropriate motor range for the affected part and depending on the type of exercise. "Any practice of sports activities has benefits, but with the presence of injury because they increase the flow of appropriate amounts of substances, components and elements in the healthy, For any of the infected parts [5].It is noted scientifically that the use of rehabilitation exercises for any infected part that comes after the rest of the time allocated by the therapist or the specialist and the exercise and exercise according to the type of injury and severity that suits the type and severity of the injury is a positive rest for the work of the injured part, and the period of the part of the injured part of the injury until the disappearance Pain and swelling are considered a passive comfort which follows the type and severity of injury because it is a period free of any action and may be limited in motion due to injury and comes the rehabilitation stage that contributes to the return of this part to work gradually without stress. In the injured part which is a positive rest as a result of the practices of exercises may be simple or recreational and then vary according to the intensity of the injured part. All the rehabilitation exercises that have been applied in the field have a high correlation with the muscular ability, which was highlighted during the special rehabilitation program used by the researchers on the sample, and the development in the results of these tests indicated the effect of these exercises in the development of muscle groups working in arm movements[5] The two researchers adopted a range of the kinetic range, the tidal and flexural movements of the joint and the muscles associated with the joint, which have a relationship between the length of the force arm and the strength of the muscle, which represent an important scientific fact determined by Which determines the strength resulting from muscle contraction whether it is positive against gravity or negative with the gravity of the work of the muscles working on this joint if it is a driving force or a resistance force. This is what the researchers adopted in his rehabilitation program, which achieved the purpose of using these exercises[5]. The results were significant for the members of the research sample in this field. Most exercises have different characteristics and have the effect in many fields but most often they are related to motor efficiency. Mechanical, chemical and other order attainment type of development in muscular work.

Table (2) Shows the computational dynamics and standard deviations of the tribal and remote tests and the calculated degree (t) and the significance level

Variables	Measruing Unit	Before Test		After Test		Standard Error	(T)	Level Sig
		Mean	S	Mean	S			
Titration of the ball between the characters(15)time	Time	13.14	1.56	11.77	1.98	0.34	4.03	0.03
Accuracy correction	Degree	7.20	1.39	9.70	1.15	0.60	4.16	0.02
Proper handling (30) time	Degree	13.10	4.90	18.0	2.74	1.31	3.73	0.04
Throw the ball to the farthest distance	Degree	10.84	1.76	12.45	2.69	0.52	3.06	0.02
Df	9							
Sig	0.05							

Table (3) Calculations, degrees of change and the total amount of change between variables

Variables	Means		Degree of change	Total amount of change	Level Sig
	Mean 1	Mean 2			
Titration of the ball between the characters (15) time	13.14	11.77	1.37	10.42	0.04
Accuracy correction	7.20	9.70	2.50	34.72	0.02
Proper handling (30) time	13.1	18.0	4.90	37.40	0.02
Throw the ball to the farthest distance	10.84	12.45	1.61	14.85	0.04
Df	9				
Sig	0.05				

Conclusion

In the light of the results obtained by the researchers through this applied study we can conclude the following: Therapeutic exercises have an effect in the rehabilitation stage as a result of giving the affected organ the increased kinetic action of the muscles involved in the performance. All the exercises that have been implemented and through the positive results of the level of improvement evidence that the injured member began to receive nerve cells correctly. In the light of the results also achieved the period of time to give such exercises that helped give the joint flexibility that helped achieve the goal of performance during the rehabilitation period.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Physical Education and Sports Sciences/Dhi Qar University, Iraq and all experiments were carried out in accordance with approved guidelines.

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Effectiveness of an Instructional Program on Promoting Lifestyle of Patients with Diabetes Mellitus Type 2 at Diabetes and Endocrinology Center in Missan City

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Abstract

Diabetes in adults is a global health problem. Diabetes mellitus is a disorder of the endocrine system characterized by abnormal fluctuations in blood glucose levels, usually related to a defect in insulin production and glucose metabolism. Aim: To assess effectiveness of the instructional program on promoting lifestyle of patient with diabetes mellitus type 2. A quasi-experimental design (two-group pretest-posttest) was used to conduct this study. The present study was carried out at Diabetes and Endocrinology Center in Missan Governorate/Iraq for the period 8th of October 2018 to 28th of Abril 2019. A non-probability (purposive) sample of (100) patients was selected. a 28 item self-rated questionnaire was constructed for the purpose of the study. Validity and reliability of the instrument were determined through a pilot study. Data were analyzed through the use of Statistical Package for Social Sciences (SPSS) version. Descriptive and inferential statistical measures were employed. The study indicated that the life style levels of participants were inadequate for both groups in the pre-test, but the study group life style levels scores have increased after introducing them to the instructional program. Thus, there were significant differences between both groups.

Keywords: *Promoting Lifestyle, Patients, diabetes Mellitus type 2, Endocrinology.*

Introduction

The proportion of people with type 2 diabetes is on the rise and is a major cause of death world-wide. Type 2 diabetes is a major risk factor for vascular disease with 65% of all diabetic deaths being due to cardiovascular disease. Lifestyle characteristics, such as physical activity, diet, and stress are important factors that influence development and prognosis of type 2 diabetes. Changes in diet and increase in physical activity (walking, etc.) and exercise (running, cycling, etc.) are key components of the management of type 2 diabetes, and guidelines recommend changes in these lifestyle characteristics for both prevention and management of the disease.(1)The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014. The global prevalence of diabetes among adults over 18 years of age has risen from 4.7% in 1980 to 8.5% in 2014. Diabetes prevalence has been rising more rapidly in middle- and low-income countries. (2)Diabetes is a major cause of blindness, kidney failure, heart attacks, stroke and lower limb amputation. In 2015, an estimated 1.6 million deaths were directly caused by diabetes. Another 2.2 million deaths were attributable to high blood glucose in 2012. (3)

Methodology

A quasi-experimental design was carried out at Diabetes and Endocrinology Center in Missan Governorate from 8th of October 2018 to 22 of May 2019. The sample involved patients at Diabetes and Endocrinology Center which is divided into two groups, one is study group (50) patients and one is control group (50) patients. A non-probability (purposive) sample of (100) patients was selected. The researcher depends on Type 2 Diabetes and Health Promotion Scale (T2DHPS) which is a 28-item self-rated questionnaire that assesses

six domains related to lifestyle. Reliability was determined through collecting the data from 10 patients and performing test and re-test, the reliability coefficient results are significant for knowledge and validity of questionnaire was determined through the experts.

Results and Discusion

Table (1) Distribution of the Diabetes Mellitus Patients According to their Demographic Characteristics

Variable		Study (n = 50)		Control (n = 50)	
		Freq.	%	Freq.	%
Age	30-39	3	6.0	10	20.0
	40-49	10	20.0	12	24.0
	50-59	25	50.0	16	32.0
	60-69	10	20.0	7	14.0
	≥ 70	2	4.0	5	10.0
Mean (SD)		54.6 ±9.3		52.46 ±12.6	
Gender	Male	26	52.0	21	42.0
	Female	24	48.0	29	58.0
Marital Status	Married	46	92.0	37	74.0
	Single	1	2.0	2	4.0
	Divorced	0	0.0	5	10.0
	Widower	3	6.0	6	12.0
Level of education	Read and write	8	16.0	13	26.0
	Primary school	29	58.0	18	36.0
	Intermediate school	1	2.0	7	14.0
	Secondary school	6	12.0	7	14.0
	College and above	6	12.0	5	10.0
Occupation	Not working	11	22.0	4	8.0
	Governmental employee	11	22.0	8	16.0
	Freelancer	3	6.0	6	12.0
	Housewife	22	44.0	29	58.0
	Retired	3	6.0	3	6.0

Table (2) Distribution of Pre and Post Test for the study Groups.

	Study Group						
	Pre		Post		t-test	df	Sig. (2-tailed)
	Mean	Std	Mean	Std			
Physical Activity	7.9200	.92229	31.4200	9.39190	-17.913-	49	.000
Risk Reduction	9.3600	1.42514	32.5400	2.05247	58.686	49	.000
Stress Management abilities	7.5000	1.34392	23.3800	1.72485	-59.261	. 49	000
Enjoying Life	4.9400	.95640	14.2600	.77749	-59.124-	49	.000
Health Responsibility	3.5200	.57994	14.8000	.85714	-77.367	. 49	000
Healthy Diet	3.8600	.98995	12.2200		1.43271	49	.000

There is a statistically significant difference in Physical Activity, Risk Reduction, Stress Management abilities, Enjoying Life, Health Responsibility, Healthy Diet, for participants in the study group between the pretest and posttest time (p-value = .001).

Table (3) Distribution of diabetes mellitus lifestyle Related to physical activity and risk reduction in Pre and Post follow up for the study and the Control Groups.

Life Style	Items	Periods	Study Group: n= 50			Control Group: n= 50		
			Mean	S.D.	Ass.	Mean	S.D.	Ass.
Physical Activity	Exercise, even if I'm busy	Pre	1.2400	.43142	L	1.0000	.00000	L
		Post	5.3200	7.22366	H	1.0000	.00000	L
	Exercise, even if my weight not reduced	Pre	1.0200	.14142	L	1.0000	.00000	L
		Post	4.1400	.85738	H	1.0000	.00000	L
	Exercise, more than 150 minutes weekly	Pre	1.0800	.27405	L	1.0000	.00000	L
		Post	4.3800	.75295	H	1.0000	.00000	L
	Exercise, even if I have to do much work	Pre	1.0800	.27405	L	1.0000	.00000	L
		Post	4.1600	.84177	H	1.0000	.00000	L
	Indoor exercise on bad weather	Pre	1.0800	.27405	L	1.0200	.14142	L
		Post	4.4200	.83520	H	1.0200	.14142	L
	Eating something before exercise	Pre	1.3800	.49031	L	1.0600	.23990	L
		Post	4.4800	.86284	H	1.0400	.19795	L
	Exercise with family or friend	Pre	1.0400	.19795	L	1.0200	.14142	L
		Post	4.5200	.95276	H	1.0000	.00000	L
Risk Reduction	Checking foot for wounds	Pre	1.1600	.37033	L	1.0000	.00000	L
		Post	4.9200	.56569	H	1.0000	.00000	L
	Reading to get diabetes information	Pre	1.3600	.59796	L	2.0200	.37742	L
		Post	4.5000	.73540	H	2.0400	.34759	L
	Brushing teeth after meals	Pre	1.9600	.72731	L	1.0200	.14142	L
		Post	4.8200	.43753	H	1.0200	.14142	L
	Checking little pieces on feet	Pre	1.0200	.14142	L	1.0400	.28284	L
		Post	4.7800	.46467	H	1.0400	.28284	L
	Reading food labels when shopping	Pre	1.0400	.19795	L	1.0000	.00000	L
		Post	3.9600	.53299	H	1.0000	.00000	L
	Using slippers or shoes	Pre	1.7800	.58169	L	1.0600	.31364	L
		Post	4.8400	.42185	H	1.0600	.31364	L
	Doing foot and ankle exercise	Pre	1.0000	.00000	L	1.0000	.00000	L
		Post	4.7200	.57286	H	1.0000	.00000	L

n= number of samples, S.D = Standard Deviation, Ass. = assessment L= Low level of life style (1-2.5), M= moderate level of life style (2.6-3.5), G= high level of life style (3.6-5).

Table (4-3) Demonstrated the items of life style of diabetes mellitus patients related physical activity and risk reduction the shows all patients life style levels were low at pre and post-test for the control group while low life style at pretest and good at posttest for study group

Table (4) Distribution of diabetes mellitus lifestyle Related Stress management and Enjoyment of life in Pre and Post follow up for the study and the Control Groups.

Life Style	Items	Periods	Study Group: n= 50			Control Group: n= 50		
			Mean	S.D.	Ass.	Mean	S.D.	Ass.
Stress Management	Trying to relax when bad mood	Pre	1.1000	.30305	L	1.0200	.14142	L
		Post	4.3400	.62629	H	1.0200	.14142	L
	Trying to know reasons of pressure	Pre	1.0200	.14142	L	1.0000	.00000	L
		Post	4.6600	.74533	H	1.0000	.00000	L
	Continuing to work after diagnosis	Pre	1.8400	.84177	L	2.3800	1.19335	L
		Post	4.8800	.52060	H	2.3600	1.20814	L
	Maintaining activities with friends	Pre	1.7000	.46291	L	2.0000	.00000	L
		Post	4.8800	.32826	H	1.9400	.23990	L
	Arranging the daily life well	Pre	1.8400	.46773	L	2.0000	.00000	L
		Post	4.6200	.49031	H	1.9400	.23990	L
Enjoyment of Life	Believing in purposefulness of the life	Pre	1.6000	.60609	L	1.9800	.14142	L
		Post	4.8800	.32826	H	1.9400	.27405	L
	Satisfaction from my speaking	Pre	1.7200	.49652	L	1.2600	.63278	L
		Post	4.5600	.50143	H	1.2600	.63278	L
	Attention to health after diagnosis	Pre	1.6200	.49031	L	1.0000	.00000	L
		Post	4.8200	.38809	H	1.0000	.00000	L

Table (4) Demonstrated the items of life style of diabetes mellitus patients related Stress management and Enjoyment of life that shows all patients life style levels were low at pre and post-test for the control group while low life style at pretest and high at posttest for study group.

Table (5) Distribution of diabetes mellitus lifestyle Related to Health responsibility and healthy Diet in Pre and Post follow up for the study and the Control Groups.

Life style	Items	Periods	Study Group: n= 50			Control Group: n= 50		
			Mean	S.D.	Ass.	Mean	S.D.	Ass.
Health Responsibility	Periodic eye examinations	Pre	1.0400	.19795	L	1.0000	.00000	L
		Post	4.9000	.41650	H	1.0200	.14142	L
	Periodic medical visits	Pre	1.3800	.49031	L	1.6600	.51942	L
		Post	4.9800	.14142	H	1.6800	.51270	L
	Periodic measuring blood lipids	Pre	1.1000	.36422	L	1.0000	.00000	L
		Post	4.9200	.34047	H	1.0200	.14142	L
Healthy Diet	Controlling diet in special days	Pre	1.2800	.45356	L	1.0600	.23990	L
		Post	4.4000	.60609	H	1.1200	.32826	L
	Avoiding to eat high fat foods	Pre	1.2400	.43142	L	1.0000	.00000	L
		Post	3.8400	.58414	H	1.0200	.14142	L
	Having a balanced daily diet	Pre	1.3400	.47852	L	1.0000	.00000	L
		Post	3.9800	.71400	H	1.0800	.27405	L

n= number of samples, S.D = Standard Deviation, Ass. = assessment L= Low level of life style (1-2.5), M= moderate level of life style (2.6-3.5), G= high level of life style (3.6-5).

Table (4-5) Demonstrated the items of life style of diabetes mellitus patients related to Health responsibility and healthy Diet that shows all patients life style levels were low at pre and post-test for the control group while low life style at pretest and high at posttest for study group. Analysis of diabetes mellitus patients' demographic characteristics revealed that the half (50%) of the study group and (32%) of the control group were (50-59) years old. This study congruent with(Al-Ebrahimy, 2003; Upadhyay, 2008) [4].Regarding gender, the study finding revealed that more than half (52%) in the study group were males while the control group, female patients were recorded slightly increased than male and they are accounted 29 (58%), and 21(42%) respectively. Viera et al 2006 mention that the male/ female ratio, is now equivalent or minimally favors females and is due in great part to the healthier lifestyle followed by women. One explanation for this difference in sex distribution of the disease may be that females use more health services and pay more attention to their health. [5]Regarding educational status, the study finding displayed that (58%) majority of study and (36%) of control were low educated levels (Primary School). This study was supported by Saffari et al,2015 who reported that the majority of patients low educated levels. [6] Concerning to occupational status of the patients, a high percentage (44%) of study and (58%) of the control, were House wife. This study was supported by Saffari et al, 2015 who reported that House wife present the majority of patients. [6]Regarding Marital status, the study finding most patients were married, and they are accounted 46(92%) and 37(74%) in study and control group. This finding was supported by Awodele,2015. Data analysis of present study have revealed that most participants reported a level of life style were Low at pre and posttest in all items of scale (all domains) for control group, while Low level of life style at pre and high level of life style at post the implementation for the study group. The implementation of instructional program has a positive effect on patients regarding (physical activity, risk reduction, stress management, enjoyment of life, health responsibility and healthy diet) tables (4-3, 4-4, 4-5). The data analysis of six domains of Health promoting lifestyle domains of DM patients shows that the control group had revealed that there are no significant differences between pre and posttests of Health promoting lifestyle domains (physical activity, risk reduction, stress management, enjoyment of life, and health responsibility domains) except (healthy diet domain) (p-value = .019) table (6). Sone et al 2010; Schellenberg 2013 both these studies found a lack of involvement by patientsin activities, and total physical activity after intervention was significantly higher in the study group than in the control group. [9]There is a statistically significant difference in Risk Reduction for participants in the instructional program this study was supported by (Perreault et al,2012). [10]Krishna, (2018); Zhange et al 2009 found that psychological distress is an important concern of many type 2 diabetes patients and coping with that distress is their main priority to improve stress management levels [11,12]This finding indicates the positive influence of the instructional program in improvement patient's health responsibility. this study is supported by Mary (2008): Chang, et al (2015).[1] the statistically significant difference in healthy diet Responsibility for patients (pre – post) periods through implementation of instructional program shows the positive influence of the instructional program in improvement patients healthy diet responsibility. This study is supported by Evert et al, (2014).[11]the difference in Physical Activity for participants in the study group between the pretest and posttest time (p-value = .001). supported by Kirk 2004; Balducci 2017; Johansen2017 where intervention included 5 to 6 weekly aerobic training sessions (duration 30-60 minutes). [12-15]

Conclusion

The instructional program was effective in promoting patient's lifestyle related to T2DM (for all domains).

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Baghdad, College of Nursing, Iraq and all experiments were carried out in accordance with approved guidelines.

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Outcomes of Laparoscopic Appendicectomyin Al-Diwanyiah Teaching Hospital

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Abstract

Aim of the Study: To evaluate the clinical results of laparoscopic appendectomy for the treatment of chronic or recurrent appendicitis and interval appendicectomy. A prospective analysis was conductedat Al-Diwanyiah Teaching Hospital on 100 cases of laparoscopic appendicectomy over aperiod between January2013 to January 2016. The diagnosis of appendicitis was established with history, physical examination, laboratory tests and ultrasound examination. The patients were analyzed for age, sex, conversion rate,operation time,postoperative complications,length of hospital stay, time to return to work and cost effectiveness. The postoperative complications including wound infection and ileus were generally low in our study with short hospital stay and early return to work and normal activity. Complication rate is higher after intervallaparoscopic appendicectomy than laparoscopic appendicectomy for chronic appendicitis as well as operative time, conversion rate and hospital stay. Laparoscopic appendicectomy is a safe and effective procedure in the management of chronic or recurrent appendicitis and as interval appendicectomy after non-operative management of appendicular mass. There is an indication that laparoscopy is becoming an excellent method for management of recurrent or chronic appendicitis

Keywords: *Recurrent appendicitis, chronic appendicitis, interval appendicectomy, laparoscopic appendicectomy.*

Introduction

Laparoscopic appendectomyhas become a common procedure worldwide in recent years. Numerous studies tried to define the role of laparoscopic appendectomy in the treatment of chronic appendicitis.[1] Interval appendectomy isdefined as performing an appendectomy following initial successful nonoperative management of appendicularmass. Most patients underwent interval appendectomy 2 to 4 months after their acute presentation.[2,3] The major argument against interval appendectomyis that many patients treated conservatively never develop manifestations of appendicitis, and those who do generally can betreated without additional morbidity.[4,5] The major argument forinterval appendectomy is to prevent future attacks of appendicitis and the need to establish a definite diagnosis and to rule out an underlying malignancy.[3,6]. The precise etiology is unknown. Recurrent appendicitis is thought to occur from transient obstruction of the appendix or secondary to excessive mucus production, while chronic appendicitis is secondary to partial but persistent obstruction of the appendiceal lumen. In both cases, luminal secretions accumulate until they aresubsequently released.[7,8]

Methodology

A prospective clinical analysis on 100 cases of laparoscopic appendicectomy over aperiod between January 2013 to January2016 was conducted at Al-Diwanyiah Teaching Hospital. The diagnosis of appendicitis was established with history, physical examination, laboratory tests and ultrasound examination. Operations were performed by many surgeons who are licensed to practice laparoscopic surgery. The inclusion criteria for our study on laparoscopicappendectomy were:

*chronic recurrent symptoms that could be attributed to appendicitis.

*interval appendicitis after 2-4 months of non operative management of appendicular mass.

*age 15 years or more.

All patients in whomwe performed a laparoscopic appendectomy or an appendectomy after conversion to anopen procedure were included in our analysis (100 pts). The patients were categorized for age, sex, conversion rate, operation time, postoperative complications,length of hospital stay, time to return to work and cost effectiveness.

Surgical team and surgical technique: The surgical operations were performed by a surgical team consisting of an experienced surgeon, a surgical trainee and a scrub nurse. Laparoscopic appendicectomywas performed under general anesthesia and all patients received prophylactic antibiotics (ceftriaxone 1 gram IV) at time of induction of anesthesia followed by 2 subsequent doses at 8 and 16 hours post op.Laparoscopic appendicectomy was performed with 3 ports; a 10-mm umbilical, a 10-mm suprapubic, and a 5-mm port in the left iliac fossa. Intraabdominal pressure of approximately 12 mm-Hg was provided by CO_2 insufflation. The mesoappendix was divided using harmonic ace. The base of the appendix was ligated twice with 2/0 vicrylendo-loop. The appendix was cut out with scissors. The appendix was removed from the abdominal cavity with a plastic bag or a piece of glove through the 10-mm port site. Peritoneal suction-irrigation with normal saline solution was performed in some patients.

Results and Discusion

A total of 100 patients examined. There were 81 (81%) appendicectomies for chronic or recurrent appendicitis (Group I) and 19 (19%) interval appendicectomies Group (II). 58 male and 42 female patients included in the study.

M:F ratio was 1.38 : 1**(table 1)** Mean age for all 100 cases was 20.1 years, range from 15 to 30 **(table 2).** The mean operative time was 44 minutes while it was 41 min for group I and 56 min for group II. The operation times were shown in **(table 3)**. Post op. complications occurred in 9 cases:3 wound infections and 6 cases developed paralytic ileus. Postoperative complications were shown in **(table 4)**.Conversion rate in our study was 5% as shown in **(table 5).** 86 patients (86%) were discharged from the hospital in the first postoperative day, 8 patients (8%) in the second, and 6 patients (6%) in the third day. Mean hospital stay was 29 hours while in group I it was 27 h and in group II was 36 h. **(table 6)** Patients returned to work or full activity within 5-7 day (mean 5.77 days).

Table 1: Sex distribution of patients

Gender	Group I	Group II	Total
Male	44	14	58 (58%)
Female	37	5	42 (42%)
Total	81	19	100(100%)

Table 2: Demographic characteristics of patients

Age	Group I	Group II	Total
15 – 20 years	33	6	39
21 -25 years	24	9	33
26 -30 years	24	4	28
Mean age	19.1 years	24.4 years	20.1 years

Table 3: Operative times

Operative Times	Group I (% from 81 cases)	Group II (% from 19 cases)	Total No. (%)	p-value
<30 min	44 (54%)	6 (42%)	50 (50%)	0.025
30-60 min	25 (31%)	8 (31.5%)	33 (33%)	
60-90 min	12 (15%)	5 (26.5%)	17(17%)	
Mean time	41 min	56 min	44 min	

Table 4: Post operative complications

Parameter	Total No.	Group I (% from 81 cases)	Group II (% from 19 cases)	p-value l
Wound infection	3 (3%)	1(1.23%)	2(10.5%)	0.1
Ileus	6 (6%)	3(3.7%)	3(15.7%)	0.05

Table 5: Conversion rate

	Group I	Group II	Total	P value
All cases	81	19	100	0.05
Converted case	2	3	5	
%	2.5%	15.7%	5%	

Table 6: Hospital stay

Discharging Day	Group I	Group II	All	P value
Day 1	73	13	86	0.05
Day 2	5	3	8	
Day3	3	3	6	
Mean(hours)	27 h	36 h	29 h	

The first laparoscopic appendectomy was performed by Semm in 1983[9]. Laparoscopic appendicectomy is being done at a time when laparoscopic cholecystectomy has shown definite benefits over open technique. A number of meta-analyses have been performed evaluatingthe cumulative outcomes of multiple prospective studies and randomized controlled trials around laparoscopicappendicectomy. Laparoscopic appendectomy is associated with fewer incision al surgical site infections compared to open appendectomy. There is less pain, shorter length of stay, and quicker return to normal activity and better cosmetic results.[10,11] Laparoscopicappendectomy is associated with increased operative duration and increased operating rooms costs; however, overall costs are likely lower when compared to open appendectomy. Patientstend to have improved satisfaction scores with laparoscopic, appendectomy when compared to open appendicectomy.[12,13] Laparoscopic technique also provides a clear view of the whole abdominal cavity and pelvic organs in female patients for example. A study reported a fewer intra-abdominal adhesions after laparoscopic appendicectomy compared to open appendicectomy by reducing tissue trauma which in turn reduces circulating inflammatory mediators[14]. Relative risk factors of laparoscopic surgery includes:

Bleeding-visceral injury-Incomplete appendicectomy

These are significantly reduced with surgeon`s experience.[15]

There are relative contraindications to laparoscopic appendicectomy given by surgeons which include previous operations on the lower abdomen and situations where a pneumoperitoneum may has deleterious hemodynamic effects [15].

Wound Infection: The average wound infection rate for laparoscopic appendectomy is reported to be 2,8% in a meta-analysis and 2,5% in a big prospective multi-centerstudy[16,17]. While infection rate is reduced by a halfinthe most recent meta-analysis based on the study of more than 6000 cases of laparoscopic appendicectomy[1].

Wound infection rate in our study was measured and was 3 cases (3%) one case from group I and the other 2 from group II although wound infection was higher after interval appendicectomy it was statistically not significant due to small number of cases of wound infection. All three cases of wound infection treated conservatively as out patient. **Post op. paralytic ileus** occurred in 6 cases (6%) and treated conservatively as in-patient.

Paralytic ileus occurred in 3 cases in group I (3.7%) and 3 cases in group II (10.5%).

The percentage of post op. complication is much higher in group IImay be due to the small sample.

Conversion Rate: Conversion rate ranges in meta-analyses between 0% and 23%[10,11] but there are studies which report conversion rates as high as 39%.[1]

In everyday practice conversion rate typically seems to range between 10 and 20%.In our study the conversion rate was 5% and the incidence was higher in group II than in group I. (15.7% vs. 2.5%) .

Causes of conversion were mostly due to excessive adhesions,phlegmonous mass or difficulty to visualize or find the appendix. This is mainly encountered in cases of interval laparoscopic appendicectomy.

Operative Times: In considering operating time the exact identification of the timing of the start of the procedure and its conclusion vary. In general the time should be calculated from the insertion of the first trocar to the end of skin suturing,which is the time calculated in our study.[15] Generally all laparoscopic procedures are more time consuming for the following reasons:

1. Inherent nature of slow maneuver of laparoscopic techniques.
2. time taken by careful slow insufflation.
3. Routine diagnostic laparoscopy before starting procedure.

A meta-analysis of randomized controlled trial has been reported showing the mean operating time was 52 minutes[15].

In our study the mean operating time was 44 minutes with prolongation of mean time in interval appendicectomy cases 56 minutes vs. 41 minutes in chronic or recurrent appendicitis group.

Hospital Stay: In a retrospective study on 176 patients, the mean hospital stay was 37.2 h.[18] All the patients in our study were discharged from hospital between day 1 and day 3 post op. but the majority discharged on the first post op. day (86%).Patients who delayed were those who developed complications mostly ileus or those who live in rural areas. The mean hospital stay after laparoscopic appendicectomy in our study was 29 hours.

The mean hospital stay was longer in group II due to more percentage of ileus than group I (36 h vs. 27 h).

Time to return to work or normal activity: In a randomized prospective study the average time to return to work was 8 days.[19] In our study the patients returned to normal activity and work in 5-8 days. The average time was 5.77 days. Those who delayed were mostly the patients with post operative complications.

Cost Effectiveness of Laparoscopic Appendicectomy: Debate still exists about the cost comparison between laparoscopic and open surgery. Most surgeons believethat laparoscopic appendicectomy is costeffective.[12] It maybe more expensive for the hospital due to the cost of laparoscopic equipment, but it offers diagnostic accuracy, lower complications and among employed patients offer cost savings to society as a result of faster return to work.[13-18]

Conclusion

Laparoscopic appendicectomy is a safe and effective procedure in the management of chronic or recurrent appendicitis and as interval appendicectomy after non-operative management of appendicular mass. It resulted in minimal morbidity in experienced hands and it presents advantages such as short hospitalization and early return to work and cost effectiveness. For this reason disadvantages such as longer duration of surgery,higher hospital costs as well as technical limitations must be overcome. There is an indication that laparoscopy is becoming an excellent choice for management of recurrent or chronic appendicitis.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved and all experiments were carried out in accordance with approved guidelines.

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Thyroid Hormone Changes in Early Pregnancy Bleeding Versus Normal Healthy Pregnancy

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Abstract

This study was done to measure the thyroid hormones levels in patient with unexplained early pregnancy bleeding at their first half of gestation and to compare it with those of normal healthy pregnancy from the period of first of October 2017-first of July 2018. This is a case control study conducted in Basra maternity hospital which includes two groups of patients:

A: Case group: This include 40 pregnant patients with history of un explained early pregnancy bleeding taken as a case group, with gestational age of up to twenty weeks, with parity range of 05, after we took their consent to be included in the study.

B: Control group: Including 58 pregnant healthy women taken as control group they had approximately the same age and parity range those patient was selected from out patient who attend for other cause other than early pregnancy bleeding or those who brought our patient as an attendant. There was a significant decrement in the level of T4, with significant changes in the level of TSH among cases with early pregnancy bleeding compare with normal healthy pregnancy while T3 show no significant changes.

Keywords: *Thyroid Hormone, Pregnancy, Bleeding Versus Normal Healthy.*

Introduction

Thyroid disease is common in general population, and especially in young women. The incidence of thyrotoxicosis, hypothyroidism, and thyroiditis is probably approaches 1 % for each condition.(1) The impact of pregnancy on maternal thyroid physiology is substantial. There are changes in the structure and function of gland that confusing in the diagnosis of thyroid abnormalities, consequently evaluation of thyroid disorders and proper interpretation of thyroid function tests during pregnancy requires an understanding of these changes(2). Thyroid gland is the biggest gland in the neck, the normal adult thyroid gland weight about 15-25g and consists of two lobes connected by an isthmus each thyroid lobe is divided in to lobules consisting 20-40 follicles(3). Thyroid gland volume determined, ultrasonographically, increases during pregnancy, although its echo structure and echogenicity remain unchanged(4,6). Anatomically, there is moderate thyroid gland enlargement as result of glandular hyperplasia and increased vascularity Conversely, pregnancy, usually dose not cause impressive thyromegally and thus any goiter or nodule should be approached as pathological(1). The thyroid gland is responsible for synthesizing and secreting thyroid hormones, L-thyroxine (T4) and L-tri iodothyronine (T3). The concentration of circulating free thyroid hormone is closely regulated by hypothalamic-pituitary-thyroid axis. This free thyroid hormone enters the cell, where T4 is converted to T3. T3 then control the metabolism [5]. The synthesis of thyroid hormone regulated by thyroid releasing hormone (TRH) which is secreted by hypothalamus and stimulates the production of thyroid stimulating hormone (TSH) from the anterior lobe of pituitary which then stimulates the production and release of T4 and T3 from the thyroid gland [7]. The synthesis of these hormones by thyroid gland requires iodine. After releasing of T3 and T4 they exert negative feedback mechanism on TSH production. T4 is the main hormone produced by the thyroid gland while T3 is mainly produced by peripheral conversion

of T4, both T3 and T4 are largely protein bound in the plasma,mainly to thyroxin-binding globulin (TBG), only the un bound or free portion (FT3,FT4) is active [3]. Iodine is a major component of thyroid hormones with dietary requirements increasing in pregnancy due to the enhanced transplacental uptake of iodide and increased maternal renal clearance[8]. Hence pregnancy is a state of relative iodine – deficiency [9].

Spectrum of Thyroid Disease in Pregnancy: Several of thyroid disorders which tend to occur during pregnancy are autoimmune in nature, by this we mean that the body develops antibodies directed against thyroid cells, which then affect the way the thyroid gland functions. Antibodies which damage the thyroid cells may result in lymphocytic thyroiditis (inflammation of the thyroid), also known as Hashemite's disease These damaging antibodies can reduce the function of the thyroid and lead to hypothyroidism. On the other hand, our body can make antibodies against thyroid tissue which can stimulate thyroid cell function, in this case, hyperthyroidism due to over-function of thyroid (graves' disease) may be the result[(16)].Postpartum thyroiditis is recently discovered problem that span the spectrum of both hyper-and hypothyroidism this condition, which tends to occur immediately after pregnancy, may produce antibodies which damage thyroid tissue, thereby releasing thyroid hormone passively into the blood stream and producing either temporary or permanent thyroid failure Since this condition is common, occurring in 8-10% of all women after pregnancy, so postpartum thyroid testing is advisable for all women[(17)].Thyroid nodules, goiter, and other thyroid problems are also sometimes first detected in pregnancy but are less common [14].

Hyperthyroidism and Pregnancy: Hyperthyroidism occurs in two of every 1000 pregnant women. This common disease of pregnancy may go undiagnosed because the clinical presentation of thyrotoxicosis is difficult to distinguish the apparent hyper metabolic state of pregnancy particularly in the second and third trimesters as perhaps expected mild thyrotoxicosis is difficult to diagnosis during pregnancy but some helpful sign include [(18)]:-

1. Tachycardia that exceeds the increase associated with normal pregnancy.
2. An abnormally elevated sleeping pulse rate.
3. Thyromegaly.
4. Exophthalmos.
5. Failure in a non obese woman to gain weight despite normal or increased food intake.

Confirmation has been made easier by assays to determine elevated serum free thyroxine levels along with recent development of assay that reliably measure thyrotropin level less than 0.05 μu/L[(19)]. Rarely hyperthyroidism may be associated with normal serum thyroxin values but, so called T3 - toxicosis.Untreated or inadequately treated hyperthyroid women deliver Babies having higher incidence of minor fetal anomalies[(20)].

Hyperthyroidism can affect the pregnancy [(20,21)]:

1. Preterm labour.
2. Increase Peri-natal mortality.
3. Maternal Heart failure where significantly increased in women who remain thyrotoxic despite treatment and in those, never treated.
4. Preeclampsia.

Etiology of thyrotoxicosis in pregnancy [(22)]:

1. Grave's disease.
2. Toxic multi-nodular goiter.
3. Toxic adenoma.
4. Hyper emesis gravid arum.
5. Gestational trophoblastic neoplasia.
6. Pituitary hyper secretion of TSH.

7- Metastatic follicular cell carcinoma.

8. Exogenous T4 or T3.
9. De Quatrain's thyroiditis. 10-
10. Silent lymphocytic thyroiditis.
11. Struma ovarii.

Graves's disease and pregnancy: The over whelming cause of thyrotoxicosis in pregnancy is graves' disease an organ specific autoimmune process usually associated with thyroid stimulating antibodies. These auto antibodies mimic thyrotrophic in it's ability to stimulate thyroid function, consequently, they appear to be responsible for both thyroid hyper function and growth in graves disease, it has been reported that thyroid - stimulating antibody activity in graves disease usually declines during pregnancy.[13,14]

Hypothyroidism and Pregnancy: Hypothyroidism occur in pregnant women with frequency of about 1 in

1600-2000 deliveries[25], women with hypothyroidism had a higher incidence of:[2]

1. Preeclampsia.
2. Placental abruption.
3. Low birth weight.
4. Still born infants.
5. Gestational hypertension.
6. Postpartum hemorrhage.
7. Anemia.
8. Cardiac dysfunction.

All pregnant women should be carefully asked about any personal or family history of thyroid disease or treatment directed at thyroid gland particularly of external radiation to the head and neck [26]. The best biochemical tests for diagnosis of hypothyroidism are measurement of serum sensitive TSH and free T4 In primary hypothyroidism, the TSH level is elevated and free T4 level is low, If TSH level is elevated and free T4 level is normal, the patient may have sub clinical hypothyroidism. In secondary or pituitary hypothyroidism the TSH level is normal or low in setting of a low free T4, 10% of patients with hypothyroidism have pernicious anemia, but neither vitamin B12 nor foliate deficiencies explain the macrocytic anemia that occurs in approximately one third of patients with hypothyroidism and anemia, Hypothyroidism usually is associated with mild normochromic, no myocytic anemia. Patients with insulin-dependent diabetes mellitus shoud are watched closely for development of hypothyroidism during pregnancy[14].

Differential diagnosis of hypothyroidism[22]:

1. Hashimoto's thyroiditis.
2. Post therapy hypothyroidism.
3. Suppurative and sub acute thyroiditis.
4. Drugs (thionamide therapy, iodides, and lithium, which inhibit the synthesis of thyroid hormones, secretion of thyroid hormone or both).

Carbamazepine, phenytoin, and rifampicin can increase thyroxin clearance.

Ferrous sulfate and sucralfate can interfere with intestinal absorption of thyroxin.

5. Lymphocytic hypophysis.
6. Iodine deficiency.

Iodine Deficiency: Iodine deficiency is a common cause of hypothyroidism in many parts of the world, although it is exceeding rare in the united status. The hypothalamic - pituitary axis responds to iodine deficiency with hyper secretion of TSH. That is probably responsible for the formation of goiters and nodules [22]. The goiter frequently grows during pregnancy, and multiple pregnancies result in much larger goiters than those occurring in nulliparous women. Many women may be clinically euthyroid but show biochemical hypothyroidism upon careful testing. The treatment is iodine supplementation, most practically accomplished when potassium iodide is added to salt[2].

Materials and Method

This is a case control study done in Basra maternity and children hospital aimed to study thyroid hormone change among pregnant women with history of early pregnancy bleeding during the period of first October 2007-first of July 2008, the study includes:-

A: Case Group: This includes 40 pregnant patients with history of of un explained early pregnancy bleeding taken as a case group, with gestational age of up to twenty weeks, with parity range of 0->5, after we took their consent to be included in the study. Detail history was taken from them including their age and parity with detail previous obstetric history and history of past medical illnesses. Those patients with any of following events were excluded from the study:

1. History of trauma.
2. History of fever.
3. History of maternal infection during gestation.
4. History of drug intake like emberyotoxic and other for chronic diseases.
5. History of irradiation during pregnancy.
6. History of repeated abortion.
7. Medical illness like hypertension, sickle cell problem.ect.
8. Molar pregnancy.
9. History of delivery of congenital anomaly babies.

B. Control Group: Including 58 pregnant healthy women taken as control group they had approximately the same age and parity range those patient was selected from out patient who attend for other cause other than early pregnancy The pregnancy of the both groups was confirmed by the following criteria:

1. History of missed period.
2. History of morning sickness.
3. Clinical examination confirms pregnancy with soft and bulky uterus.
4. Laboratory confirmation by pregnancy test and ultrasonography.

Parity of the patient were classified as 0-1 nillpara or primiparous patient, 2-5 multiparous patient and >5 as grand multiparous patients. their age also classified as those <20year, 20-39year.S o clinical and laboratory investigations confirming the presence of pregnancy were carried out for every candidate in each group.

Specimen collection and handling: 5ml of blood samples were collected by venipuncture from each candidate included in the study case and control group. The sample then centrifuged for 5 minutes then the serum was collected for immune enzymatic determination of TSH, T3, T4 using ELFA teqnique (enzyme linked florescent assay). This procedure carried out by VIDAS which is an automated quantities test and used for quantities measurement for TSH, T3, T4.

Principle of the procedure: By using of human serum of lithium heparinate (in amount of 0.Iml for TSH, 0.1 ml for 13 and 0.2ml for T4) the assay principle combines an enzyme immune assay competition method with final fluorescent detection (ELIFA).

Results and Discusion

Table one shows the difference in thyroid hormone level according to parity among the two study group which evidently show no significant differences in TSH, T3, T4 values in both groups, except among grand multiparous women (5 parity) in which T3 value is about 1.76 μiu/l in case group compared to 1.2 µiu/1 among control group with a significant P value of 0.44. Table two shows the thyroid hormone differences between cases and control according to the age as we see there was significant differences in T3 and T4 values in those with age (20-39) years, T3 values was 1.83 $\mu\ mol$/1 (p-value in cases which is higher than in control group 1.43 $\mu\ mol$/1(p-value 0.49 significant) and not significant in those with age more than 40 years. T4 value 96.64 $\mu\ mol$/l in cases which is lower than control group 105.8umol/1 (p -value 0.498 significant) and not significant in those with age 40 years or more. Table three TSH value in those with age 40year or more than was 2.165µiu/ml in cases which was also higher than control group 1.54uiu/ml (p -value o.499 significant) but not significant in those with age (20-39) years.Show thyroid hormone differences between cases mean level and control mean level where TSH value was 1.717µiu/ml in cases which is significantly higher than control group 1.311 (p-value o.49 significant)T3 value was 1.735 umol/lin cases and 1.564umol/1 in control group in which the difference is of no significant. Although thyroid hormone had definite impact on fertility and on the outcome of pregnancy and because of the vitality of thyroid hormone and the pregnant lady, that why we see definite diffuse enlargement of thyroid gland during normal healthy pregnancy this explain the increase demand of the pregnant women to the thyroid hormone,unfortunately no studies found similar to our study and In spite of many studies available regarding the physiological changes In the thyroid during pregnancy, it is uncertain if functional disorder of thyroid play a role in the etiology of spontaneous abortions. Maruo et al. proposed that maternal thyroid hormone level are one of endocrine Factors responsible for the threatened abortion [15].Ross et al. Indicated that Functional disorders of thyroid are not effective in the outcomes of miscarriage, this is in contrast to our study where we found that there is significant decrement in the level of T4 among those with early pregnancy bleeding. Lower TT3, TT4,FT3,FT4 levels and higher TSH values was obtained in the spontaneous abortions group are an indication of the presence of a hypothyroidism situation in this group which goes with our study which evidently showed an increment in the level of TSH among case group as was shown in Table III with a significant decrement in the level of T4 among the same group thus, there are several publications indicating that the ratio of spontaneous abortions rises two -fold in women with hypothyroid as compared to euthyroid women this in turn indicate the importance of thyroxin hormone in the continuation of normal healthy pregnancy.

Table 1. Thyroid hormone differences according to parity in both groups

Parity	Thyroid hormones	Cases mean level	Control mean level	P-Value	Test of significant
0-1 parity	TSH	1.56	0.45	0.136	Not significant
	T4	93.5	101.8	0.37	Not significant
	T3	1.6	1.56	0.19	
	Sample size	9	14		
2-5 parity	TSH	1.78	1.3	0.49	Not significant
	T4	95.2	120.5	< 0.49	Not significant
	T3	1.7	1.47	0.37	Not significant
	Sample size	19	28		
More than 5 Parity	TSH	1.34	2.1	0.36	Not significant
	T4	93.8	103.5	0.37	Not significant
	T3	1.76	1.2	0.44	Significant
	Sample size	13	14		

Table 2. Thyroid hormone changes in the two study groups according to age

Age	Thyroid hormones	Cases mean level	Control mean level	P-Value	Test of significant
> 20 years	TSH	1.031	1.137	0.16	Not significant
	T4	95.34	102.77	0.338	Not significant
	T3	1.73	1.5	0.386	
	Sample size	9	15		
20-39 years	TSH	1.83	1.46	0.32	Not significant
	T4	96.64	105.8	0.498	significant
	T3	1.83	1.42	0.49	significant
	Sample size	22	32		
≥	TSH	2.165	1.54	0.499	significant
	T4	93.73	97.1	0.215	significant
	T3	1.5	1.42	0.114	Significant
	Sample size	9	11		

Table (3) Thyroid hormones differences between cases & control.

Thyroid hormones	Cases mean level	Control mean level	P-Value	Test of significant
TSH	1.717	1.311	0.46	Significant
T4	94.94	102.41	0.49	Significant
T3	1.735	1.564	0.29	Not significant
Sample size	40	58		

Conclusion

There was a significant decrement in the level of T4, with significant changes in the level of TSH among cases with early pregnancy bleeding compare with normal healthy pregnancy while T3 show no significant changes; this is possibly because T4 is the main circulating hormone in the blood.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved and all experiments were carried out in accordance with approved guidelines.

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Knowledge of Nurse-Midwives Concerning Hypertensive Disorders During Pregnancy in Al-Najaf AL-Ashraf City Hospitals

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Abstract

Hypertension is the most common medical disorder of pregnancy;hypertension may exist prior to pregnancy or develop during pregnancy. A descriptive cross-sectional hospital-based study is conducted throughout the period of (31th July 2018 to 29th July 2019.). The population of this study consisted of all nurse-midwives (n=120) who are working at delivery rooms in AL-Najaf AL-Ashraf city Hospitals.Data was collected through the use of the questionnaire and the self-administration report, from those nurse-midwives. Data were analyzed through the application of statistical package of social science (SPSS) program. The study results reveal that nurse-midwives are young with age group of (20 – 29) years old (45%), who were graduated from midwives' secondary school (63.3%), more than half of nurse-midwives are having a period of (1–5) years of experience in working at hospitals (58.3%).Sixtysix. seventy percent(66.7%) of them showing that they get information from health team members the sample under study showed that this have fair level of knowledge about assessment and diagnosis of hypertensive disorders and poor knowledge about the clinical manifestation of severe eclampsia. Also, results indicate that there is significant relationship between knowledge about hypertensive disorders with residence of nurse-midwives as well as, with their educational level

Keywords: *Knowledge, Nurse-Midwives, Hypertensive Disorders During Pregnancy.*

Introduction

Hypertensive disorders complicating pregnancy (HDP) is the most common complication in pregnancy. The incidence varies in different populations and is affected by the definition used. HDP is influenced by null parity, age, and race. In India 2006, the incidence of HDP was 5.38%, while preeclampsia, eclampsia, and HELLP (hemolysis, elevated liver enzymes, and low platelet count) syndrome accounted for 44%, 40%, and 7% of complications, respectively. Maternal and perinatal death have been reported in 5.5% and 37.5% of deliveries, respectively. HDP comprises preeclampsia and eclampsia[(1)]. World Health Organization (WHO) estimates that at least one woman dies every seven minutes from complications of hypertensive disorders of pregnancy, pregnancy induce hypertension is the second most common medical disorder seen during pregnancy They along with contribute hemorrhage & infection, greatly to maternal morbidity & mortality with the advent of antenatal care in large cities, severe degree of toxemia & eclampsia has become mostly preventable. However, in developing countries, it still continues to be a major obstetric problem. Thus, we can reduce the maternal mortality by providing preventive measures & proper management of these complications[(2)]. In developing countries, pre-eclampsia accounts for (20-40%) of the maternal mortality and (15%) of preterm deliveries. According to the reports of the WHO, the pregnancy-induced hypertension in Iraq accounts for (9%) until 2013[(3).]

Methodology

The study aims to assess the knowledge of nurse-midwives regarding hypertensive disorders during

pregnancy and to find out the relationship between knowledge of nurse - midwives and their socio-demographic and personal characteristics such as (age, level of education, years of experience, residency, marital status, income etc...).

Design of the Study: A cross sectional hospital-based study is conducted throughout the period of (31th July 2018 to 29th July 2019).

Sample of the Study: A total of 120 nurse midwives working at delivery rooms in AL-Najaf AL-Ashraf City Hospitals.

Study Instrument: After an intensive review of relevant literatures, the questionnaire is developed and used as a tool of data collection which includes the following:

Part I: Contains socio-demographic and personal characteristics; part II deals with midwife's general knowledge concerning hypertensive disorders during pregnancy.

Data Analysis: Descriptive and inferential statistical study tests used through the use of the (SPSS ver-25).

Results and Discusion

Table (1): Distribution of the Nurse-Midwives According to Their Socio-demographic Characteristics

List	Characteristics		F	%
1	Age	< 20 years	19	15.8
		20 – 29 years	54	45
		30 – 39 years	23	19.2
		40 – 49 years	19	15.8
		50 ≤ years	5	4.2
		Total	120	100
2	Level of Education	Nursing school	15	12.5
		Midwives secondary school	76	63.3
		Nursing secondary school	11	9.2
		Nursing institute	5	4.2
		Nursing college & higher	13	10.8
		Total	120	100
3	Marital status	Single	40	33.3
		Married	63	52.5
		Divorced	9	7.5
		Separated	5	4.2
		Widowed	3	2.5
		Total	120	100
4	Socio-economic status	Sufficient	52	43.4
		Insufficient	55	45.8
		Barely sufficient	13	10.8
		Total	120	100
5	Residency	Urban	89	74.2
		Rural	31	25.8
		Total	120	100

F: Frequency, %: Percentage

This table shows that nurse-midwives are young with age group of (20 – 29) years old (45%), who were graduated from midwives' secondary school (63.3%). Fifty-two. five percent of them are married and (33.3%) are single. Regarding socio-economic status, they are revealing insufficient to sufficient status, in which (45.8%) showing insufficient and (43.4%) showing sufficient socio-economic status. More of the nurse-midwives are resident in an urban area (74.2%) and only (25.8%) are resident in a rural area.

Table (2): Table (4-1): Distribution of Nurse- Midwives According to Their Years of Experience in Nursing Profession

List	Characteristics		F	%
1	Years of experience in hospital	< 1 year	1	0.8
		1 – 5 years	70	58.3
		6 – 10 years	25	20.8
		11 – 15 years	6	5
		16 – 20 years	7	5.8
		21 ≤ years	11	9.2
		Total	120	100
2	Years of experience in delivery room	< 1 year	2	1.7
		1 – 5 years	72	60
		6 – 10 years	26	21.7
		11 – 15 years	9	7.5
		16 – 20 years	6	5
		21 ≤ years	5	4.2
		Total	120	100
3	Years of experience as midwives	< 1 year	2	1.7
		1 – 5 years	73	60.8
		6 – 10 years	25	20.8
		11 – 15 years	11	9.2
		16 – 20 years	4	3.3
		21 ≤ years	5	4.2
		Total	120	100

f: Frequency, %: Percentage

This table reveals that more than half of nurse-midwives are having a period of (1–5) years of experience in working at hospitals (58.3%). Regarding years of experience in delivery room, (60%) of them are working in delivery room for (1 – 5) years, which is the same duration as they working as midwife; they show that they are working as midwife for (1 – 5) years.

Table (3): Significant Differences for Knowledge about Hypertensive Disorders with Respect to Residency of Nurse-Midwives (N=120)

Knowledge Domains / Residency		Independent t-test					
		M	SD	T	df	P ≤ 0.05	Sig.
General Knowledge	Urban	89	8.26	1.797	118	0.075	N.S
	Rural	31	6.87				
Assessment & Diagnosis	Urban	89	4.61	3.075	118	0.003	H.S
	Rural	31	2.87				
Management of Hypertensive disorders	Urban	89	6.08	2.129	118	0.035	S
	Rural	31	4.84				
Overall Knowledge	Urban	89	18.94	2.640	118	0.009	S
	Rural	31	14.58				

This table indicates that there is significant relationship between knowledge about hypertensive disorders with residence of nurse-midwives

Table (4): Analysis of Variance for Knowledge about Hypertensive Disorders with Regard to Nurse-Midwives' Level of Education (N=120)

Education / Knowledge	Source of Variance	Sum of Squares	d.f	Mean Square	F	P-value (Sig.)
General Knowledge	Between Groups	113.688	4	28.422	2.113	.084 (N.S)
	Within Groups	1547.112	115	13.453		
	Total	1660.800	119			
Assessment & Diagnosis	Between Groups	99.152	4	24.788	3.415	.011 (S)
	Within Groups	834.840	115	7.259		
	Total	933.992	119			
Management of hypertensive disorders	Between Groups	50.084	4	12.521	1.589	.182 (N.S)
	Within Groups	905.908	115	7.877		
	Total	955.992	119			
Overall Knowledge	Between Groups	699.728	4	174.932	2.813	.029 (S)
	Within Groups	7150.238	115	62.176		
	Total	7849.967	119			

d.f: Degree of freedom, F: F-statistic, P: Probability value

Sig.: Significance, H.S: High significant, S: Significant, N.S.: Not significant. This table indicates that there is significant relationship between knowledge about hypertensive disorders in pregnancy with educational level among nurse-midwives

Discussion

Part I: The Nurse-Midwives According to Their Socio-demographic Characteristics

1. **Mother's Age:** Results of this study reveal that nurse-midwives are young with age group of (20 – 29) years old (45%) and this result corresponding with a study that carried out by [4] in Ethiopia they found out among the total study participants, 155 (37.3%) were aged between (20-24) years.
2. **Mother's level of education:** Regarding level of education, the total sample of the study graduated from midwives' secondary school (63.3%). The current finding inconsistent with a study that done by [4] in Ethiopia who stated that (36.1%) of their participant's educational level attended primary school only.
3. **Marital Status:** Concerning marital status, (52.5%) of them are married, the finding of this study goes

along with study that conduct by [5], who found that the majority of their study sample were married (91.94).

4. **Socio-economic status:** Regarding socio-economic status, they are revealing insufficient to sufficient status, in which (45.8%) showing insufficient socio-economic status. The result of under hand study supported by A "prospective case – control observational study that conducted by Vats and Paul, 2017, to study risk factors for hypertensive disorders of pregnancy in a tertiary care maternity hospital of Delhi, who stated that majority of cases (63%) belonged to lower and upper lower socioeconomic status[6].

5. **Residency:** In regard to residency, more of the nurse-midwives are resident in an urban area (74.2%). the finding of current study supported by cross-sectional study that conducted by [5] to assess pregnancy induced hypertension and its associated factors among women attending delivery service at Mizan-Tepi University Teaching Hospital, Gebretsadikshawo Hospital and Tepi General Hospital. They were depicted that half of the participants were from rural areas (51.4).

Part II: Distribution of Nurse-Midwives According to Their Years of Experience in Nursing Profession

1. **Years of experience in hospital:** Results reveal that more than half of nurse-midwives are having a period of (1 – 5) years of experience in working at hospitals (58.3%). This finding inconsistent with a quasi-experimental (pre-post) design was used and conducted in Obstetrics and Gynecology Department, Beni-Suef University Hospital, from March to December 2016. A total of 60 nurses working at the out-patient antenatal clinic and inpatient Obstetrics and Gynecology Department took part in Egypt that conducted by [7] who were found that more than half of the nurses had experience less than five years. This is may be due to that the hospital is the second level referral health institution's attending to complicated maternal case's and therefore require more midwives.

2. **Years of experience in delivery room:** Regarding years of experience in delivery room, (60%) of them are working in delivery room for (1 – 5) years, the finding of current study corresponding with study conducted by [8] in Ethiopia who reported that about 52 (66.7%) of total sample served for 1-5 years, while working as midwife; they show that they are working as midwife in delivery rooms for (1 – 5) years.

Part III: Analysis of Variance for Knowledge about Hypertensive Disorders with Regard to Nurse-Midwives' Level of Education.

This table indicates that there is significant relationship between knowledge about hypertensive disorders in pregnancy with educational level among nurse-midwives, at p-value ≤ 0.05. The finding of the present study is incongruent with retrospective study which determine the prevalence of HDP and its associated factors among the pregnant women delivered at tertiary care hospital of Northern Karnataka, that carried out by [9] in India who found that there is no statistically significant association with hypertensive disorders in pregnancy. This difference may be due to pregnancy by the simple reason that the low educational level is associated indirectly to midwives' knowledge such as nurses graduated from nursing school don't had enough knowledge and skills as well as practices to deal with pregnant women who had HDP. Also, was explained by midwives had inadequate training workshop on risk factors, management and caring of pregnant woman with hypertensive disorders in pregnancy.

Part IV: Analysis of Variance for Knowledge about Hypertensive Disorders with Regard to Residency of Nurse-Midwives

The result of the present study indicates that there is significant relationship between knowledge about hypertensive disorders with residency of nurse-midwives at p-value ≤ 0.005, and significant difference is seen between domain of management of disorders with residence of nurse-midwives at p-value ≤ 0.01.

According to cross-sectional study entitled (hypertensive disorders of pregnancy in jimma University specialized hospital) that carried out by [10], who stated that residence area was found to have statistically significant association with the hypertensive disorders in pregnancy at (p- value=0.001). This result is consistent with the result of the current study.

Conclusions

More of the early adult's nurse- midwives' lives at urban areas and graduated from midwives' secondary school, who are marriedand presented with insufficient

to sufficient socio-economic status. Nurse-Midwives' level of education, residency, type of training programs that Nurse-Midwives participate with and sources of information have a great effect on their knowledge regard hypertensive disorders in pregnancy.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Nursing, Babylon University, Babylon Province-Iraq and all experiments were carried out in accordance with approved guidelines.

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Epidemiology of Gestational Diabetes among Pregnant Women at Primary Health Care Centres in Al Nasiriyah City/Iraq

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Abstract

Objective: To assess the incidence and prevalence of Gestational Diabetes(GD) among pregnant women and find out the factors that contribute to GD occurrence. Retrospective – prospective study is carried out in Al-Nasiriyah city at primary health care centers to find out the incidence rate of GD for two months and prevalence rate of GD for five years ago, and identify the relationship between contributing factors with it.Anon probability sample (convenience sampling) a total of 5183 pregnant (13)out of them new cases with GD for two months and a total of 186056 pregnant(453) out of them existed cases with GD for five years ago. The study was conducted during the period from January 2nd 2019 to February 28th 2019. Findings reveals that there are significant relationships between women's education, occupation and incidence of GD. Highly significant relationship is between women's age and incidence of GDwhile there are highly significant relationships are between women's age, occupation and prevalence of GD only and there is highly Correlation between women's obstetric history, maternal body mass index with incidence and prevalence of gestational diabetes Correlation is significant at the 0.01 level (2-tailed).

Keywords: *Incidence, Prevalence, Gestational Diabetes, primary health care centers.*

Introduction

Pregnancy is a normal physiological state, which a woman experiences at some point of her life. During pregnancy, a woman may develop complications that pose a risk to both maternal and fetal health[(1)]. Gestational diabetes mellitus (GDM) is the second commonest medical complication of pregnancy after hypertension. It is a non-communicable disease that has major effect on pregnancy process and outcomes [(2)(3)]. Worldwide, GDM affects approximately 14% of pregnancies which represent about (18) million births annually [(4)]. Furthermore, the occurrence of GDM is predictable to increase over years. Especially in Asia, this is possibly due to increase in maternal age and obesity [(5)(6)(7)]. The incidence of GDM is rising in the context of the pandemic in obesity and type 2 diabetes in the modern world[(8)(9)]. In Iraq according to statistical report in 2015, non communicable risk factors for female ≥ 18 year include obesity, hypertension, overweight and diabetes which represent 42.6%, 34.5%, 30.6%, and 13.7% respectively. According to the annual statistical report for Iraqi Ministry Of Health/Environment (MOH) in 2017, the second direct cause of maternal mortality is complications of maternal hypertension was 14.5% and third indirect cause of maternal mortality is diabetes was 4.4%[(10)]. The present study aims to find out the incidence and prevalence of GD among pregnant women in Al Nasiriyah City to aid in planning for strategies of control.

Methodology

Design of the Study: Retrospective – prospective study design is conducted at primary health care centers at Al-Nasiriyah city aimed to find out the incidence rate of GD for two months from January 2nd 2019 to February 28th 2019, to find out the prevalence rate of GD during five years ago (2014-2019), and to find out the factors that can contribute to incidence and prevalence of GD among pregnant.

Sample of the Study: Anon probability sample (convenience sampling) a total of 60 pregnant (13) out of them new cases with GD for two months and a total of 1961 pregnant (453) out of them existed cases with GD for five years ago at Al-Nasiriya city/Iraq.

Data collection: Data was collected by reviewing health medical records and using the questionnaire through the researcher interviewed the pregnant to explain purpose of the study in simple way. The data were collected through the period from January 2nd 2019 to February 28th 2019.

Instrument of the Study: The questionnaire consists of two parts: part I: Pregnant's Socio- demographic Data: This part was designed to include items that represent the socio-demographic data of pregnant with GD related to age, education and occupation and part II: Pregnant's risk factors for GD this part was designed to include items that covers the maternal risk factors which associated with GD which consist of (1) Pregnant's medical and family health history: This item include (17) sub items are represent medical history of pregnant which identical with her family history (2) Obstetric history: This item covers obstetric history and reproductive data of pregnant which is involve number of gravida, number of para, number of abortion, history of deliveries, and age at first pregnancy (3) Pregnant's weight status(BMI). The validity and reliability of the instrument was determined by using through the panel of experts, and internal consistency through the computation of Cronbach's Alpha Correlation Coefficient

Statistical Method: Data were analyzed through the application of descriptive statistical(Frequencies and percentages) and inferential analysis (Pearson Correlation Coefficient).

Results

Table (1): Incidence and Prevalence rates for Women's Gestational Diabetes

Variables	Incidence Rate (percent)	Prevalence Rate (percent)
Gestational Diabetes	0.25%	0.24%
Total	5183	186056

Results out of this table depict the incidence rate of gestational diabetes is 0.25% and prevalence rate is 0.24%.

Table (2): Descriptive Statistics of Women's Prevalence during Five Years

Case definition	Year of Prevalence	Frequency	Percent (%)
Gestational Diabetes	2014	90	19.9
	2015	76	16.8
	2016	118	26
	2017	77	17
	2018	92	20.3
	Total	**453**	**100**

Results out of this table indicate major percentage (26%) of the women have gestational diabetes in 2016.

Table (3): The Relationship between Women's Incidence of Gestational Diabetes and Their Demographic Characteristics

Demographic Characteristics	Correlation	Significance
Age	0.720	0.004**
Education	0.534	0.049*
Occupation	627	0.016*

*Correlation is significant at the 0.05 level (2-tailed), **Correlation is significant at the 0.01 level (2-tailed)

Results out of this table presents that there are significant relationships between women's education, occupation and the incidence of gestational diabetes. Highly significant relationship is between women's age and the incidence of gestational diabetes.

Table (4): The Relationship between Women's Prevalence of Gestational Diabetes and Their Demographic Characteristics

Demographic Characteristics	Correlation	Significance
Age	0.292	0.000**
Education	0.133	0.049*
Occupation	0.357	0.000**

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

Results out of this table indicate that there are highly significant relationships between women's age, occupation and the prevalence of gestational diabetes. Significant relationship is between women's education and the prevalence gestational diabetes.

Table (5): The Relationship between Women's Incidence of Gestational Diabetes and Pregnant's risk factors

Variables	Correlation	Significance
Medical History	0.218	0.455
Family History	0.249	0.391
Obstetric History	0.961	0.000**
Body Mass Index	0.763	0.002**

** Correlation is significant at the 0.01 level (2-tailed)

Results out of this table indicate that there is highly significant relationship between women's obstetric history, maternal body mass index and incidence of gestational diabetes

Table (6): The Relationship between Women's Prevalence of Gestational Diabetes and Pregnant's risk factors

Variables	Correlation	Significance
Medical History	0.032	0.636
Family History	0.026	0.699
Obstetric History	0.546	0.000**
Body Mass Index	0.328	0.000**

** Correlation is significant at the 0.01 level (2-tailed)

Results out of this table reveal that there is highly significant relationship between women's obstetric history, maternal body mass index and prevalence of gestational diabetes.

Discussion

Results of the study depicts, that the incidence rate of GD is (0.25%) and prevalence rate is (0.24%) as shown in table (1). The majority percentage of prevalence of GD is (26%) at year 2016 (table 2). These rates lower towards international statistics. According to the International Diabetes Federation(IDF) the prevalence of GDM may vary from 1% to 14% of all pregnancies this is regarded a good indicator about health of Iraqi women and improvement of health care services thought years.

Part I: Pregnant's Socio-demographic Characteristics: Findings reveals that there are significant relationships between women's education, occupation and incidence of GD. Highly significant relationship is between women's age and incidence of GD table (3) while there are highly significant relationships are between women's age, occupation and prevalence of GD only (table 4), this results consist with Kalyani and others(2014)[11] who are conducted a study in India which included 300 antenatal women to determine the prevalence of GDM and the risk factors associated with it. The findings showed GDM was found to be significantly associated with socioeconomic status and education level.

And agree with Areefa et al(2014)[12] conducted a retrospective case control study in Gaza aimed to identify the prevalence and socio-demographics of GDM revealed there is significant association between level of education, job status and prevalence of GDM. Also consistent with Abu-Heija and others (2017)[13]who are conducted a prospective study at Sultanate Oman designed to study the effects of age on the incidence of GDM in healthy pregnant Omani women. This study reported the incidence of GDM increased with rising maternal age from 2.2% in women aged <25 years to 14.7% in women aged >35 years (P =0.009).

Part II: Pregnant's Risk Factors for Gestational Diabetes: Epidemiological evidences about risk factors of GDM may be different from region to other. The results present highly significant association between women's obstetric history with incidence and prevalence of GD as shown in tables (5) and (6). This results consistent

with Kiani and others (2017)[14]conducted meta-analysis study in Iran based on the national and international journals databases to explore the risk factors of GDM among 1658 pregnant women with average age of 29.15 years old. It was revealed that history of abortion, delivery≥ 5, history of stillbirths, history of delivery < 37 weeks, and history of gestational hypertension were significant risk factors for GDM growing.Supported by Zakir and others(2017)[15] those conducted a study in Pakistan To determine the frequency of GDM and to analyze the relationship and strength of association among common risk factors in the development of GDM which proved that multiparty and obstetrics history were strong predictors of GDM.

This study reveals no association between family history and medical history of pregnant with incidence and prevalence of GD as shown in tables (5) and (6). This results consistent with Lotfi et al(2018)[16]conducted a study to examine the role of clinical factors in the association of GD in Yazd, Iran among women aged 15–49 years showed there is not significant relationship between GDM and underlying diseases.

The findings reveals that there is highly significant relationship between women's body mass index with incidence and prevalence of GD as shown in tables (5) and (6). This results agree with many studies like Pillai (2017)[17] who is conducted a retro- prospective observational study to estimate the prevalence and risk factors of GDM among 222 pregnant diagnosed with GDM for the period of 8 years at Trichy district that showed overall prevalence of GDM was 2.1%. Higher BMI definite influence on GDM . Also agree with Chitme and others (2017)[18] who are conducted a case–control multicentered study to understand the modifiable risk factors in GDM patients of different regions in Oman which involved 291 women diagnosed with GDM and 300 normal pregnant women. This study depicted that body weight significantly (P < 0.001) correlated with incidence of GDM.

Conclusion

According to the present study findings, the investigator concludes the following: The incidence and prevalence rates of GD are less than 1%. This rates were low in compared with international rates of this condition occurrence. Most of the study sample was at age group (25-34) years, unemployed, and low education level. There is statistical significant association between mother's Socio-demographic characteristics, obstetric history, and maternal body mass index with incidence and prevalence of GD.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Nursing/University of Baghdad, Iraq and all experiments were carried out in accordance with approved guidelines.

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Assessment of Premenstrual Syndrome (PMS) Symptoms among Female Students in Baghdad City

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Abstract

Premenstrual syndrome (PMS) affects women to extent that their quality of life, interpersonal relationships and work performance can be impaired the current study aims to assess the symptoms of premenstrual syndrome among female students and to determine the severity of premenstrual syndrome symptoms. Adescriptive study was conducted on female students in Baghdad city from august 2nd 2017 to May 30th 2018. A simple random selection of (300) female students was selected to participated in this study; (100) students from Institute of Medical Technology/Baghdad, (100) students from College of Health and Medical Technology and (100) students from Institute of Medical Technology/Al-Mansour. A self-administrative questionnaire was conducted to achieve the study objectives. The participants aged between (18-25) years with mean of age 20.19 years. Most of female students used sleep and rest to relieve the symptoms of PMS. The highest percentage (35.3%) of female students had a mild level of psychological symptoms of PMS. The highest percentage (34.3%) of female students had a moderate level of physical symptoms of PMS. The study concluded that all participants had at least one symptom of premenstrual syndrome and they affected by the physical symptoms more than the psychological symptoms.

Keywords: *Premenstrual syndrome, psychological symptoms, physical symptoms.*

Introduction

Menstruation is a normal physiological phenomenon in a woman's reproductive life. In the gynecological issue the menstrual problems especially among young women are supposed to be the major ones[(1)]. The term premenstrual tension (PMT) was first used by frank in 1931 who described tension, depression, weight gain and headaches in women 7-10 days prior to the onset of menstruation. Green and Delton first used the term PMS in 1953[(2)]. The premenstrual syndrome was defined by the international statistical classification of diseases and related health problem 10th revision (ICD-10) as the existence of one premenstrual symptom within a set of many symptoms which include mild psychological distress, general swelling and weight gain, breast tenderness, swelling of hands and feet, diverse aches and pains, low concentration, disturbed sleep and appetite changes, the luteal phase of menstrual cycle was restricted and terminated with the beginning of menstrual flow[(3)]. The psychological symptoms of PMS may include (Depressed mood, Angry outbursts, Irritability, Anxiety, Confusion and Social withdrawal) and the physical symptoms include (Breast tenderness, Abdominal inflating, Headache and Swelling of extremities). These symptoms start at ovulation and progress during the 5 days before the onset of menses and it will be resolved within 4 days of onset of menses and not persist until after day 12 of the cycle. These symptoms must adversely affect social or work related activities [(4)].It is estimated that PMS affects about 1.5 million women and 80% of women during their reproductive cycle experience some symptoms attributed to premenstrual phase of menstrual cycle. PMS can affect all women and prevalent in women of all ages causing considerable morbidity with evident impairment to interpersonal relationships, social interactions, lifestyle,work performance, emotional well-being, function normally at home and the quality of life [(3)]. This syndrome is mostly common in the young females and seems to become more sever throughout the reproductive years[(5)]. The severity of premenstrual

syndrome symptoms differs extensively from women to women, and can vary from cycle to cycle but the type of symptoms remains constant in each women[6]. The etiology of PMS remains unknown;but many factors contribute to the condition such as change in hormonal levels, fluctuation of neurotransmitters, dietary habits, medications and lifestyle [7]. Low zinc and copper retention, insufficient serotonin amount, deficiency of progesterone, deficiency of vitamin E,B, calcium, linoleic acid, and magnesium manganese are also implicated in the existence of PMS. Management of PMS goals to relief symptoms and restores function and often requires an arrangement of lifestyle adjustments and medication treatment [8].

Methodology

A descriptive correlational study was conducted on female students in Baghdad city from August 2nd 2017 to May 30th 2018. A simple random selection of (300) female students was selected to participated in this study; (100) students from Institute of Medical Technology/ Baghdad, (100) students from College of Health and Medical Technology and (100) students from Institute of Medical Technology/Al-Mansour. A self-administrative questionnaire was conducted to achieve the study objectives. A self-administration questionnaire was constructed by the researchers depending on extensive review of literature and used to achieve the study objectives. Approval consents were obtained before data collection and oral consents also achieved from female students. The questionnaire consists of 3 sections:

1. The demographic characteristics of the female students such as (age, property age, marital status).
2. The data related to the menstrual cycle such as (regulation of menstrual cycle, period of menstruation, duration of menstruation and period of premenstrual pain).
3. The data related to the means used by participants to relieve the symptoms of PMS.
4. The psychological and physical symptoms of premenstrual syndrome assessment include:
   A. Assessment of psychological symptoms contain (12) items.
   B. Assessments of physical symptoms contain (12) items.

The response to these items is (not suffering = 0, having slightly = 1, I suffer moderately = 2, I suffer with sever degree = 3, I suffer with very sever degree = 4).

The reliability of the questionnaire assessed by using split- halve technique of (20) students were (r1)= 0.735. The questionnaire was presented to experts in order to achieve its validity.

The data of the study were analyzed by using the descriptive statistics; frequencies, percentages, mean and standard deviation (SD).

Results and Discussion

Table (1): Distribution of the sample according to socio- demographic characteristics

No.	Variables		f	%
1	Age (Years)	18-19	105	35
		20-21	143	47.7
		22-23	50	16.7
		24-25	2	0.6
		Total	**300**	**100%**
2	Marital Status	Single	274	91.3
		Married	26	8.7
		Total	**300**	**100%**
3	Property age (years)	9-12	105	35
		13-16	195	65
		Total	**300**	**100%**

Table (1) indicated that 300 students who participated in this study aged between (18-25) years old with mean age = 20.19 years and std. deviation = 1.41. The highest percentage (47.7%) of them aged between (20-21) years, as regards to the marital status; majority of the female students (91.3%) were single. And more than half of them (65%) the property age of them were between (13-16) years old. The results of current study was contiguous to (Bakhshani etal, 2009) who reported in there study that the age of 300 university students who participated in the study ranged from 18-27 with mean age 21.64 years. And majority of them (257) were single[9].

Table (2): Distribution of the sample according to data related to menstrual cycle.

No	Data related to menstrual cycle		f	%
1	Regularity of menstrual cycle during the last 12 months	Yes	216	72
		No	84	28
		Total	**300**	**100%**
2	Period of menstruation (days)	3-5 days	149	49.7
		More than 6 days	151	50.3
		Total	**300**	**100%**
3	Duration of menstruation (days)	Less than 26 days	60	20
		26 days	41	13.7
		28 days	117	39
		30 days	42	14
		More than 30 days	40	13.3
		Total	**300**	**100%**
4	Period of premenstrual pain (dysmenorrhea)	Before 2-6 days	268	89.3
		Before 7-14 days	32	10.7
		Total	**300**	**100%**

The results indicated that (72%) of female students have a regular menstrual cycle during the last 12 months. More than half of women (50.3%) reported that the menstruation period more than 6 days. (93%) of female students reported that duration of menstruation was 28 days. The majority of the sample (89.3%) was suffering from PMS symptoms before 2-6 days of menstruation.

Table (3): Distribution of the sample according to the means used to relieve premenstrual pain

No	Means used to relieve premenstrual syndrome symptoms	Yes		No		Total	
		f	%	f	%	f	%
1	Analgesic medications	205	68.3	95	31.7	300	100%
2	Herbs	25	8.3	275	91.7	300	100%
3	Exercise	29	9.7	271	90.3	300	100%
4	Rest and sleep	227	75.7	73	24.3	300	100%
5	Health food	36	12	264	88	300	100%

Table (3) indicated that most of participants (75.7%) used sleep and rest in order to relieve the PMS symptoms and 68.3% of them used an analgesic medication. This result was consistent with the study of Thu et al (2006) who found that 75% of respondents used sleep and 41.4% used Paracetamol when they detected the symptoms of PMS[6].

Table (4): Distribution of the sample according to the physical and psychological symptoms of PMS

PMS symptoms		Yes		No		Total	
		f	%	f	%	f	%
Physical symptoms	Backache	271	90.3	29	9.7	300	100%
	Abdominal spasms	255	85	45	15	300	100%
	Acne	254	84.6	46	15.4	300	100%
	Abdominal bloating	248	82.6	52	17.4	300	100%
	Joints pain	212	70.6	88	29.4	300	100%
	Breast tenderness	210	70	90	30	300	100%
	Frequent urination	172	57.3	128	42.7	300	100%
	Nausea	170	56.6	130	43.4	300	100%
	Swelling of general body	134	44.6	166	55.4	300	100%
	Weight gain	129	43	171	57	300	100%
	Vomiting	125	41.6	175	58.4	300	100%
	Swelling of extremities	120	40	180	60	300	100%
Psychological symptoms	Fatigue	272	90.7	28	9.3	300	100%
	Depressed mood	270	90	30	10	300	100%
	Anger	257	85.7	43	14.3	300	100%
	Appetite changes	245	81.7	55	18.3	300	100%
	Low productivity and performance	242	80.7	58	19.3	300	100%
	Anxiety	242	80.7	58	19.3	300	100%
	Sudden feeling of sadness	238	79.4	62	20.6	300	100%
	Sleep problems	238	79.4	62	20.6	300	100%
	Avoidance of interpersonal relationships	197	75.7	103	34.3	300	100%
	Concentration difficulties	216	72	84	28	300	100%
	Avoid daily routine activities	213	71	87	29	300	100%
	Tearfulness	213	71	87	29	300	100%

Table (4) revealed that the most physical symptom of PMS was the backache (90.3 abdominal spasms (85%), acne (84.6%) and abdominal bloating (82.6%).And the more frequent psychological symptoms were fatigue (90.7%), depressed mood (90%) and anger (85.7). These results were slightly different with (Bakhshani et al, 2009) who found that the most common physical symptoms were backache, abdominal inflating and joints or muscles pain and the most prevalent of psychological symptoms were tiredness and depressed mood. Many studies suggest that the heredity play a role in PMS symptoms[9].

Table (5): Distribution of the sample according to the severity of psychological and physical symptoms of premenstrual syndrome

No.	Severity of symptoms		f	%
1	Psychological symptoms	Mild	106	35.3
		Moderate	99	33
		Sever	95	31.7
		Total	300	100%
2	Physical symptoms	Mild	102	34
		Moderate	103	34.4
		Sever	95	31.7
		Total	300	100%

Table (5) revealed that all female students were suffered from at least one of the psychological and physical symptoms of premenstrual syndrome and reported different levels of severity. The highest percentage (35.3%) of them had a mild level of psychological symptoms of PMS, and (34.3%) of them reported a moderate level of physical symptoms of PMS. This results was consistent with (Thu etal, 2006) who reported that 41% of the sample had symptoms with mild level of PMS symptoms. The results of current study was congruent with (Bakhshani etal, 2009) who reported that all participants had at least one premenstrual symptoms of minimal severity and 88% of them were considered moderate level of severity [(6)(9)].

Conclusions

The study concluded that all participants had at least one symptom of premenstrual syndrome. Most of female students used sleep and rest to relieve the symptoms of PMS. Most frequent psychological symptoms were tiredness, depressed mood and anger, while the main physical symptoms were backache, abdominal spasms and acne. The severity of PMS symptoms varied from mild to severe; the highest percentage (35.3%) of female students had a mild level of psychological symptoms and the highest percentage (34.3%) of had a moderate level of physical symptoms.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Institute of Medical Technology/ Baghdad, Middle Technical University, Baghdad, Iraq and all experiments were carried out in accordance with approved guidelines.

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Some Important Prognostic Factors in Breast Cancers in Iraqi Women: A Retrospective Study

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Abstract:

Based on our knowledge about the importance of some prognostic factors in breast cancers, a retrospective study on 101 Iraqi female patients was done, using the following parameters; patient's age, tumor grade, hormones Estrogen receptor (Er.) status, and human epidermal growth factor receptor 2 (Her2/neu) expression. A significant relationship between younger age group (< or = 35 years) and high grade tumors was detected. Significant number of those patients in the study had Er+ve tumors. No significant relationship has been found between Er-ve tumors and high grade histology. Most of postmenopausal women in this study were with Er+ve breast cancers, which is significantly higher than that in premenopausal women. Also a significant increase in Her2/neu expression is seen in tumors with high grade histology. No inverse relationship between Er. concentration and Her2/neu expression was seen. We did comparison between these findings and the results of others over the world to see if behaviors of breast tumors in Iraqi female are the same to that over the world. Unfortunately no similar work on Iraqi females was performed previously for comparison.

Keywords: *Breast cancer, Tumor grade, Er, Pr, Her2/neu, Postmenopausal, premenopausal.*

Introduction

Breast cancer is the most common cancer in females and is the most killing disease in them.(1) According to these facts, it becomes important to study this disease in details and to look for factors that affect therapeutic measures and hence prognosis. Important prognostic factor in breast cancer is the patient age. Those women that are younger than 50 years have the best prognosis.(1) The survival declines after age of 50 years.(2) But women who are at age < or = 35 years (young age group in breast cancer incidence) are at the same risk of older patient(3) and even with higher risk of distant metastasis(4) as they often have higher grade tumors.(5) important prognostic measure, in breast cancer, is looking for the grade of the tumor. Cancer cells are given a grade according to how different they are from normal breast cells and how quickly they are growing. According to Bloom and Richardson grading system (6), the breast cancers were put into 3 grades. High grade tumors (grade 3) look different from normal breast cells and are usually fast growing, while low grade tumors (grade 1) look close to normal breast cells and slowly growing.An important development in treatment of breast cancers is that the detection for the presence or absence of hormone (estrogen and progesterone) receptors in the malignant cells.(7) Normal breast cells and some breast cancer cells have these receptors that attach to the hormones (estrogen and progesterone) and depend on these hormones to grow. These receptors are certain proteins. Cancers are called hormone receptors-positive or hormone receptors-negative based on whether or not they have these receptors. According to these facts the tumor is Estrogen

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receptor (Er.) +ve or –ve, and Progesterone receptor (Pr.) +ve or –ve, and even positive for both or negative for both. Knowing this status is important in treatment and even prognosis. [8]About 80% of breast cancers are ER +ve.[1] The ER-ve breast cancers tend to have high grade (grade 3).[9]Generally; estrogen receptors concentration are lower in tumors of premenopausal women than in those who are postmenopausal.[10] Her2/neu (human epidermal growth factor receptor 2) is an oncogen.[11] Its over expression can be measured by immunohistochemistry (IHC) or Fluorescence in situ hybridization (FISH).[12,13] Over expression of Her2/neu is a very good predictor of response to Herceptin (a monoclonal antibody used to treat breast cancer)[1] and a predictor of response to adjuvant chemotherapy.[14] This gen indicates poor prognosis [15] and it is highly related to tumor grade.[16] Her2/neu correlates inversely with estrogen and progesterone expression.[17]According to preceding facts, a study was done on some Iraqi females with breast tumors using same parameters to make some comparison.

Material and Method

A retrospective study was performed on 101 females with breast cancers who visited the Medical City-Oncology Center during the year 2015 for sake of treatment. The data were collected from the previous records of the laboratory section of the center with the agreement of managing director. No patient name or private details were collected. A different parameters were studied (to assess behaviors of these tumors) namely, age of those patients, grades of tumors, hormone receptors status (especially for estrogen), and results of Her2/neu expression. All these records came from previous laboratory works (3 years or more before collection of data). For all these cases, a histological study using traditional paraffin embedding histotechnique and staining by routine Hematoxylin and Eosin (H & E) staining protocol for initial histological diagnosis were adopted. Then immunohistochemistry (IHC) technique was used according to College of American Pathologist (CAP) Breast Biomarkers template, [18] especially for estrogen receptors (ER). Her2/neu study was done by IHC technique initially, while some equivocal cases needed to be confirmed by (fluorescence in situ hybridization) FISH technique (a molecular cytogenetic technique) according to American Society of Clinical Oncology (ASCO) Guideline Update.[19]

Protocols followed in histotechniques (paraffin embedding)

1. Sample receipt & identification
2. Labeling with numbering
3. Fixation
4. Dehydration
5. Clearing
6. Impregnation (infiltration)
7. Section cutting
8. Staining
9. Mounting

Hematoxylin and eosin staining protocol

1. Deparafinization
2. Hydration
3. Nuclear staining (hematoxylin)
4. Cytoplasmic staining
5. Dehydration and clearing
6. Mounting

Immunohistochemistry (IHC) protocol (LSAB method)

1. Tissue preparation
2. Inactivation
3. Antigen retrieval
4. Blocking
5. Primary antibody incubation
6. Secondary antibody incubation
7. Staining

Reporting Results of Estrogen Receptor (ER) and Progesterone Receptor (PgR) Testing (according to CAP):

Results	Criteria	Comments
Positive	Immunoreactive tumor cells present (≥1%)	The percentage of immunoreactive cells may be determined by visual estimation or quantitation. Quantitation can be provided by reporting the percentage of positive cells or by a scoring system, such as the Allred score or H score.
Negative	<1% immunoreactive tumor cells present	

Reporting Results of HER2 Testing by Immunohistochemistry (IHC) according to (CAP):

Results	**Criteria**
Negative (Score 0)	No staining observed or Incomplete, faint/barely perceptible membrane staining in ≤10% of invasive tumor cells
Negative (Score 1+)	Incomplete, faint/barely perceptible membrane staining in >10% of invasive tumor cells
Equivocal (Score 2+)	Incomplete and/or weak to moderate circumferential membrane staining in >10% of invasive tumor cells or Complete, intense, circumferential membrane staining in ≤10% of invasive tumor cells
Positive (Score 3+)	Complete, intense, circumferential membrane staining in >10% of invasive tumor cells

Reporting Results of HER2 Testing by In Situ Hybridization:

Result	**Criteria**
Negative (not amplified)	Average HER2 copy number <4.0 signals/cell
Equivocal	Average HER2 copy number ≥4.0 and <6.0 signals/cell
Positive (amplified)	Average HER2 copy number ≥6.0 signals/cell

Statistical studies for those parameters, mentioned above, were done by using Chi square depending on P-value (p< 0.01 is regarded as significant).

Results

At the end of this study and according to statistical data, we had the following results.

On studying results on those patients, with ages < or = 35 years, we found that; A significant increase (P< 0.01) in high grade (grade 3) of breast tumors in those patients (table no. 1). These findings were found in 44% of them. While in those who were of older (more than 35 years); about 21% of them were with high grade.

Table No. 1: Numbers and percentages of breast tumors with high grade according to age group

No.	**Age group**	**Total no.**	**No. of low grade**	**%**	**No. of high grade**	**%**
1	< or = 35 years	9	5	56%	4	44%
2	> 35 years	92	72	79%	20	21%

We found that about 73 patients (72%) of all patients are Er+ve.

29% of Er-ve tumors were with high grade histology at the same time. The rest (71%) were with low grade histology (table no. 2)

Table No. 2: Relation between Er. status and tumor grade

Er. status	**Total number**	**High grade no. (%)**	**Low grade no. (%)**
Er. -ve cases	24	7 (29%)	17 (71%)

The number of postmenopausal women, in this study, was 34. Twenty nine of them (85%) were with Er.+ve tumors. This finding was significantly higher (P<0.001) than the 47 premenopausal women, in whom 27 cases only (57%) were with Er.+ve tumors (table no. 3).

Table No. 3: Er. status in both postmenopausal and premenopausal women

No.	Group	Total no.	Er. +ve	%	Er. –ve	%
1	Postmenopausal women	34	29	85%	5	15%
2	Premenopausal women	47	27	57%	20	43%

Eighteen of patients, in this study, were with high grade tumors. From them, we found that 15 (83%) were with Her2/neu +ve tumors. While about 71% of patients with low grade tumors, in this study, were Her2/neu +ve (table no.4). This difference was found statistically significant (P<0.01).

Table No. 4: Relation between high grade tumors and Her2\neu expression

No.	Grade	Total no.	Her2\neu +ve	%	Her2\neu -ve	%
1	High	18	15	83%	3	17%
2	Low	83	59	71%	24	29%

There is no significantly inverse relation between Er. percentage and Her2/neu expression in this study.

Discussion

The results of this study were compared to other studies, mentioned in the introduction, as those studies were regarded important international records.

In this study, the studied number of Iraqi patients was a little bit limited (101), so those results can give us information of Iraqi women with breast cancers, but it is not necessarily represent all Iraqi females.

Finding of significant increase in high grade tumors in younger age group (age < or = 35 years), in this study, looks to be similar to what others found [5]. This finding indicates bad prognostic sign in this age group (high grade means bad prognosis).

As we found that 72% of our patients were with Er +ve tumors. This finding is not significantly different from other world result [1], which means that both had same behavior regarding Er. receptors status.

According to our results; the percentage of Er –ve tumors associated with high grade histology (24%) is highly different from other's result (94%)[9] which meant that there is no relation between two parameters (association between Er. negativity and high grade histology) in this study.

The highly significant difference in Er. positivity between postmenopausal and premenopausal women (85% and 57% respectively), in the study, is similar to that in other studies [10]

Like what Tsuda et al found [16] (about correlation between histologic grade of breast tumors and Her2/neu expression), we also found the same significant correlation between these two parameters.

Our results about inverse relation between Er. percentage and Her2/neu expression, is dissimilar to what others found[17] as there was no inverse relation in this study.

Conclusion

In our conclusion; though the number of patients is limited, but most of behaviors of breast tumors in Iraqi

women, in this study, looked like to what we found in other parts of the world.

Conflict of Interest: Authors declare that they have no competing interest.

Source of Funding: self funding

Ethical Clearance: All data collected has been approved by the manager of laboratory department-oncology center of medical city. No patient name or any personal data being collected.

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Relationship between Toxoplasmosis and Diabetic Pregnant Women

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Abstract

Toxoplasma gondii is an obligate intracellular parasite of the phyla Apicomplexa. This study was measured to detect *T. gondii* infection in diabetic patients using ELISA technique. A total of 98 patients attending the clinics in Baghdad city were detected for *T. gondii* infection. Sera of ninety-eight diabetic mellitus patients were involved in this study. Their serum samples were diagnosed for anti-*T. gondii* IgG and IgM antibodies using ELISA technique in addition to the level of fasting blood sugar. Most of diabetic patients (50 patients) their levels of blood glucose were between 151-200 mg/dl while 45 patients and 3 patients had > 200 mg/dl and 150 mg/dl of blood glucose respectively, among 98 patients there were 10 positive for IgM and 32 for IgG. In conclusion, this study reveals that diabetes could increases susceptibility of *T. gondii* infection.

Keyword: *Toxoplasma gondii, Diabetes mellitus, IgM, IgG, ELISA kits.*

Introduction

Toxoplasma gondii is an obligate intracellular parasite of the phyla Apicomplexa. Felids are the only definitive host for *T. gondii*, but *T. gondii* has a wide intermediate host range and has been documented to naturally infect most warm-blooded animals including birds, rodents, and humans[(1).] Humans can also be secondary hosts for *T. gondii* and it is clearly established that congenital infections,especially early in pregnancy, can produce intracranial calcifications, mental retardation, deafness, seizures, and retinal damage[(2).] Likewise, somecases of acute adult-acquired toxoplasmosis can result in headache, fever, myalgia, lymphadenopathy and occasionally seizures[(3).]

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Following ingestion of contaminated food, tachyzoites disseminate throughout the body, infect all nucleated cells, leading to production of necrotic focus surrounded by inflammation. Tachyzoites are transformed into tissue cysts resulting in life-long infection. Cellular immunity mediated by T-cells, macrophages, and activity of Type-1 cytokines (interleukin-12 [IL-12] and interferon [INF] gamma) is necessary for maintaining the quiescence of chronic *T. gondii* infection[(4)]. Anti *T. gondii* IgG antibodies start increasing after 1-2 weeks of infection and reaches peak in 6-8 weeks. They decline gradually over next 1-2 years but they can persist for life time in some cases[(5)]. Demonstration of high titers of anti-*T. gondii* IgG antibodies with high IgG avidity gives serological evidence of infection and also indicates the secondary reactivation of latent or chronic *toxoplasma* infection[(6)]. Diabetes mellitus is a group of metabolic diseases characterized by chronic hyperglycemia resulting from defects in insulin secretion, insulin action, or both. Metabolic abnormalities in carbohydrates, lipids, and proteins result from the importance of insulin as an anabolic hormone. Low levels of insulin to achieve adequate response and/or insulin resistance of target tissues, mainly skeletal muscles, adipose tissue, and to a

lesser extent, liver, at the level of insulin receptors, signal transduction system, and/or effector enzymes or genes are responsible for these metabolic abnormalities[7,8,9]. Several studies have shown that in diabetic patients, leukocyte cytotoxicity to eliminate pathogenic factors is reduced and the opsonic activity of immune system is significantly diminished; therefore, diabetic pregnant women are one of the groups susceptive to such opportunistic infections[10].

Materials and Method

Patients: A total of 98 diabetes mellitus (type 2) patients their age from 20 to >50 attending out private clinics between November 2017 to May 2018 mellitus, were examined for toxoplasmosis infection.

Blood Samples: Five ml of brachial vein blood were drawn from each person using disposable syringes. Then the blood was placed in plain tubes and allowed to clot at room temperature. They centrifuged at 3000 round per minute (rpm) for 10 minutes**.** Serum samples were divided into ependrof tubes and kept at -20 °C until using. The level of glucose (Fasting Blood Sugar) was measured use the enzymatic technique.

Enzyme Linked Immunosorbant Assay (ELISA): This assay was performed by using two kinds of ELISA kits [Bio Check Toxoplasma IgM ELISA (Bc-1087) and [Bio Check Toxoplasma IgG ELISA (Bc-1085), Europe].First for the detection of IgG and the second for the detection of IgM specific antibodies against *T. gondii* antigens in the patient's serum. The test was performed as in the manufacture instruction.

Statistical Analysis: The Statistical Analysis System- SAS (2012) program was used to detect the effect of difference factors in study parameters. T Chi-square test was used to significant compare between percentage (0.05 and 0.01 probability) in this study [11].

Results and Discusion

Sera of ninety-eight diabetic mellitus patients were involved in this study. Their serum samples were diagnosed for anti-*T. gondii* IgG and IgM antibodies using ELISA technique in addition to the level of fasting blood sugar. Table 1 highlights the information in regard to the distributions of toxoplasmosis infection among patients under study, the results revealed that patients between 20-29 years were recording the highest percentage 11(34.78%) of anti-Toxoplasma IgG, while the proportions of those between 30-39 years approaching 4(40%) for anti-Toxoplasma IgM and were the highest among the rest of age groups. Lowest percentages were 5 (15.62%) anti-Toxoplasma IgG and 2 (20%) anti-Toxoplasma IgM for the age groups30-39 and 40-49 years, respectively. There was statistically significant differences between these two antibodies (P<0.01).

Table 1. Distribution of Toxoplasmosis according to different age groups

Age (Year)	Anti-Toxoplasma IgM No of patients (%)	Anti-Toxoplasm IgG No of patients (%)
20-29	1 (10%)	11 (34.78%)
30-39	4 (40%)	5 (15.62%)
40-49	2 (20%)	8 (25.00%)
50>	3 (30%)	8 (25.00%)
Total	10	32
Chi-square	11.764 **	7.041 **

** (P<0.01).

Regarding (Table 2) that provide information in terms of diabetic disease distribution among different age groups, it is found that 15 (33.33%) patients of diabetic category of >200 mg/dl and 18(36%) patients of diabetic category of 150-200 mg/dl which is prevailed to be most abundant than diabetic category 150 mg/dl.

Table 2. Distribution of diabetes according to different age groups

Age (Year)	Number of Patients (Percentage %)		
	Level of Fasting blood sugar		
	~ 150 mg/dl	151-200 mg/dl	>200 mg/dl
20-29	0 (0.00%)	18 (36.00%)	9 (20.00%)
30-39	2 (67.67%)	10 (20.00%)	9 (20.00%)
40-49	1 (33.33%)	13 (26.00%)	15 (33.33%)
50>	0 (0.00%)	9 (18.00%)	12 (26.67%)
Total	3	50	45
Chi-square	11.740 **	7.913 **	6.178 **

** (P<0.01).

Considering (Table 3) that provides information in regard to the toxoplasmosis infection and it's relation with diabetic disease, the results showed that the highest prevalence was 19(59.37%) anti-Toxoplasma IgG and 5 (50%) anti-ToxoplasmaIgM among patients of more than 200mg/dl diabetic category, while the lowest percent was 0 (0.00%) anti-Toxoplasma IgG and 1 (10%) anti-ToxoplasmaIgM among patients of ~150 mg/dl diabetic category. There was statistically significant differences between the groups of glucose level (*P*<0.01).

Table 3. Distribution of diabetes and Toxoplasmosis

Glucose Levels (mg/dl)	IgM No (%)	IgG No (%)
~ 150	1 (10%)	0 (0.00%)
151-200	4 (40%)	13 (40.63%)
>200	5 (50%)	19(59.37%)
Total	10	32
Chi-square	10.966 **	11.927 **

** (P<0.01).

Discussion

In the current study, most diabetic patients (50 patients) their level of blood glucose were between 151-200 mg/dl while 45 patients and 3 patients had > 200 mg/dl and 150 mg/dl of blood glucose respectively. Large proportion of the Iraqi population is at risk of developing type 2 diabetes mellitus within the next years, that may be attributed to the high incidence rates of family history of diabetes, obesity, lifestyle of unhealthy diet and physical inactivity [12,13]. Our study aimed to explore the serum levels of anti-Toxoplasma toxoplasma antibodies in diabetic patients. Our study revealed that among 98 patients there were 10 positive for IgM and 32 for IgG.

Our results are agreed with previous study that accomplished by [14] in Iran which revealed that anti-ToxoplasmaIgM and anti-Toxoplasma IgG proportions in patients with diabetic were 73 and 125 respectively among 205 patients. Another study was done by [15] in Iran also supported our study and the proportions were 3 and 47 among 110 patients for anti-Toxoplasma IgM and anti-Toxoplasma IgG respectively. The highest seroprevalence rate of anti *T. gondii* IgM and IgG antibodies was observed in the >200mg/dl diabetic category, this is in accordance with previous studies had done by [14,16].

Insulin combined with D-glucose plays a significant

role in the regulation of unicellular eukaryotes replication[17], insulin changes the growth kinetics of *T. gondii* and induces a mitogenic influence on *T. gondii* replication[18].

The role of *T. gondii* in the pathogenesis of Type 2 Diabetes mellitus remains a dilemma, that may be attributed to the inflammatory-mediated destruction of pancreatic β cells which indicates to the decrease in β-cell mass that contributes to the failure of the β cell to yield enough insulin, this lead to increase the risk of developing acute and chronic pancreatitis as well as diabetes.[19,20,21,22].

In Iran significantly high rates of anti- *T. gondii* antibodies have been reported in diabetic pregnant women[18]. Moreover, in Turkey, more than double rate of infection among patients with type I diabetes compared with healthy individuals[23]. Those results are consistent with our findings that showed the highest seroprevalence rate of anti *T. gondii* IgM and IgG antibodies was observed in the women of old age.

Conclusion

In conclusion, this study reveals that diabetes could increases susceptibility of *T. gondii* infection. Most diabetic patients (50 patients) their level of blood glucose were between 151-200 mg/dl while 45 patients and 3 patients had > 200 mg/dl and 150 mg/dl of blood glucose respectively. Our study revealed that among 98 patients there were 10 positive for IgM and 32 for IgG.

Conflict of Interest: Authors announced that they don't have any competing interest.

Source of Funding: Self-funding

Ethical Clearance: All data collected has been approved by private laboratories and clinics. No collection of patients names or any personal data.

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Analysis of the Psychological Effect of Scamper Education Program and Creative Thinking among Primary Pupils

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Abstract

Gifted students specifically, are in dire need of opportunities to develop their thinking, skills and knowledge acquisition through thinking programs that can suit their abilities, their possession of a wealth of linguistic and a wide range of information and ideas, their love for deep investigation and exploration of new things, as well as activities which are at par with their mental abilities. There were newly formulated ideation approaches, techniques and programs coming forth with cognitive affirming studies, which required directed and intuitive approaches. The aim of this study was to determine the effect of the SCAMPER Program in learning vocabulary for pupils. The participants included a total of 65 fifth grades -year pupils. According to the study results, the primary students can generate, determine, match vocabulary and put it in the appropriate position. Following the application of the SCAMPER program, the pupils generate determine, match vocabulary, that they will recycle all *karikh primary* school.

Keywords: *Psychological effect, Creative Thinking.*

Introduction

Due to the growing body of research in the last decades teaching vocabulary has created a heated debate among researchers [1]. In the center of the discussion is whether words should be taught in context or in isolation or whether incidental vocabulary learning leads to better word power compared to method where learners engage in deliberate word learning activities. SCAMPER is one of the brainstorming strategies developed by Bob Everle (1971), and the program is an extension of ideas and recommendations submitted by Alex Osborn (1953), for the generation of ideas, and making effort[2] or brainstorming during the thinking process, and the different strategies that can be used in promoting the process of thinking, and the principles upon which the generation of ideas is based on; That innovation really stem from ordering and addition of new ideas[3,4]. This program is also one of the programs through which to promote the creative levels between Students' classes, and in this program a number of questions are directed to students in a way that encourages them to get out and think outside the box, and therefore these questions are considered the driving force that allows them to acquire many different thinking skills, which will help them in improving their thinking skills and the wisdom of the program helps teachers to think in an unusual way with more flexibility [5]. The strategy is used effectively in educational settings; teachers need to follow a number of the procedures, and the basic steps that teacher should prepare a lesson plan to be able to identify the preferences through which the information will be transferred to the students,[6] and select the most important topics .It is interesting to keep students' attention as long as possible, and then the teacher sets the time to apply them. the strategy is whether the time is for explaining or whether students are working with each other in a Cooperative way [7].Objectives of the Study the present study aims at: Developing student's ability in acquiring the new vocabulary items in their textbooks and thus increasing student's vocabulary capacity. Determining student's attitudes regarding the utilization of Scamper program.

Methodology

Design of the Study The present study makes use of an experimental design to investigate theefficiency of scamper strategy on the study sample. The experimental design is an approach to research into which situations

are sat up to test a specific hypothesis or idea in which different variables can be determined [8].

Population: The population is the 5th grade students in all the primary schools in Bagdad governorate in the academic year 2018/2019.

The Sample of the Study: The sample of the present study comprises (63) students of TOOLKARAM Primary school in Bagdad Governorate. Such a sample is divided into two groups. The first group (A) is the control group, it consists of (31) students. The second group (B) is the experimental one, it consists of (32) students. After exclusion, the sample decreased to (60) students, (30) students for each group. The experimental group received the treatment based on Scamper strategy activities taught by the researcher during nine weeks in the second term of 2018/2019. The researcher herself taught the experimental and the control group during that period.

Equivalence of the Groups: The researcher is sure of the equivalence between the two groups the (experimental and the control) before getting started with the experiment. There are certain variables that affect the experiment results. These variables are as follows: Students' Age: The students' ages were calculated per months. They were calculated from the day of their birth until the day of the experiment (20 of February 2019). After using the t-test, the mean of the experiment group is (208) and that of the control group is (209), the standard deviation for the experiment group is(12.7) and that for the control group is (8.48) and the calculated t-test value is (1.092) whereas the tabulated one is (2). It was proven that there is no statistically significant difference of (0.05) under (58) degrees of freedom between the ages of the two groups. Students' Scores in the First Course: The researcher obtained the first course scores of English of the year (2018/2019) and after implementing the t-test for the two groups, the mean scores of the experimental and the control groups are (58.6) and (58.6), the standard deviations are (14.2) and (10.6) and the calculated and tabulated test value are (1.95) and (2) respectively. It turned out that there is no statistically significant difference at the level (0.05) under (58) degrees of freedom. Academic Achievement of the Parents: Academic achievement is another variable that is controlled in order to equalize the two groups. These academic achievements are literacy, primary, intermediate, preparatory and bachelor.

Controlling External Variables: 1. The sample was chosen randomly; the researcher has randomly chosen the sample and the equivalence between the two groups. 2. There is no obstacles or accidents that may affect the steps, procedures or circumstances of the experiment. 3. The absence of some students does not cause any experimental extinction because the numbers between the two groups are equal. 4. The growth factor has no effect on the dependent variable because the experiment takes a short period of time (nine weeks) [5]. The researcher uses the same instrument for both groups under the same circumstances [6]. For the sake of preventing the differences between the two groups including teaching method and the way of dealing with students, the researcher taught the two groups (experimental and control) by herself. She also has consolidated the course content which is the last four units of the textbook/English for Iraq for the 5th primary students. 7. The period of the experiment is the same for the two groups (the experiment and control). It started on (20th February, 2019) to (25th of April, 2019) for the two similar classes and under the same physical circumstances [8]. The researcher has given ten lessons a week one lesson for each group every day with close hours as shown in the following table:

Teaching Material: The researcher has taken the last four units (5, 6, 7, and 8) of the textbook/English for Iraq in the second course of (2018/2019) and has chosen the following lessons for such units: 1. Unit Five: Food and drink. (P: 58) from the textbook 2. Unit Six: in the capital city. (p:74) from the textbook 3. Unit Seven. The seasons. (P: 90) from the textbook 4. Unit Eight: The challenge. (p:106) from the textbook. Behavioral Objectives Richards & Schmidt (2010:51) define behavioral objectives as follows: "It's a statement of what a learner is expected to know or be able to do after completing all or part of an educational programmed". A behavioral objective has three characteristics: 1. it describes the goals of learning in terms of observable behavior 2. It describes the conditions under which the behavior will be expected to occur.3. It states an acceptable standard of performance. In the light of the teaching material which is the last four units (5, 6, 7, 8) of the textbook, the researcher prepared (100) behavior objectives depending on bloom's taxonomy in the learning domains including the four levels (knowledge, comprehension, application and analysis). It was shown to a panel of experts to give their opinions and to modify what the researcher had to prepare. There was an 89% approval of all the experts. The behavioral objectives were distributed to the four units of the content.

Table 1: Distribution of behavioral objectives on the units

Level Content	Knowledge	Comprehension	Application	Analysis	Total
Unit 5	11	4	4	4	23
Unit 6	9	9	5	4	27
Unit 7	10	8	5	3	26
Unit 8	5	9	6	4	24
Total	**35**	**30**	**20**	**15**	**100**

Instruction of the Study: The experiment began on the (20th of February, 2019) for nine weeks and lasted to the (25th of April, 2019). The researcher taught the two groups in order to control the teacher variable. SCAMPER strategy was used with the experimental group and the regular teaching with no additional activities for the control group. Each group was exposed to an achievement of pre and post-test.

The Experimental group: in this group the researcher has prepared 30 lesson plans and 100 behavioral objectives according to SCAMPER teaching strategy following 7 Steps such as substitute. Combine, Adapt, Modify, put to other use, Eliminate, Reverse. These steps are as follows: Preparing the students to use Scamper by explaining that they will be taught how to improve their English vocabulary. Attract student 'attention of the most important rules and vocabularies students have previously studied in order to refresh their minds and make them ready for the next activities. Starting by using the first stage "substitute

The Study Instrument: Every experimental study needs a proper instrument through which the researcher collects data: In this study, the following instruments are used: Combee (2007) defines Achievement test as a determiner to what a student has learned about stated course outcomes. It is administered at mid- and end point of the semester or academic year. The content is based on the specific course content or on the course objectives. It is cumulative, covering material drawn from an entire course or semester. The researcher constructed a vocabulary comprehension test for the pre and post-test for both groups. The aim of this procedure is to compare the scores of the pre and post-test to show the impact of using Scamper strategy on the students' achievement.

Pre-Test Description: Richards & Schmidt (2010) define pre-test as the test that is given before learning occurs. The comprehension pre-test for this experiment consists of 5questions; the first question consists of 5 items. The second question consists of 5 items. The third question consists of 5 items.

The Post-test: The researcher post-tested the students of both groups on the 25th of April, 2019. The same procedures of the pre-test were followed as well as the validity, reliability, pilot study, scoring scheme, item facility and item discrimination.

Statistical Tools: The researcher used some statistical tools in this study. They are as follows: 1. T-test 2. Chi-square 3. Item facility and Item discrimination 4. Pearson Correlation Coefficient

Results and Discussion

In order to investigate the aim of this study which is the "The efficiency of Scamper's program on Iraqi EFL 5th primary Pupils' learning vocabulary. improve the students' performance and examine the hypotheses, the data obtained from the pre- and post-test of the experimental and control groups are statistically analyzed. This analysis proves if there is any significant difference between the two groups in the pre- and post-test. Comparison of the Experimental and Control Groups in the post-test scores According to the results obtained from the post-test of both groups it is shown that the mean scores of the EG is (17.0) and that of the CG is (14.5). This means that the scores of the experimental group is higher than that of the control one in listening comprehension performance which is successful. Using the t-test formula, for the two independent samples, is not clear to show the significant difference between the two groups. But it is found that the computed t-value (4.15) is higher than the tabulated one (2) at (0.05) level of significance under (58) degrees of freedom. Analyzing the Hypotheses: Analyzing the Results of the First Hypothesis There is no statistically

significant difference between the mean ages of the students in the experimental and control groups. The two groups are equivalent in the age variable, so the hypothesis is accepted. Analyzing the Results of the Second Hypothesis: The second hypothesis is "There is a statistically significant difference of 0.05 between the mean scores of the students of the experimental and the control groups concerning the first course scores.". The second hypothesis is accepted for there is no significant difference at the 0.05 level in the scores of the groups (experimental and control). Analyzing the Results of the Third Hypothesis The third hypothesis is "There is a statistically significant difference of 0.05 between the mean scores of students of the experimental and control groups in the listening comprehension post-test results in favor of the experimental group" previously which means that this hypothesis is accepted. Discussion Regarding the statistics of data of the present study, the results show that the strategy adopted in this experiment had proved that there is an improvement in the students 'English vocabulary where the students' achievement in the post-test in the experimental group is better than that of the control group. The mean scores are (17.0) for the experimental group, and (14.5) for the control one. The results of using the reciprocal listening activities in the present study are as follows: 1. the researcher used modern ways in teaching such as;(audio, Data-show, laptop and PowerPoint etc.). These techniques help the class make more fun and interesting [2]. The researcher adopted logical steps in introducing the lesson, where he starts with warming up in order to stimulate students to start a new lesson and also for the purpose of reviewing the previous lesson information, then she used scamper strategy step by step such as (substitute, combine . Adapt, Modify, put to other use, eliminate and Reverse) [3]. Scamper strategy is effective and important strategy in learning vocabulary for it helps students understand the study material. With the help of this strategy of teaching, the student can recall any piece of information that they learned in previous lessons.

Conclusion

According to the results, some conclusions have been drawn: The Scamper strategy has proved to be effective in the students' learning vocabulary. Using these 7strategy (substitute, combine. Adapt, Modify, put to other use, eliminate and Reverse) helps students increase their energy and enjoyment in the class. Scamper strategy play an important role in stimulating the basic senses and makes the learning more active and effective. It also increases the students' knowledge of phonology, grammar and vocabulary. The use of modern strategy during class encourages students to develop their English vocabulary. It also enhances their knowledge and understanding as it appears in their performance in the post-test.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon/College of Basic Education, Iraq and all experiments were carried out in accordance with approved guidelines.

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The Impact of Think-pair-share Strategy and Psychological Effect for Fifth Preparatory Students

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Abstract

The observation protocol contains codes related to student behavior in the different phases of the Think-Pair-Share activity. Two trained observers observed samples of students during thirteen Think-Pair-Share activities across ten weeks of the semester, and coded their behavior using the protocol. Analysis of observation data showed that our implementation of Think-Pair-Share results in 83% of the students displaying engaged behaviors for a majority of the time. We analyzed patterns of student behavior in the different phases of TPS and the transition of their behavior from one phase to the next. The sample consisted of (92) students of the Fifth grade in Al-thawra preparatory school for female, they distributed randomly, (46) students in the experimental group and (46) students of the control group. The two groups were equalized in the following variables: age, IQ, and linguistic ability test, parents' education. The experiment lasted over 8 weeks, and at the end of the experiment the post test was applied After the results were analyzed, the results showed that the students of the experimental group who studied by using think-pair-share strategy were superior to the control group who studied the conventional method in the development of the achievement of the students.

Keywords: *Investigating, think-paire-share Strategy, EFL students.*

Introduction

Basically, Think-Pair-share (henceforth TPS) has been utilised as a teaching strategy in the educational world[1]. TPS is found in not only English teaching but also in many other areas of teaching such as mathematics, or social science teaching. TPS challenges the students to be more enthusiastic, proactive and more lively in the learning process. This is because TPS is student-oriented with teachers functioning as a facilitator where their role is directing, facilitating, and guiding students[2]. The foundation of TPS is collaborative learning techniques [3] in which exchanging information, ideas, and opinions is open and stimulating. Also, discussions lie at the heart of collaborative learning. In that way it is clear that discussions are the prototype teaching method to make the students posses eagerness or enthusiasm in learning process and at once they are one of the most valuable tools in teachers' repertoire. TPS was developed by Lyman in 1978 [4] for the first time. It has been observed through varied research on educational teaching from the basic to the university levels. This strategy is a part of cooperative learning. To make a case for collaborative learning seems easy. Research on learning in small groups exists than on any other instructional method, including lecturing. While most of this is credible and positive, it is dominated by research and investigation in higher education [5]. There is a lot of research that involve some structures of cooperative learning: TPS, three-step-interview, round-robin-brainstorming, three-minutes-review, numbered heads, think-pair-solo, circle the sage and partners. TPS consists of some steps. Kagan (2009) states there are five steps in TPS. They are: Organizing students into pairs by dividing the students into pairs randomly. The purpose of choosing randomly is to avoid the gap between high students and low students. Posing the topic or a question is posing a question or a topic to the students. This question should be in general and has many kinds of answers. It makes the students think deeper and deeper, and they can give their opinions in many aspects. Giving time to students to think meanwhile the teacher should give the students several minutes to think an answer of the question given before. They should analyze the question and use their critical thinking to answer the question. [4] Asking students

to discuss with their partner and share their thinking. In this section, each students share his or her own answer to his or her partner in pairs. They share their thinking and discuss each other to find the best answer.[7] Calling on a few students to share their ideas with the rest of the class. This last step is calling some students to share their ideas with the rest of the class. Some students give their answer, and the others can give their opinion or other answers. This improves not only the student's knowledge but also their confidence. In TPS, the teacher poses a challenging or open ended question and gives students a half to one minute to think about question. This is important because it gives a chance to start to formulate answers by retrieving information from their long term memory. Then, the students work in pairs in collaboration or with a neighbor sitting nearby and discuss their ideas about the question for several minutes. The teacher may wish to always have students pair with non collaboration group member expose them to more learning style. TPS gives all students the opportunity to discuss their idea. This is important because students start to construct their knowledge in this discussion and also to find out what they do not know. This active process is not normally available to them during traditional lectures. After several minutes, the teacher solicits students or takes classroom "vote". Students are much more willing to respond after they have a chance to discussing their ideas with a classmate because if the answer is wrong, the embarrassment is shared. Also, the response received are often more intellectually concise since students have a chance to reflect their ideas. TPS also enhances the student's oral communication skills as they discuss their ideas with the one another. This short "intermission" can also provide the teacher with a timely opportunity to mentally go over the next concept to be discussing. One variation of this structure is to skip the whole-class discussion. Another variation is to have students write down their thoughts on note card and collect them. This gives the teacher an opportunity to see whether there are problems in comprehension.

Methodology

The following statistical procedures which followed by the researcher in order to reach the aim of the study and prove its hypothesis. The following procedures are:

1. Selecting the experimental design.
2. Selecting the population and sample and Equalizing the sample
3. Controlling extraneous factors.
4. Applying the experiment.
5. Designing and administering tests. 6. Analyzing the data statistically.

Experimental Design: The experimental design includes one independent variable (think-paire-share strategy) and a dependent variable (the test scores), thus the experimental design was adopted on two equivalent groups one experimental and the other is controlled

Population and Sampling: The population of the presented study is represented by the fifth-grade preparatory school students in the province of Hilla for the educational year (2018-2019). Al -thawra preparatory school for female located at the core of the province was chosen to represent both samples the control and the experimental one, and we randomly selected class (A, 46 students) to represent the experimental set that received think-paire-share strategy based instruction and class (B, 46 students) to represent the control set which received conventional way of teaching.

Samples Equivalence: The researcher conducted a statistical equivalence between the experimental and control sets in some variables that could affect the results of the experiment. The researcher has chosen the two groups randomly, the students of the research sample from similar social and economic status and study in one school. These variables are:the age measured by months, first course scores, and parents academic achievement. The statistical results demonstrated that the two sets were equivalent in all the aforementioned variables.

Extraneous Variables: Despite the fact that the researcher verified the equivalence of the two sets of research in some variables that are believed to affect the course of the experiment, she also tried to avoid the effect of some extraneous variables in the course of the experiment. Some of these variables and how to control them are as follows: Accidents associated with the experiment. There were no accidents during the execution of the experiment. No students left the school or got transported to another one. The sample was chosen intentionally and the two sets were equalized accordingly. The maturity factor: Since the duration of the experiment was unified between the two research groups As well as the age for students in the two groups so all the growth that occurred will be unified between all the students because they are on the same level, so this factor did not have an impact on the research,

the impact of experimental procedures: the researcher worked to reduce the impact of experimental procedures that can affect the dependent variable during the course of the experiment [10].

Preparing the Material

The teaching materials that were used in conducting the experiment were represented by the English for Iraq syllabus and the content that was taught during the second course of the educational year (2018-2019) was set to be from (Unit 6- Unit9). In which the researcher set a number of behavioral objectives to be expected from the test sample, as for the lesson plans the researcher prepared a total of (30)lesson plan for each sample set based on the second intermediate grade book (English for Iraq).

Research Instrument:

- **Pilot study testing:** The researcher chose the students of one school that is located near the main school on which the experiment was conducted. The school was Tulaytula preparatory school for female on (40) student from this school. The test items were statistically analyzed and found that the item difficulty ranged from (0.75-0.30) by which the test items are considered valid in difficulty. The item discrimination ranged from (0.72- 0.31) which is accepted also.
- **Conducting the test**

  * The Pre-test Final Administration

Both students of the experimental and control groups were pre-tested on the 20th of February 2019. This pre-test aims at comparing the scores of the students' achievement in the pre-test with those in the post-test. As a result, the researcher tested and scored the sample of the study.

***The Post-test**

Students of both groups (the experimental and control ones) were post-tested on the 20th of April 2019. The same pre-test procedures were followed in conducting the post-test, namely scoring scheme, validity, pilot study, item difficulty, item discrimination, and reliability. It is worth mentioning that the post- test also was seen by a jury of fifteen specialists in linguistics and TEFL methodology

Results and Discusion

A t-test formula for independent samples was used to compare the mean scores of the EG and CG on the posttest. As shown in Table 1 the mean score of the CG is 36.239; whereas the mean score of the EG is 53.587. The calculated t-value is 4.668 and the tabulated value is 1.98 at 0.05 level of significance and 90 degrees of freedom. This indicates that there is a statistically significant difference between both groups, i.e., the achievement of the EG who were taught by think-paire – share strategy is higher than that of the CG who were taught by the convectional way . This indicates that think-paire – share strategy is more effective than the traditional way. Therefore, the aim of the study is fulfilled and the null hypothesis is rejected. The alternative hypothesis should read: There is a statistically significant difference between the means of the achievement scores of the students who are taught by the traditional method, and those who are taught by using think-paire-strategy in favour of the EG.

Table 1. Comparison between EG and CG on the Posttest

Group	No.	M	SD	df	T-value	
					Calculated	Tabulated
EG	46	53.587	14.387	90	4.668	1.98
CG	46	36.239	20.694			

Conclusion

The use of TPS motivates students in the classroom, but it is used when necessary. Whenthe pair working is used the classroom, learners are motivated to develop their oral skills. The use of TPS does not always enhance the development of classroom interaction and interactional skills. In fact, the lack of use of this technique seems to reduce the progress rate. The use of pair working

in the classroom developed the classroom interaction. This can be helpful for the learners to be active and take opportunities to develop their interactional skills and resources. According to (Runmei Yu,2008)," classroom interaction take the role of collaborative learning, which means that interactional skills development on the different classroom activities".

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Basic Education, University of Babylon, Iraq and all experiments were carried out in accordance with approved guidelines.

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Psychological Factors Affecting on Performance in Speaking Skill

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Abstract

This article is aimed to investigate psychological barriers faced by Indonesian students which affect their speaking performance. Moreover, as this research is a qualitative study, direct observation is done to capture all of phenomenon happened in the speaking class in natural setting. The study adopted a pre-test treatment-post-test design. It is hypothesized that there is no significant difference between the mean score of the students' performance who are taught by the Task-based language teaching and that of the students taught by recommended method from the ministry of education. The test results were analyzed statistically, and it was found out that the achievement of the subjects of the experimental group was better than that of the subjects of the control group. Future studies could very well expand and support the findings of this study or yield different results.

Keywords: *Psychological Factors, Performance, Skill*

Introduction

Most of the foreign language learners prefer learning speaking more than other skills. Many language learners, as Hadley (2003), consider speaking skill as the main goal of learning the language. People who can speak a language are those who are familiar and know that language[1-3]. The development of speaking skill as a classroom goal is highly emphasized in teaching English as a foreign language in Iraqi intermediate and secondary schools. Salih (1998)[14] states that "It is a common experience of the teachers of English in Iraq that students at the secondary stage are very poor and hesitant when it comes to participation in speaking, which can be considered a valid measure for learners of oral proficiency". Hence, it requires the mastery of communicative competence to develop this skill. Richards (2002)[11] state that there are some features and factors which make learning speaking the most difficult skill to be achieved by learners. Such difficulty should be tended to utilize reasonable and suitable method and techniques that would open doors to the improvement and development of the learner's oral skills. Since the development of speaking as a skill is fundamental in language teaching, efforts should be concentrated to find new means and techniques for improving this skill. Starting from this point of view, [2] discusses that students may learn the language if they are thinking about a non-linguistic problem than if they were concentrating on particular language forms. Having the above discussions at hand[5,6] state a new shift seemed to be required to satisfy such requirements. To react to such requests, for example giving ideal conditions to students to improve their speaking ability according to what effective communication or meaningful communication' requires, Task-Based language teaching can be the answer for the absence of exposure to authentic English. Task-Based language teaching gives the students[8] an opportunity to use English by practicing effective and different activities in real-world tasks. The emergence of TBLT as a somewhat supported teaching method recently has won notable increasing popularity in learning a foreign and second language and it has been suggested as a path forward in English learning and teaching[7]. Therefore, the researcher utilizes this approach which depends on the use of tasks as the core unit of planning and instruction in language teaching.

Statement of the Problem: English is considered as the most demanded and important language in the world because it is used for the purpose of technology, education, trade traveling, tourism, and communication

among nations. Nunan (2006) confirms that in the course of recent decades, there is a notable increase in the number of people who speak English as a foreign language or second language around the world. Despite the importance of learning the English language, learning speaking in a2L or a foreign language and, in general, is considered one of the most challenge able and difficult aspects of language learning. Rivers and Temperley (1978) mention that how much students are well trained in using 2L or foreign language structure they face difficulties and sometimes find themselves completely at a loss in speaking the target language. Iraqi students are not out of this rule and always face difficulty with the English language. This can be seen in their results and achievement in the matriculation examination; their grades, unfortunately, are very low in English subject, especially in speaking English. There are many reasons for this failure. One of the most common reasons is that Iraqi students usually are in permanent hesitation to speak English because of their problems using fluent and accurate English language. The other problem lies in using teaching techniques and the method followed in teaching speaking at schools, which neglect giving chance to students for interaction through English. Thus, this study is an attempt to find out and suggest another suitable way of teaching speaking, i.e. the Task-Based Language Teaching.

Methodology

Includes a presentation of the procedures used to achieve the objectives of the study, starting from selecting the population and samples, neutralizing the variables of both samples, designing the instruments and tools of the study, conducting the experiment and analyzing the results.

Experimental Research Design: The researcher used the "Experimental-Control Group Design[9]. The experimental design contains one independent variable (Task-Based Approach) and a dependent variable (the test scores), thus the experimental design was adopted on two equivalent groups one experimental, i.e., the group which the task-based method will be applied to. and the other is controlled, i.e., the group which the traditional method will be applied to.

1.	E.G.	Pre-test	Independent Variable	Post-test
2.	C.G.	Pre-test	----------	Post-test

Population and Sampling: The population of the presented study is represented by the fifth-grade preparatory school students in the province of Kirkuk for the educational year (2018-2019). Al-Shahid Nazhan Al-Juburi preparatory school located at the centre of the province was chosen to represent both samples the control and the experimental one, which the researcher randomly selected class (A, 40 students) to represent the experimental group that received Task-Based instruction and class (B,38 students) to represent the control group which received recommended teaching method by Iraqi ministry of education.

Equivalence of Subjects: The researcher selected the students of the study randomly from one school with similar social and economic status. Both groups (EG and the CG) are equalized by controlling the following variables which possibly affect the experiment results:

The age of both groups is measured by months, parent's academic achievement first-course scores. The statistical results demonstrated that the two groups were equivalent in all the mentioned variables above.

Extraneous Variables Equivalence: Cohen et al. (2000) state that one of the most common factors that may affect the dependent variable in any experiment is 'Extraneous Variables'. The researcher tried to avoid such factors in the course of the experiment. We can mention to some of these variables and the way that can be controlled as follows:

1. Accidents related to experiment. The experiment conducted without any accidents like leaving students the school or transporting to another.
2. Maturation
3. Experimental Mortality
4. History
5. Selection Bias

Preparing the Material

The researcher in conducting the experiment depended on materials taken from book English for Iraq during the second course of the educational year (2018-2019) including (Unit 5-Unit 8). The researcher taught all sections and lessons in spite of speaking sections which was the subject of the study. Hence, the researcher conducted the experiment for the whole course as a teacher.

Instruction Period: The experiment started on the 24th of February 2019 for nine weeks and ended on the 5th of May 2019. The experiment conducted by the researcher himself and taught both EG and CG five lessons per week.

Pilot Study Testing: The pilot administration of the test is carried out so as to help the researcher to: check the clarity of the items of the test; and the average time needed for answering the questions. In addition to this, it is used to check the reliability of the test and the practicality of the test in general. The researcher randomly selected (40) students out of the total number (80) students, The school (Al-Shahid Hashim) was located in the center of the province of Kirkuk.

The Control Group: In this group, the researcher has used the recommended method and techniques by the Iraqi ministry of education and followed the lesson plans, steps, and guidelines mentioned in "English for Iraq" teacher's book for 5th preparatory school students.

The Experimental Group:

Preparation: The researcher prepares in advance the tasks that he is going to use in accordance with the materials to be taught and the learners' cognitive abilities.

Presentation: The following procedures are followed in teaching speaking, according to "TBLT". The lesson is divided into three stages: pre-task, task cycle, and post-task (feedback).

Pre-task stage (3-4 min)

1. The teacher will introduce and define the topic of 'My kind of food'.
2. The teacher will use activities to help students learn new words and phrase about food, such as delicious, fresh, healthy, unhealthy, spicy, tasty, grilled, flavor, olive oil, cereal, energy. This will be done by using different instructional techniques:
   (a) Guiding students to use all types of clues found in the text in order to guess the meanings of new lexemes.
   (b) Teaching pronunciation of new lexical items.
   (c) Using visual aids, realia, and stickers to explain vocabulary items about food and drinks
3. Ensuring that the students write new words and phrases in their notebooks in order to study them at home.
4. The teacher will divide the students into groups and choose a reporter, timekeeper, motivator, and monitor for each group. The timekeeper will ensure that the group is working within the time limit, whereas motivator should encourage group members to move forward and achieve the task. The monitor can help members by gathering information and giving feedback on group interactions. The reporter will represent the group in talking about the task in the task cycle phase.
5. The teacher will ensure that the students understand task instructions.

While-task phase (Task cycle) (2 min): Each group is given pictures of food and drinks. In groups, the students will find the name of given pictures and discuss the benefit and harm of that food and drinks.

Planning (8-10 min):

- The students will prepare a report about the pictures to the class, how they did the task and what they discovered.
- During this phase, the teacher walks around, helps them if they need it and notes down any language points to be highlighted later.
- Then the teacher will help the students to rehearse oral reports.

Report (8-10 min):

- The students present their spoken reports about the pictures to the class.
- The teacher will act as a chairperson, selecting which group's reporter will speak next. He may give brief feedback on content and form.

Post-task phase (language focus) (10-15 min)

Analysis:

- The teacher writes on the board five good phrases used by the students during the task and five incorrect phrases/sentences from the task without the word that caused the problem.
- Students discuss the meaning and negotiate how to correct the wrong expressions.
- The teacher reviews the analysis, possibly writing the language, such as categorizing words according

to relevant concepts, on the board. Students may take notes.

Practice:

- The teacher may use a memory challenge game based on partially erased examples already found on the board, and then ask the students to remember these examples. For example, deleting the name of food and drinks found on the board, and then ask the student to remember them from descriptions.
- Together with the students, the teacher will assign the best group's report, and reward the best group by sticking their report on the wall.

The validity of the Tests: Validity has to do with how well a test actually measures what it is intended to measure.[5]

In this study, the oral test measures the performance of fifth preparatory students in speaking skills, i.e., their ability to speak in real-life situations and to measure the behavioral objectives of the elements of both: communicative competence components and the linguistic competence components.

(a) Content validity: Which is "based on the degree to which a test adequately and sufficiently measures the particular skills or behavior it sets out to measure" (Richards et al 1985:61).It is concerned with the relationship between test or examination content and detailed curriculum aim. In the construction of the speaking test the materials of the test items are based on the materials of the "English for Iraq" (unit 5-8).

(b) Face validity: Which is "the degree to which a test appears to measure the knowledge or abilities it claims to measure, it is based on the subjective judgment of an observer" Richards et al (1985), i.e., how the test items look to the examiners, test administrators, and educators. To check whether the test items are suitable and practical or not, the test has been exposed to a jury of experts for evaluation. The jurors are asked to modify, add, or change anything they do not find appropriate in the oral test. The jurors have agreed that the test items are appropriate to measure the purpose they are designed for, except for some minor recommendations and modifications, which have been taken into consideration.

Results and Discusion

The statistical analysis of the results indicates that the mean value of the experimental group is found to be (37.510), and it is higher than the mean value of the control group, in the post-test, which is found to be (32.110). This means that the achievement of the students of the experimental group is significantly higher than that of the control group on total scores of the post-test. This indicates that "TBLT", which is used to teach speaking skill for the experimental group is more useful and more favorable to learning than the recommended method by the Iraqi ministry of education.

Table 1. T-test results for two independent samples to identify the significance of the statistical differences between the two groups on the post-test

Group	N	Mean	SD	t-value		Level of significance
				Computed	Tabulated	
CG	38	32.110	6.581	3.117	2.000	0.05
EG	40	37.510	8.847			

The following points have been made on the basis of the findings indicated in: TBLT can better improve the students' interaction with the teacher and other students. Hence, there is a notable improvement in students' participation throughout group work. TBLT can increase students' opportunities to speak English during the lesson and provide the potential benefits of student-student interaction. Through the interaction students elicit opinion and information from each other and teacher The given tasks make them work together in groups and feel responsibility for tasks fulfill. TBLT encourages students' practice target language receptivity as a result of given various tasks. The students' reaction to the tasks used during the study was very positive, it showed that they were receptive to the idea of "Task Achievement."

Conclusion

The study adopted a pre-test treatment- post-test design. It is hypothesized that there is no significant difference between the mean score of the students' performance who are taught by the Task-based language teaching and that of the students taught by recommended method from the ministry of education. The test results were analyzed statistically, and it was found out that the achievement of the subjects of the experimental group was better than that of the subjects of the control group. Future studies could very well expand and support the findings of this study or yield different results.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon – College of Basic Education, Department of Higher Studies and all experiments were carried out in accordance with approved guidelines.

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The Impact of Psychological Skills and the Strategy of Consensus on Self-Confidence Positive and Negative Affects among Fifth Graders

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Abstract

The aim of the study is to know the effect of the strategy of consensus on location determination in the achievement and self-confidence of fifth grade students in geography. The experimental approach was adopted as the appropriate method for the research procedures and the research community consisted of secondary and middle schools in Babil governorate, Two of which were (Mahaweel Preparatory School for Girls and Al-Najat Girls' Preparatory School) to be a sample of the research. The experiment was applied in two groups: the first was an experimental group studied. The results showed that the two groups were statistically equivalent, and the researcher used the appropriate statistical means to conduct the research (the independent testing of two independent samples, The coefficient of discrimination, and the effectiveness of the alternatives and the equation Alvakronbach equation size effect)The results showed the superiority of the experimental group's female students in the control group in the achievement test and the self-confidence measure, that is, there is a difference of statistical significance at the level of significance (0,05) and for the benefit of the experimental group.

Keywords: *strategy of consensus on location, achievement, self-confidence.*

Introduction

Today, the world is witnessing a tremendous scientific and technological development in the fields of contemporary life. This scientific development is a standard that is measured by the progress and development of nations and the progress and development of any nation is related to the scientific and technological development achieved by these nations[1]. The process of education has become a social and economic investment tool related to the needs and requirements of society. Therefore, education is multi-faceted for the individual and society and is used as a means to achieve the goals of society[2]. Perhaps the main goal of education is change in behavior, but this change involves a specific goal, namely the individual. Many human societies have given great importance to education because it is the goal they seek to achieve from teaching. Although education is of great importance and has fixed characteristics[3], it is always changing. Education in any country should change to fit the nature and circumstances of these countries[4]. The curriculum is a means of education that includes all the experiences that are given to the student from inside and outside the school. It also constitutes a basis in shaping the life of the individual and society and preparing generations capable of keeping up with the progress of civilization and keeping pace with scientific development. Ability to think properly[5], which includes analysis, criticism, reasoning and evaluation in the stages of the educational process, all of which passes through the student. The social materials have an important place in the curricula of the different stages of study because they have an important and effective effect in preparing the students for their academic and professional future and making them useful individuals in society. The teaching of geography feels that the Arab world is a single country integrated geographically and the current borders between its countries are artificial borders. The study deals with the relations between the institutions and organizations involved in the society and their relations with the environment in which they live, as well as their relations with their cultural heritage and contemporary cultural developments and changes. This

strategy gives each student the opportunity to think and record their ideas as well as to have the opportunity to learn from each other in a small collaborative[6] discussion group that leads to a higher level of learner achievement. The main goal of this strategy is to allow each student to think in a way that makes the learner self-reliant, hears his voice, identifies and discovers. Self-confidence is one of the basic personality traits that begin to form since the birth of the individual and are closely related to the individual's psychological and social adaptation and are entirely dependent on his mental, psychological and social components [7]. And self-confidence and success are two sides of the same coin We cannot mention success. We cannot emphasize that this successful man is characterized by his own confidence. Nor can we say there is a failed and confident person. Self-confidence is the first reason for success in life. The teaching of most of the subjects, including social and especially geography in our schools, depends mainly on the traditional method, which focus on memorizing and memorizing the information.

Methodology

Research Methodology and Procedures: This chapter will include an explanation of the research methodology and procedures. It includes the choice of experimental design and the selection of the research community and its design as well as the procedures of parity between the two research groups (experimental and control)And identify the necessary statistical means as follows:

First: the experimental design of the research: includes an independent variable (the strategy of consensus on the location determination) and (the normal method) and the two variables of achievement and self-confidence. Therefore, the researcher used experimental design with partial control of two equal groups, one experimental and the other control table (1) illustrates this:

Table 1. Experimental design of the research

The Group	Independent Variable	The Dependent Variable	Search Tools
Experimental	The strategy of consensus on location determination	1. Collection 2. Self-confidence	1. Collection test 2. Self-confidence test
Control	-----		

Second: **The research community and its model**: The current research community represents the students of the preparatory stage, all of them in the secondary schools and secondary schools of the General Directorate of Education in the province of Babil (Mahaweel district) for the academic year 2018-2019., The researcher chose the two schools (Mahaweel Preparatory School for girls and junior high school for girls) in the district of Mahaweel and in the random drawing method chose Mahaweel Preparatory School for girls to represent the experimental group and the number of female students (40) students, which will study according to (strategy of consensus on the location) (37) students who will study their students according to the usual method.

Table 2. Distribution of female students before and after exclusion in the experimental and control groups

The Group	Division	Number of female students before exclusion	Number of female students	Number of female students after exclusion
Experimental	B	40	4	36
Control	A	37	2	35
Total	2	77	6	71

Thirdly: The equivalence of the two research groups: Before starting the actual teaching in the experiment, the researcher made sure to achieve equivalence in some variables, which can affect the two dependent variables. In order to guarantee this, the students of the two groups were rewarded in a number of variables. Calculated by Months, Educational Achievement of Parents, Grade of Students in Geography for the First Semester of the Academic Year (2018 - 2019), Danilez Intelligence Test of Previous Information in Geography and Self-Confidence Scale (Table 3).

Table 3. The arithmetic mean, the standard deviation, and the two values of the variables (age of time calculated in months, first grade grades, IQ test and SBI) for the two research groups

Statistical significance level	The value of substrate		The degree of freedom	Standard deviation	Average arithmetic	Sample size	The group	Variable
	Table	The calculated						
Not statistically significant	2.000	0.552	69	6.04	200.42	36	Experimental	Age calculated in months
				5.99	199.63	35	Control	
		0.058		10.05	64.11	36	Experimental	First semester grades
				13.98	63.94	35	Control	
		0.224		4.25	16.19	36	Experimental	Test scores of previous information
				5.17	15.94	35	Control	
		0.345		7.52	26.47	36	Experimental	Test for intelligence (Danlys)
				7.47	27.09	35	Control	
		0.180		23.16	109.03	36	Experimental	Self-confidence scale
				20.71	108.09	35	Control	

Fourthly : Adjusting Exotic Variables: In addition to the above measures of statistical equivalence between experimental and control groups, the researcher attempted to avoid the effect of some internal variables (non-experimental) in the process of the experiment, which increases confidence in the internal credibility of the experiment and then in the results, Sample, associated accidents, experimental extinction, maturation processes, measurement instruments, experimental procedures).

Fifth: Preparing the research requirements: The research requirements are the basic elements on which the research is based and according to which the research procedures are implemented. These requirements are as follows:

1. **The scientific material (content):** The researcher identified the scientific material to be taught to the students of the research groups during the period of the experiment (the second semester) of the academic year (2018-2019). The scientific article included the last three chapters (fourth, fifth and sixth) Of the natural geography book to be taught for the fifth grade literary.
2. **Formulation of Behavioral Goals:** The researcher formulated (120) observable behavioral goals covering the six levels of Bloom's knowledge-based classification (knowledge, understanding, application, analysis, synthesis, and evaluation). She presented a group of experts and specialists in geography, Educational and Psychological, Table (4) illustrates this

Table 4. Behavioral objectives according to the six levels of knowledge of the country and according to their distribution to the chapters

Scientific Article	Knowledge Level Levels (Behavioral Goals)						Total
	Knowledge	Understanding	Implementation	Analysis	Installation	Evaluation	
Chapter 4	18	14	4	3	2	2	43
Chapter 5	11	12	3	4	3	2	35
Chapter 6	20	9	5	3	3	2	42
Total	49	35	12	10	8	6	120

Preparation of teaching plans: The researcher prepared a set of teaching plans for the experimental and control groups in the light of the content of the three chapters (fourth, fifth and sixth) of the scientific material to be taught for the academic year (2018 - 2019). The number of teaching plans (34) (17) for the experimental group and (17) for the control group. Two of these plans were presented to a group of arbitrators, educators and teaching method to benefit from their opinions and observations for the purpose of modifying and improving the formulation of the two plans.

Sixth: The research tools (the achievement test and the self-confidence scale)

The achievement test: is defined as a measuring tool that is organized according to an organized method to determine the level of students' achievement in a given subject matter that was previously learned by answering a sample of the questions that represent the content of the subject [3]. There are several steps in which to prepare the test achievement is as follows:

Determination of the purpose of the achievement test and the number of paragraphs: The purpose of the achievement test is to measure the achievement of students in the fifth grade literary natural geography of the fifth grade literary for the three quarters (fourth, fifth and sixth) according to the objectives of the behavior that was formulated from the scientific article, (50) paragraphs distributed (40) thematic paragraph of the type of multiple choice and (10) paragraph article

Preparation of the specification table: The researcher prepared a table of specifications (the experimental map), which included the subjects studied of the natural geography of the fifth grade in the light of the behavioral objectives of the six levels in the knowledge field of the Bloom classification. Relativity and determination of the number of questions with (50) paragraphs distributed on matrix cells, and Table (5) illustrates this

Table 5. Shows the specifications table (test map)

Seasons	Number of pages	Relative importance	Test paragraphs						Total 100%
			Knowledge 41%	Understanding 29%	Implementation 10%	Analysis 8%	Installation 7%	Evaluation 5%	
P5	46	40%	8	6	2	2	1	1	20
P6	30	26%	5	4	1	1	1	1	13
P7	39	34%	7	5	2	1	1	1	17
Mg	115	100	20	15	4	4	3	3	50

Formulation of the test paragraphs: The test paragraphs that measure the six levels of the Bloom classification, which include (multi-choice, understanding, application), are used for these tests, because they have overall comprehensiveness, objectivity and flexibility, Learning outcomes, shortening time and

effort and covering a large part of the content of the course material [17], The paragraphs that measure the top three levels of knowledge from the Bloom classification (analysis, composition, and calendar) were written in the original paragraphs.

Formulation of instructions to answer the test: The researcher put instructions to answer the paragraphs of the test achievement writing the name of the student in the place allocated to them and answer the fifty paragraphs without leaving any paragraph. The answer is to draw a circle around the correct answer for multiple choice paragraphs.

Results and Discusion

The results of the study variable: The students of the experimental group, who studied according to the strategy of consensus on location, were more than the students of the control group who studied according to the usual method in the achievement test. This indicates that there is a significant difference at (0.05) The average score of students in the experimental group and the average score of the students of the control group in the natural geography collection test. This is in line with the studies that confirmed the superiority of the experimental group on the control group We note that the strategy of consensus on location has had an impact on raising the level of student achievement in geography. The effect of the test in the achievement test is (0.91) which is a large size and this explains the superiority of the experimental group to the control group.Results of the variable self-confidence: The students of the experimental group, who studied according to (strategy of consensus on the location) on the students of the control group, who studied according to the usual method in the self-confidence measure and this indicates a difference of statistical significance at the level of significance (0.05) Between the mean scores of the experimental group and the average score of the control group students in the self-confidence scale we note that the strategy of consensus on the location has had an impact on raising the level of self-confidence of students in geography, and the size of the impact in the scale (1.01) which is large size and this explains the superiority of the experimental group on the control group

Conclusions

The use of the strategy of consensus to identify the location in the teaching of geography has contributed to raising the level of academic achievement among students and revitalize their memory by retrieving the previous information and giving the correct answer. The application of the strategy of consensus to identify the location inspires students enthusiasm and vitality and promotes the spirit of cooperation among them and love to participate in the lesson and the female students self-esteem.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon/Faculty of Basic Education, Iraq and all experiments were carried out in accordance with approved guidelines.

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The Impact of Mingle Model on Students' Performance Skill

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Abstract

This study aims at investigating the effect of Mingle Model on Iraqi EFL Fifth Preparatory Students' Performance in Speaking Skill. The researcher has chosen his participants, and they are the 5th-grade students in preparatory schools for boys in Kirkuk Governorate. The numbers of the participants are (61) students and they are distributed into two groups; the control group (31) students and the experimental one (30) students. The control group was taught by means of the traditional way whereas the experimental group was taught by using Mingle model. The researcher has used a recording tool to measure the learners' performance in speaking skill. The experiment was administered during the second course of the school year 2018- 2019 and continued for nine weeks. During this period, the researcher taught both groups himself. After the administration of the posttest to the main sample and the statistical treatment of data using the t testformula for the two independent samples, the results have indicated that the mean scores of the experimental group are (75.13)whereas the mean scores of the control group are (59.00). This result has shown the effect of MingleModel on Iraqi EFL Fifth Preparatory Students' Performance in Speaking Skill.

Keywords: *Impact, Mingle, Speaking Skill.*

Introduction

Currently, talking a foreign language is considered one of the fundamental demands of today´s society issues and for its great significance it has received a large amount of focus to help the learners to obtain[1] the peaking skill but the language learners have faced many troubles in the present days which they have been considered as barriers to learning: firstly, the linguistic barriers which appear in the students' lack of vocabulary, the grammar mistakes, the pronunciation difficulties and the interference of the mother tongue [2,19]; therefore, students find difficulties to speak since they do not have enough words to express themselves, and they feel unconfident to use incorrect structures or unclear pronunciation. In fact, the requirements of this era require new method, strategies, model, and etc. in education. This information goes above the limits of time and space with its modern features in terms of size, accuracy, speed of movement, ease of storage andretrieval[3]. Moreover, the process of education and learning is developing at an increasing pace[2]and to master any language, it is important to master its components [4]. In addition to that the process of teaching English is an important and difficult task, and the role of teacher is not just for teaching only but also facilitator, involves the sub-roles of a supervisor of student's learning, also he should be as the classroom manager and sometimes as co-communicator with the learners[1]. In order that the researcher aims to apply Mingle model to find out its effect in teaching the English language especially, improving learners' performance. A mingle is an activity where a student slants a classmate, talks for a while, and then exchanges on to speak to another classmate [6]. Mingle is suggested firstly by Pollard and Hess (1997) and it is improved to a new model for teaching speaking skill. It is an activity or technique in which the students stand up and mingle with one another, and chat to people especially at a social event and various topics [16]. The unique one of a Mingle activity is that the students stand up and mingle

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at once, in pairs or small groups, and change from one classmate to another whiles peaking, pay attention, and recording notes. Face-to-face interface with at least a few other students is the principal goal. It comes as a set of 20 cards and each card has a unique question designed specifically for the group [10]. The essential skill in learning/teaching language in classroom is speaking skill but most students find difficult to speak fluency. As speaking is not simple to be mastered by the student, the teacher requires developing their strategies in teaching speaking. Since speaking is applied in a school, the students have to learn to comprehend a text and can speak so as to use language fluency. Therefore, the teacher should enable the students to speak by using a new technique or modal to make student better speakers. In addition to that students do not have the ability to speak influency and accuracy as have been noticed that through the period of teaching many levels of learners of English language. English language speaking is a communicating process of constructing sense that includes creating and receiving information[7]. Its method and meaning are reliant on context in which it occurs involving the members themselves, their mutual experiences, the effective physical environment and the speaking objective[11]. Learning English as a Foreign Language (TEFL) has come to bemany popular throughout the last century. Educators face various kinds of complications and problems that make the course slow and relatively weak. These problems headed the teacher in a dilemma in attempting all the hardships in teaching students in order of their future. Iraq is not that far from those problems. Iraq is one of the leading countries that tried to reduce literacy and overcome the difficulties that are related to (TEFL). Consequently, UNESCO has listed Iraq as one of the fastest developing countries in the area of education. Not only has Iraq supplied its society with highly educated people, but it also supported many other neighboring countries with groups of university professors and scientists. In recent, unfortunately, the educational system of Iraq has been lowered to the worst in the region[14]. Therefore, we need a solution to this problem. Accordingly, the researcher aims to apply Mingle model as a new method in teaching the English language and the essential skill of the English language speaking skill as documented by many specialists and teachers of English language. Accordingly, the problem of the current research can be stated in the following question: what is the effect of using mingle model on Iraqi EFL fifth preparatory students' performance in speaking skill?

The Population: The population is the 5th-grade students in preparatory schools for boys in Kirkuk governorate in the academic year 2018- 2019. The sample of the present study includes (68) students of Al-Jehad preparatory school in Kirkuk Governorate. Such a sample is divided into two groups. The first group (A) which is the experimental group; it consists of (33) students while the second group (B) is the control group; which consists of (35) students. After exclusion, the sample is decreased to (61) students, (30) for the experimental group and (31) for the control one. The experimental group received the treatment based on Mingle Model taught by the researcher during eight weeks in the second term of 2018-2019. The researcher himself taught the experimental and the control group during that period of time.

The Experimental Design: The true experimental design is one where the study members are randomly distributed to experimental and control groups. In the experimental investigation the academicdeals with at least one independent variable then,controls further relevant variables, and detect the effect happening on one or extra dependent variables. An experiment typically involves a comparison of two groups [14]. In this study, the experimental group was taught speaking skill by the usage of Mingle Model learning, while the control group has taught by using the traditional method which the teacher normally teaches his classroom (different strategies and techniques).

Controlling Extraneous Factors: The dependent variable may be affected by many unrelated variables in any experiment study adds to the independent variables. These factors are; history, maturation, experimental mortality, and selection bias. So as not to contaminate the obtained results, the researcher attempts to control these extraneous variables.

Instruction: The experiment began on (24th of February, 2019) for nine weeks and ended on the (5 of May, 2019). The researcher has used two groups to determine the control of teaching variables. The researcher has used a Mingle Model to investigate the effect on students' performance in speaking skill with the experimental group and the regular teaching method with the control group, and then administered the pre-test and the posttest on the two groups.

The Control Group: The researcher has followed the steps of the lesson plan and guidelines mentioned

in "English for Iraq"/teacher's book for 5th preparatory school students in teaching this group.

The Experimental group: The researcher has prepared lessons plan and cards to cover the needs of the curriculum and the speaking skill. These cards contain different questions about different subjects as students interact in the classroom. The cards are used in mingle activity to make the situation to be communicated and studied. These cards are shared to students by the researcher to make the Mingle more effective.

Instrument: Every experimental study needs an appropriate instrument that the researcher collects data. The researcher tests speaking skill in this study[3]. For the difficulty of measuring proficiency in speaking accurately, the researcher has used the achievement test and it is an oral test.

Test Validity: Test Validity is the degree to which conclusion drawn from the outcomes of a particular assessment is suitable, expressive, and significant to the assessor's intention[12].

Content Validity: The test is designed according to the general objectives of the content in the "English for Iraq" student's book for fifth preparatory concerning the skill of speaking.

Face Validity: Face validity means the test must appear to assess what it was intended to test. Facial validity can be explained as the extent to which the test is representative of the knowledge and abilities, it presumably stresses to measure[5].

The test is displayed to jury members of teaching staff with well-known and long experience in the field of teaching English language and from different universities in Iraq in order to validate the validity: their advice has been taken into consideration and the tests have become valid within the required standards at the level of the fifth stage preparatory school.

Test Reliability According to classically test theories, every score gained via measuring instrument, the recorded scoreis combined of both a "true" score, which is unidentified and "error" in the measurement practice. The true score is basically the score that the one would have obtained if the measurement were exactly correct.[13]. Reliability is a chief concern as the psychological tests are used to measure certain attributes or behaviors. The researcher uses statistics tools to ensure the test reliability.

Administering the Experiment: The experiment started on Sunday (24th February 2019), extended for nine weeks and ended on Sunday (5th may 2019). The researcher exams the students in the pre-test as well as post-test by himself. The tests were conducted with the approval and assistance of the school administration, a number of teachers and specialists to ensure the safety of the test.

Scoring Scheme: For the test to be objective and reliable, an accurate scoring scheme should be developed for the whole test. The answers of the students in the tests are scored according to Broun's (2001) the oral proficiency scoring categories [8]. The present study is centered on students' performance in speaking skill that depends on oral production. Consequently, it is difficult to test them in a writing style. The researcher tests the students and records their answers with the recorder to be presented to the specialists and compare such scores and determine the final grade for each student.

Results and Discusion

The t test formula is used to indicate pupils score in pre-test and post-test and if there is any significant difference between pre-test and post-test scores or not. To achieve the research aims, a null hypothesis is formulated.

The results showed that the null hypothesis is rejected because there is a statistically significant difference at the level of (0.05) as it clarified in the table below:

The mean results of both groups					
	Group	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Pretest	Control	31	46.71	17.96	3.22
	Experimental	30	46.70	19.24	3.51
Posttest	Control	31	59.00	15.25	2.74
	Experimental	30	75.13	15.25	2.78

Major Findings and Discussion

The researcher concluded in the light of the statistical manipulation of data that Mingle Modelstrategy is a positive effect on Iraqi EFL Fifth Preparatory Students' Performance in Speaking Skill Due to these results, the researcher recommends teachers to use Mingle Model during English classes because they promote learning especially language skills. The Students' Performance in Speaking Skill can be improved; it is supported by the result of the pre-test scores that is lower than the result of the post-test score. The results also indicated that the strategy suggested and adopted by the researcher in his experiment has proved to be effective in improving the pupilspeaking skill.

Conclusion

The results of this study have been reflected a positive effect of using Mingle Model strategies on Iraqi EFL Fifth Preparatory Students' Performance in Speaking Skill. Due to these results, the researcher recommends teachers to use Mingle Model during English classes because they promote learning especially language skills.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Basic Education/ University of Babylon, Iraq and all experiments were carried out in accordance with approved guidelines.

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Critical Component of Behavioral Health Promotion and Impact of Pix PECS in the Achievement of Fifth Grade Students

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Abstract

The goal of the research is to identify the Pix strategy pecs. In the achievement of students in the fifth grade literary history. The researcher used experimental research as a method of conducting his research, which includes an independent variable (Pix strategy) Method usual, and variable follower(academic achievement), as adopted researcher experimental design The partial adjustment to adjust the variables Alp urged, and before starting the application of the experiment Cava researcher between the two sets of research to get accurate results for the following variables: (chronological age measured in months, collection Students in history material (first course grades), Dan IQ test Liz, academic achievement for parents) and when making parity between the two sets of research, the researcher numbers application plans and requirements targets and tests, and until the completion of the application of the experiment where the researcher applying his research for the two sets of search tools, and when correct answers students got a researcher on the experimental group data And then the data were processed statistically by means of a test t- test)

Keywords: *Pix Strategy, Achievement, fifth grade literary students, European history.*

Introduction

The current era has witnessed a great development in all aspects of life. This development has been reflected in the field of education and teaching method, in light of the need to train the teacher to acquire modern teaching skills to facilitate the process of learning and education[1], in addition to his functions as a guide, facilitator and inspiration during Modern and unconventional method These programs require a distinctive planning of modern strategies that have proven to be effective[2] for the educational environment [3].Until the emergence in recent years of several theories of education based on a number of method and strategies used in teaching, and from these theories The constructivist theory calls for the learner to adopt his own knowledge through his direct interaction of educational attitudes and new knowledge, as he links it to his prior knowledge of the teacher's directions. The constructivist theory is contemporary educational, having received a growing interest in educational thought and teaching. In the contemporary era, the Ba'ath has shifted attention[5] to external factors to the interior, that is, within the mind of the learner, such as : his past knowledge, his motivation, his modes of thinking, and all that makes learning meaningful. [7] education seeks to build the learner to know in the cooperative society, and then benefit the learner from his peers during the work and the signs and assistance provided by the teacher and this corresponds to the goal of learning through scaffolding (Scaffolding) To reach the area of growth potential or neighboring Vijotsky knows it is the distance between the level of possible to reach the solution of the problems posed until the availability of assistance or support during the cooperation between the students themselves[8] . Traditional education views the learner as an empty vessel and the learner as the negative future of knowledge dictated by it until the education changes and becomes a consideration of the learner positively [9]. The modern education meant the learner to make article where you will not only be limited role for the transfer of knowledge, but aims to teach individuals and how they think and learn [10] that education is one of the answer and have a broad role for communities and nations and is

the mainstay of its development and Delighting and its tool The key to survival and sustainability in the wave of environmental challenges and to play a large role in the lives of developed and developing peoples . Its value has grown in the development and development of peoples and increased their ability to meet the challenges of civilization to become a strategy for all peoples[11]. The traditional teaching method used by the teacher to teach his students have obscured the role of the pupil in a significant role to undermine his inactive mentality in the classroom . Because its role is passive recipients of information . This made it difficult to absorb the material by students . This is reflected negatively on the level of scientific students and low level of academic achievement of the scientific material . For this reason, the researcher is thinking about using a modern strategy suitable for maintaining and advancing the age and mental level of students, which is the Pix strategy (pecs) Is one of the strategies of active learning and is based on collaborative groups among students and help them to demonstrate their abilities and potential and develop a spirit of cooperation among members of one group and to highlight the role of each student within his group to reach solutions and information and ideas and this leads to the activity And the role of the student to create the spirit of competition and give it the freedom to rely on themselves in the process of learning and thus lead to raise the level of academic achievement in the subject matter to become a positive and effective student in the educational process .

Methodology

It includes the research procedures to achieve and complete the objectives starting with the methodology chosen by the researcher and experimental design and identifying the research community and the sample and the equivalence of the two research groups and prepare the research requirements and tools and the procedures of applying the experiment and know the statistical means used, which are presented as follows :**Experimental Design :** The selection of the experimental design y a partial adjustment as one of equal groups The Research Society : The research society consists of fifth grade students in the governmental day schools affiliated to the Directorate of Education of Babil province/Musayyib district for the academic year 2018-2019 . The researcher chose the junior high school for boys randomly to implement his current research experience and found that it includes two divisions, Division (A) method of random clouds to represent the experimental group and the number of students (30)students, which will study students according to the strategy of Pix (pecs) And in the same way the researcher chose randomly Division (b) to represent the control group and the number of students (31) students who will study their students according to the usual way. Adjust the extraneous variables: where is the settings extraneous variables and one of the important procedures in experimental research in order to provide internal honesty experimental design, it tried the researcher to control extraneous variables that it deems may affect the integrity of the search and as follows: (associated withincidents of experience: the experience was not exposed to any unforeseen circumstances or the occurrence hinder its progress, disappearing demo: you do not get thecase of interruption, transfer or absence of only some individual cases throughout the duration of the test, the sample test: was selected two groups of research atrandom and checked equal groups with a number of variables and enables the researcher to avoid differences For individual students of the two sets of research which may affect the search results, maturity factor: Ndhara the fact that the duration of a short experience and one of the two sets of research and the convergence of thereconstruction of students in the two groups, so what happens growth will return to the members of the two groups equally so was not this factor after the search .measurement tool: Used the same tool measurement for the two sets of search is (achievement test), following the experimental procedures: the work of the researcher to reduce the impact of the experimental procedures that could affect the dependent variable during the course of the experiment and in comes presentation of these measures that have been identified, secret search: keen researcher On the confidentiality of research in agreement with the school administration and the teacher of the article not to inform students of the nature of the research and application of the experience as they were told that the researcher a new teacher at the school so as not to change their activity or deal with the researcher . Duration of the experiment: The length of time equal to the experience of the two sets of search () weeks as it began on (Tuesday) 19.02.2019 and ended on ()//2019 subject: the two groups studied research article itself and is Chapter V/VI/VII of the Book of contemporary European history (2015 i) to be taught fifth grade literary prepared by the Iraqi Ministry of Education For the academic year 2018-2019 Teacher : The researcher studied the two groups of research himself throughout the duration of the experiment, which gives the results of the experiment accuracy and objectivity because

the difference of teachers may affect the results of the experiment and hides the impact of the independent variable, place : The experiment was applied in the same school, Lessons : The study groups were divided into three classes Each group should have one lesson per group on the same day . The experiment was applied on Tuesday February 19, 2019 from the fifth semester of the second course where the researcher studied the experimental groups and the control himself and prepared teaching plans for the experimental and control groups . He prepared (16) a plan for the experimental group according to the Pixstrategy (pecs) And (16) a plan for the control group according to the usual way, the experiment ended 04/07/2019 day (Sunday) where the researcher applied on the achievement test (Monday) corresponding to 8/4/2019 on the two sets of experimental research and control in one day .

Results and Discusion

The students of the experimental group studied in accordance with the Pix strategy (pecs) With the control group students who have studied according to the usual way in the achievement test, and this is in line with studies that have confirmed the superiority of the experimental group that studied according to Becky ‘s strategy (p, ecs) On the control group studied according to the normal method .Research has shown that neurodegenerative activity, which includes physical activity, sensory activities, learning, thinking and imagination, changes the brain, as well as changing the mind. Cultural activities and ideas are not an exception to this rule, which modifies our brains through our cultural activities, read or study music or learn new languages we all have what can be called the brain susp culturally and while cultures evolve it leads constantly to new changes in the brain as Mears Lynch puts it: vary our brains tremendously in the minute brains Celle details Art .... at every stage of cultural development was a normal human being to learn new skills and capabilities of all include brain change a huge ..... can each one of us to learn actually in his life a very complex set of abilities and skills developed Silvia as happens, re - creativity of the history of this cultural development through plasticity the brain and thus the point of view own culture and brain Al Z based onneural plasticity requires a way bi - directional : the brain and the genetic makeup of one form the culture, but culture is a brain also can these changes be Dramatic sometimes.

Plasticity: The plasticity and the ability to change and modification, and thus refers to neural plasticity ductility neurons in our brains and nerve our devices and the ability to change . Many scientists initially did not dare to use nerve plasticity in their publications. Scientists have shown that the mental abilities in which children are born are not always fixed and that the damaged brain can often distinguish itself so that if one part fails, the other can replace it. Brain cells are dead and can sometimes be replaced .It is possible to re-activate the work of some sensory centers and stimulate them again to make them perform the functions that have already suffered a state of cessation and use this process of stimulation to achieve two purposes : to make the person has special capabilities (bara psychological) concerned with risks and visual and other Of other known psychological capabilities and capabilities .Stop : It means stop responding to external stimuli and be on the first two cases : the cessation of the specific case or the partial or Almnhsr and means the case stopped a particular sensory center or a group of specialized sensory centers (sensory area) responding to one type of external influences and like not A person can smell a certain smell while he can smell the rest of the second types of smell : the spread of the mouth that includes all kinds of responses and this situation occurs when the activities of the system of all five senses when the person suffers from the state of fainting due to a strong external influence and Violent does not strengthen his device To nervous to receive him and the interpretation of the goals and the appropriate response to him and spoke palm of the so - called diffuse or faint to ward off a particular risk may affect a particular sensory or entire region damaged sensory center.

Conclusion

Bex’s strategy is appropriate (pecs) With the topics of history, which studied for the five grade literary in secondary and junior high schools, and that the application of the shortcomings of the strategy refers to the spirit of cooperation in the students in the lesson.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon - Faculty of Basic Education, Iraq and all experiments were carried out in accordance with approved guidelines.

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Prevent the Growth of Microorganisms, Reduce the Enzymatic Activity, Storage Traits by Freezing

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Abstract

The current study was conducted on some cultivars of Iraqi dates (Khalal Hamrawi, Hamrawi date, Khalal Zahidi, Zahidi Dates, Khalal Barhi, Rutab Barhi, Khastawi dates) in order to know the effect of Storage in Freezing on the chemical, physical and sensory traits for these cultivars after freezing it at -18 °C. Plastic cans with the size of (1 kg), The fruit quality data were collected after 3, 6 and 9 months of storage. The results showed that frozen storage did not significantly affect the physical traits for date fruits,It was noticed that there were no significant differences in the length and width of the fruits as well as the weight of the fruits during the storage period, except for some cultivars such as Khalal Zahidi, Zahidi Dates, and Khalal Barhi, It was found an increase in fruit weight, There was a small increase in the volume of fruits during storage, the results remained constant after six months of storage in freezing, The study showed an increase in the content of TSS and total sugars of fruits during the period of conservation and storage in freezing and decrease in moisture content during storage periods.

Keywords: *Freezing of dates, Hamrawi cultivar, Khastawi cultivar, Storage traits.*

Introduction

Dates palm trees are considered fruit trees in most Arab countries such as Iraq, Egypt, UAE, Saudi Arabia, Kuwait and Tunisia, and it can be said that dates palm trees represent a fruit tree[1] of important economic value if it receives the attention and proper care. It can be transformed into an agricultural commodity that contributes significantly to the list of crops that can be exported, thus add a profitable return from hard currency to national income[2], in addition to the importance of this crop in bridging the food gap because it represents the fruit of rich and poor food, It is characterized as a whole food that contains most of the important nutrient elements needed by the human body, In addition to a large number of manufacturing areas where both main and secondary date palm products are included, Dates are considered an important source of energy and essential nutrients, In addition, it has some medical benefits[5]. At present, as a result of the continuous growth in world production and industrial development of dates, there is an urgent need to store dates in production seasons to other seasons. In addition to the problems experienced by owners of orchards in the storage of dates, Among these problems are the damage of dates and the rotting them as a result of poor and non-objective storage. As we know that the freezing process reduces the water activity, prevents the growth of microorganisms, reduce the enzymatic activity, which leads to the extension of the fruits age[12], especially the rapid freezing maintains the texture and characteristics of the original fruit because it does not cause rupture of cellular tissues when melting ice crystals and it maintains relatively the color of the fruit, In addition, storage in freezing allows dates to be preserved at different stages of maturity compared to dry storage [7] and for the purpose of storage dates in freeze, it is necessary to study and knowing the type, dates cultivars and the amount of moisture[6], knowing The amount of sugars and the quality of packaging, because the filling factor is very important and controls the success of the freezing process, if the dates are packaged, the packaging does not allow the exchange of moisture and thus the relative humidity is not useful, However, if the dates are not packaged, the relative humidity in the atmosphere of the freezing chamber

increases because of the presence of moisture in the incoming fruits and it decreases as soon as evaporation of this surface moisture, and the dates lose their moisture quickly and it often makes fog in the freezing room or whiteness on the surface of dates and cause a shortage of The weight of dates [3]. The fruits of dates are classified into three stages of maturity, which are Khalal, Rutab, and date depending on the color, texture, moisture and sugar content. At the Khalal stage, the fruits of the date begin to mature and the moisture content drops to about 20%, and the sucrose turns to the sugars. In the dates stage, the skin becomes brown and the texture becomes soft. Dates contain the maximum amount for Total Soluble Solids and it is the best case for storing dates[11].

Materials and Method

Preparation of samples: This study was conducted on some cultivars dates in Babylon province for the agricultural season 2018. The samples were taken from the local markets at different stages of maturity which included (Khalal, Rutab, and date). The samples were stored at low temperatures from 0 to -18 ºC. These samples were placed in 1 kg sealed plastic containers until the required laboratory tests were conducted. The weight of the fruit was approximately 500 g in each package.

Conducting chemical, physical and sensory analyzes on stored dates

Estimation of fruit weight: The weight of the fruit was calculated by taking 10 fruits randomly from each replicate using a sensitive balance and the average weight for one fruit per gram was then calculated by dividing the total on the total number of fruits.

Fruit Size: The size of the fruit was measured by the graduated cylinder method and the displaced distilled water at the average of 10 fruits per duplicate, The size of the distilled water was placed in the graduated cylinder and the fruit was immersed in the graduated cylinder. The volume was measured by finding the difference between the water level in both cases and the average of one fruit was then extracted by dividing the size difference on the number of fruits, it was calculated by unit (cm^3).

Fruit length and its diameter: The length and diameter of the fruit were measured using the Vernier (cm) and the length and diameter of the fruit were then extracted by dividing the total on the number of fruits.

Estimating humidity: The percentage of water content and humidity was estimated using the method in [9] by drying 10 fruits per replicate in a vacuum oven at a temperature of 70 °C for 48 hours and at the constant weight, the percentage of the water content for the fruit is calculated.

Estimating Total Soluble Solids: Five gram of chopped fruit was added and 15 ml of distilled water was added and triturated in a ceramic mortar. which then filtered, The percentage of Total Soluble Solids was estimated using the Hand Refractometer by taking a drop of sap and placing it on the prism of device. The results were adjusted based on the optimum temperature of 20 °C.

Estimating pH: The acidity was estimated using the method found in [9]. The study concludes by taking 25 g of available sample (cut into small pieces and ground with blender), followed by adding 100 ml of distilled water and boiling for 1 hour, it was then filtered the resulting mixture and cooling it to 100 ml in a standard glass flask and then transferred to a cup Its capacity is 150 ml and then measure the PH number by using PH METER.

Estimating Total Soluble sugars: It was estimated by the method of [13] which conclude by weighing 200 mg of the sample, adding to it 8 mL of ethyl alcohol at a concentration of 80%, it was placed in a test tube and then placed in a water bath at 60 °C for half an hour.After that, the solution was taken to another flask. An 8 mL ethyl alcohol was added to the remaining precipitant at a concentration of 80% and leave in a water bath for half an hour. this solution was taken and collected with the solution from the previous stage and place in a centrifuge at 4000 rpm for 15 min. The slurry then transferred to the rotary evaporator to remove the alcohol. The remaining solution completed to 100 mL with distilled water and in which the total soluble sugars were estimated using the phenol method by taking 1 ml of the sample and adding 1 ml of phenol at a concentration of 5% and 5 ml of concentrated sulfuric acid, The model was left to cool down and the absorbance was measured at a wavelength of 490 nm and a standard glucose curve was used for this method.

Sensory evaluation for the storage fruits: The sensory evaluation test for dates was conducted by specialized professors in College of Food Sciences, where each professor makes a sensory evaluation of

the samples, taking into consideration the taste, flavor, color, appearance, texture, general acceptance and then filling out the test form. The preference grade in the test model are then classified into figures as follows:

The excellent grade is given 25, a good grade is given 20, the medium grade is given 15, the poor grade is given 10, a Very poor grade is given 5.

Results and Discussion

Effect of Storage Time in freezing on Physical Characteristics for Dates: Figure (1) shows there were no significant differences in the weight of stored fruits during storage periods. Most of the cultivars had very low weight differences, except for a slight increase for the cultivars. This may be due to increasing the maturation during the storage period and low weight loss for the cultivars. These results agree with [17] who found a decrease in the weight of fruits during storage periods in freezing.

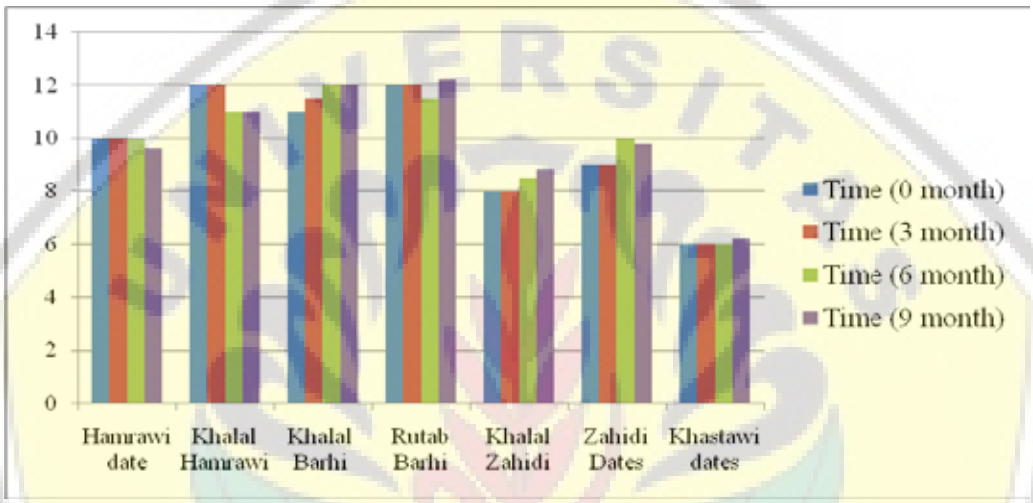

Figure 1: shows the change in the weight of fruits during the conservation period.

As for the size of stored dates, Figure (2) shows the stability of the size for some cultivars such as Rutab Barhi and Khastawi dates, While the rest of the cultivars were a few increases, such as the Khalal Zahidi, Zahidi Dates, Khalal Barhi, and Hamrawi date, while we find a decline in size after 6 months of storage for the cultivar of Khalal Hamrawi. These results agree with [7].

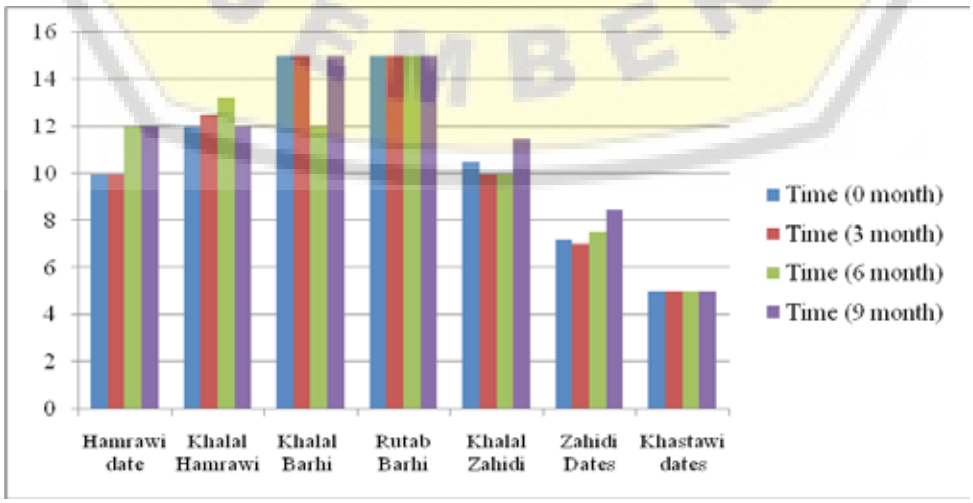

Figure 2: Shows the change in the size of fruits during the conservation period.

Figure (3) shows the change in the width of the stored fruits. The stability of the width for some cultivars, such as Khastawi dates and Rutab Barhi and Khalal Barhi, While there is an increase in width for other cultivars, This result agrees with.[17]

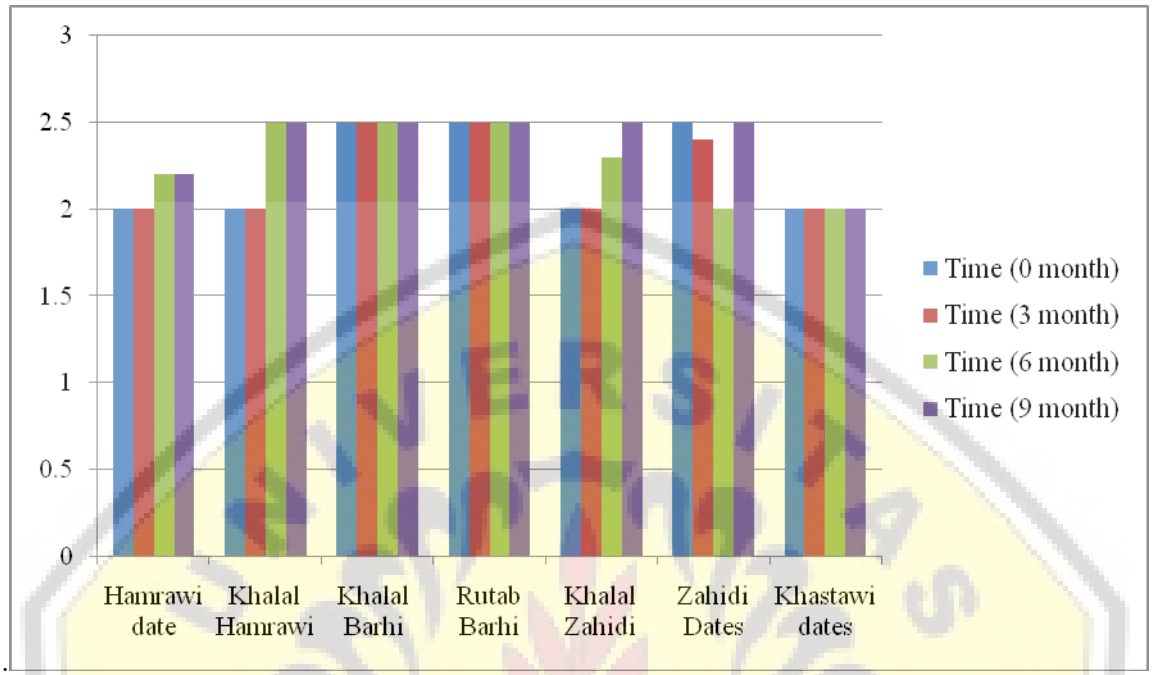

Figure 3: shows the change in the width of fruits during the conservation period.

As for the length of fruits during the storage period, the results were an increase in the length of fruits for most cultivars after 6 months of storage.[17] found clear changes in fruit length and width during the storage period.

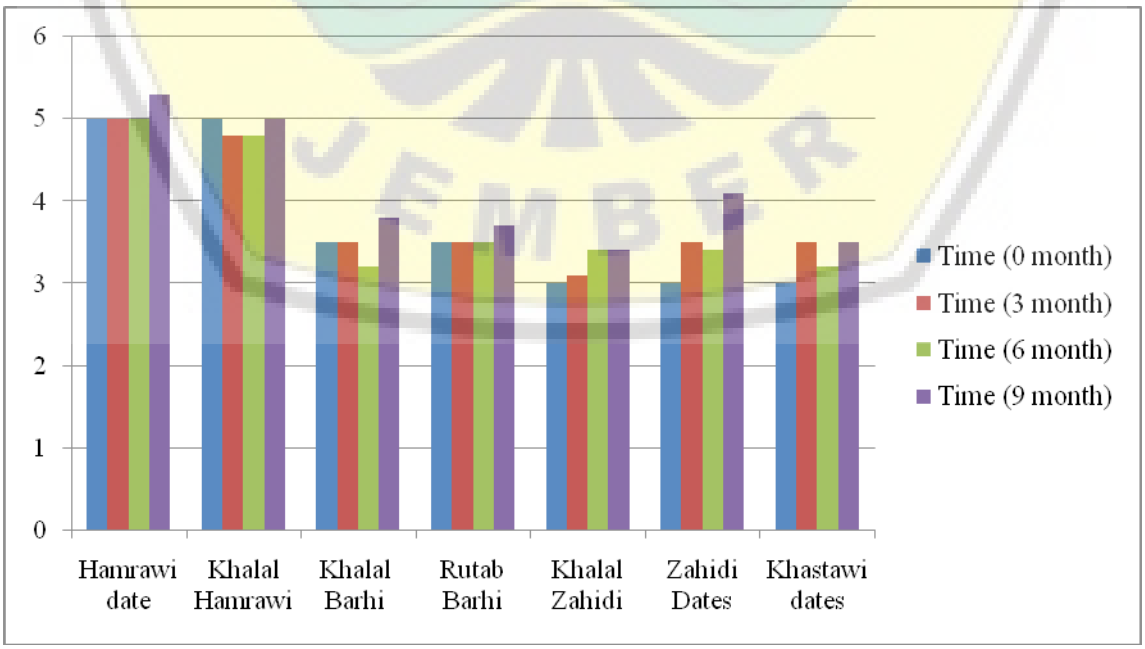

Figure 4: shows the change in the length of fruits during the conservation period.

Effect of storage time in freezing on chemical properties for dates: The pH values were high for Khalal Hamrawi, Hamrawi date, and Khastawi dates during storage periods, As for the cultivars of Khalal Zahidi, Zahidi Dates, Khalal Barhi, and Rutab Barhi, The pH values were slight. This result did not agree with[17], where they found a gradual decrease in pH.

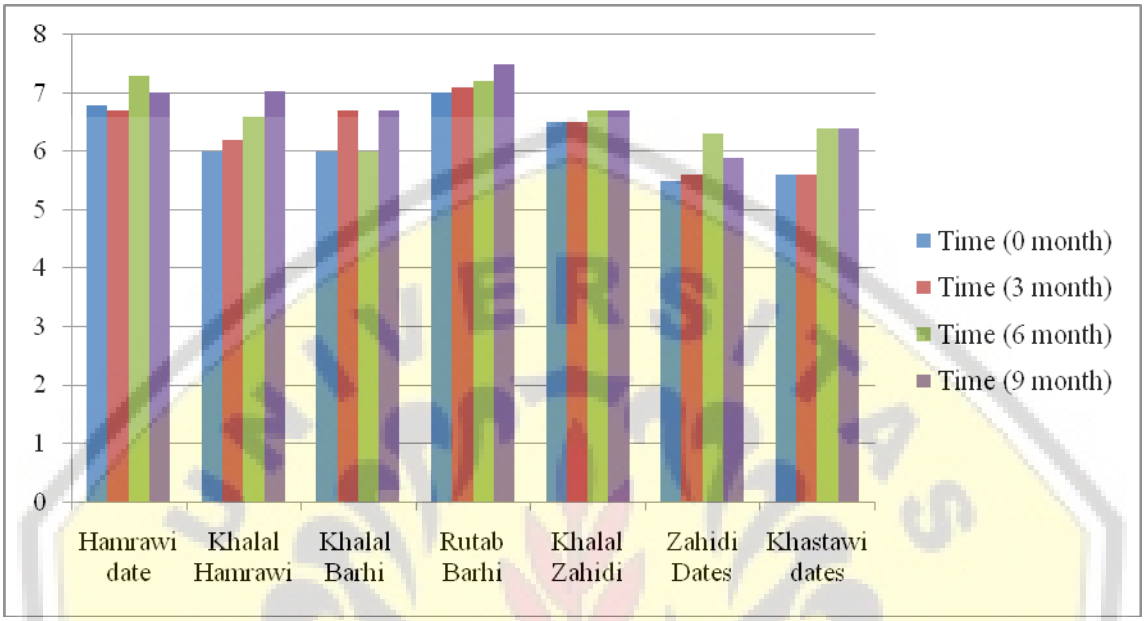

Figure 5: Shows the change in the pH of fruits during the conservation period.

Figure (6) shows the low moisture content in the stored fruits when the storage period is increased because prolonged storage often leads to a decrease in moisture content. This may be due to the high respiratory rate for the stored fruits. These results agree with[2,4,18].

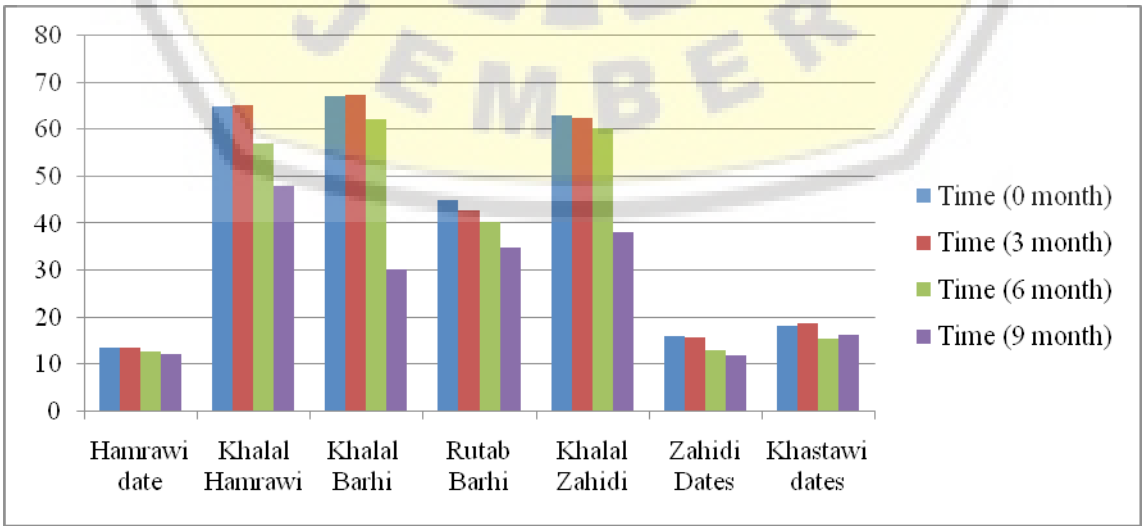

Figure 6: Shows the change in the moisture content of fruits during the conservation period.

An increase in TSS values was observed for most date cultivars during the storage period. This increase may be due to the conversion of some insoluble compounds such as Pectin to soluble compounds, This may indicate the continued degradation of complex sugars to simple. Stability values for some cultivars such as Khastawi dates and Zahidi Dates, These results agree with[14,2,4]. We also note an increase in the percentage of total sugars for the stored dates due to increasing the maturation of dates and increasing enzymes activity that converts tannins and pectin into monosaccharides. These results agree with [15].

Effect of frozen storage on sensory traits: The grades of sensory evaluation are among the most important indicators of the quality for dates in the Rutab and dates stage from the point of view of the consumer. The results indicated in Figure (9) that the best cultivars in terms of taste and flavor is Rutab Barhi with grade of 24.4 followed by Zahidi Dates 24.1 and Khalal Barhi 23.2 where Khalal Barhi became most mature and fresh during the storage period in freezing, The lowest grade was found for Khalal Hamrawi cultivar 15.8, with the disappearance of the clutch taste during the end of the storage period due to the transformation of dissolved tannin compounds into insoluble compounds. The most favorable evaluation was for Zahidi Dates (24.0 and 22.8) for the traits of color and appearance, respectively, with the presence of Sugary spots for Zahidi Dates after 2 months of storage in some storage boxes, followed by Khastawi dates (23.8, 22.1), respectively. As for the fruit texture, the best grades were for the Khalal Zahidi 22.8 followed by Rutab Barhi 22.0.

Conclusion

There was a small increase in the volume of fruits during storage, the results remained constant after six months of storage in freezing, The study showed an increase in the content of TSS and total sugars of fruits during the period of conservation and storage in freezing and decrease in moisture content during storage periods.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Al-Qasim green University, Iraq and all experiments were carried out in accordance with approved guidelines.

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Risk Factors Associated with Stroke among Elderly Adults

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Abstract

Objectives: Some stroke risk factors cannot be controlled. These include Gender, age and family history. However, many stroke risk factors are lifestyle related and can be reduced by making a few simple lifestyle modifications. This study aimed to determine the risk factors associated with stroke among elderly adults. A quantitative case-control study was conducted in the medical wards and physiotherapy units of teaching hospitals in Erbil City of the Kurdistan Region of Iraq from March to August 2017. A randomized cluster sampling technique was used for enrolling 97 cases and 97 controls of elderly adults, and data were collected in direct interviews with a structured questionnaire. Multiple logistic regression analyses revealed a statistically significant association between the risk factors of hypertension (OR = 7.846, P< 0.001), diabetes mellitus (OR = 7.108, P< 0.001), family history of stroke (OR = 5.949, P< 0.001), hypercholesterolemia (OR = 5.700, P= 0.002), smoking (OR = 4.284, P= 0.003), lack of physical activity (OR = 3.351, P= 0.01), obesity (OR = 3.340, P= 0.013), and heart disease (OR = 3.335, P= 0.011) with stroke. Hypertension and diabetes were associated with higher odds of stroke.

Keywords: *Brain; Stroke; Elderly adult; Odds Ratio; Risk factor*

Introduction

Every year, 15 million people worldwide suffer from stroke. About six million die, and five million are remain permanently disabled. Stroke is the second leading cause of disability after dementia [(1)]. Stroke causes sudden difficulty in walking, dizziness, loss of balance, lack of coordination and severe headache with no apparent cause[(2)]. Disabilities due to stroke may include loss of vision and/or speech, paralysis and confusion. Globally, stroke is the second leading cause of death over the age of 60 years [(3)]. Most developed countries were accepted that the chronological age of greater than 60 years as a definition of 'elderly' or older person. There is no United Nations standard numerical criterion, but the United Nation agreed cutoff is 60+ years to refer to the older population[(4)]. Data from the Framingham study showed a lifetime stroke risk of one in five for women and one in six for men among those 55 to 75 years of age. Moreover, the incidence of stroke continuously escalate because of the population expansion of elderly and the apparent epidemic in the general population regarding modifiable cardiovascular risk factors, including diabetes mellitus, obesity, and physical inactivity [(5)]. Many risk factors will contribute to the occurrence of stroke, some of which are modifiable, while others are nonmodifiable. Controlling the modifiable risk factors such as hypertension, hypercholesterolemia, blood glucose, physical inactivity, smoking, stress, obesity, and diet will prevent the occurrence of stroke [(6)]. Because of the importance of controlling the modifiable risk factors by lifestyle changes in preventing stroke, and the importance of screening and early management of stroke to prevent neurologic deficits and disabilities, the researcher intended to determine the risk factors among elderly adults.

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Material and Method

Study Design: This research involved a quantitative case-control study design. It was carried out from May to November 2016.

Setting: Medical wards and physiotherapy units of Hawler and Rizgary teaching hospitals in Erbil City of the Kurdistan Region of Iraq.

Participants:

Eligibility: The study population consisted of elderly adults with or without stroke. The study sample included 97 cases and 97 controls of elderly adult patients according to **the following inclusion criteria:** elderly adult (age ≥ 60 years old), both Genders, conscious, agreed to be a subject in this study, good personal communication, hemorrhagic or ischemic types of stroke (for cases) and no other medical problems except stroke (for controls). **Exclusion criteria:** those who had a transient ischemic attack. The controls were matched to cases in age and Gender.

Sampling and sample size: A randomized clustered sampling technique was used to obtain a representative sample of the target population according to the inclusion and exclusion criteria from March 4, to May 22, 2017, once a time without the follow-up of participants. The total sample size was 194 (97 cases and 97 controls). The estimation was based on the following parameters through the GPower software Version 3.1 in two tails: effect size (0.041), alpha I error/level of significance = 0.05 in 95% confidence interval, power (1-beta II error) = 0.8, and number of predictors = 1; these parameters were obtained from a previous study that was conducted in Erbil City [7].

Tool and method of data collection: A questionnaire was designed and consisted of two main parts. Part one included sociodemographic characteristics of the study sample (age, gender, education level, marital status, occupation status, and residency area). Part two included some anthropometric measurements (systolic and diastolic blood pressure, blood glucose level, serum cholesterol level, and body mass index based on the weight and height) and risk factors associated with stroke in elderly adults (hypertension, diabetes mellitus, hypercholesterolemia, obesity, heart disease, smoking-current, lack of physical activity, and family history of stroke). The data were collected through a direct interview (face to face) method of approximately 45 minutes duration with each participant. The data collection duration was approximately 3 months, from June 3, 2016, to August 15, 2016.

Validity and reliability: The validity of the questionnaire was checked initially by experts from different specialties related to neurological nursing/ medicine and physiotherapy. The expert responses were based on agreement or disagreement with items of questionnaire. The results indicated that all experts agreed to the content of the questionnaire with some modifications. The researcher took into consideration their responses and prepared the final version of the questionnaire. A pilot study was carried out in two wards of each hospital on 10 cases and 10 controls to determine the reliability of the questionnaire (internal consistency by the split-half method). The alpha correlation coefficient was 0.811, which is statistically adequate.

Ethical considerations: A formal permission was obtained from both the Ethical and Scientific Committees in the College of Nursing/Hawler Medical University, number 56, on 5th September 2016. Written informed consent was obtained from each participant (attached). The researcher promised to keep the patient's information confidential and use the data for this study only after explaining the purpose of this study to each participant. In addition to the above, the researcher told each participant that participation was voluntary, and he or she could leave at any time even if the process was not completed.

Statistical Method: After data collection, the variables and data were entered into statistical application software (SPSS Version 23). The data were analyzed through descriptive statistical analysis (frequency, percentage, mean, standard deviation, and odds ratio) and inferential statistical analysis (Spearman correlation coefficient, chi-square test, and logistic regression). The confidence interval is 95%. A P-value of each test ≤ 0.05 was considered statistically significant, with a power of 0.80, and a correlation coefficient between -1 and +1. For the odds ratio =1, exposure does not affect the odds of stroke, OR >1 exposure is associated with higher odds of stroke, and OR <1 exposure is associated with lower odds of stroke.

Results and Discusion

In this study, the age and Gender were nearly matching criteria between the case and control groups. Table 1 shows the sociodemographic characteristics of

the 97 case and 97 control groups of the study sample. Regarding the educational level, the highest percentage of the study sample was illiterate in both groups (73.2% of cases, 58.8% of control). For marital status, the highest percentage of the study sample was currently married (59.8% of cases, 79.4% of control). Concerning the occupational states, the highest percentage of the study sample was home maker in both the cases and the control study samples (75.3% and 61.9%, respectively). For residential area, most of the study sample was urban (74.2% cases and 69.1% control).

Table 1: Sociodemographic characteristics of the study sample

Sociodemographic Characteristics	Case (n=97)	Control (n=97)
	F (%)	F (%)
Age group/years		
60-69	32 (33)	35 (36.1)
70-79	56 (57.7)	52 (53.6)
80-89	9 (9.3)	10 (10.3)
Gender		
Male	49 (50.5)	49 (50.5)
Female	48 (49.5)	48 (49.5)
Education level		
Illiterate	71 (73.2)	57 (58.8)
Can read and write	4 (4.1)	2 (2.1)
Primary school graduated	5 (5.2)	9 (9.3)
Intermediate school graduated	5 (5.2)	15 (15.5)
Preparatory school graduated	6 (6.2)	7 (7.2)
Institute or college graduated	6 (6.2)	7 (7.2)
Marital status		
Currently married	58 (59.8)	77 (79.4)
Widowed	39 (40.2)	20 (20.6)
Occupational status		
Paid work	14 (14.4)	17 (17.5)
Self-employed	1 (1)	2 (2.1)
Homemaker	73 (75.3)	60 (61.9)
Retired	9 (9.3)	18 (18.6)
Residential area		
Urban	72 (74.2)	67 (69.1)
Rural	25 (25.8)	30 (30.9)
Total	97 (100)	97 (100)

Table 2 shows the anthropometric measurements and risk factors for stroke among elderly adults in both the case and control groups. Regarding blood pressure, the highest percentage of cases was hypertensive, while the controls were in normal blood pressure (systolic and diastolic blood pressures 63.9% and 62.9% among cases; 80.4% and 66% among controls, respectively). Half of the cases had heart disease (51.5%), while most of the controls did not have any type of heart disease (74.2%). Regarding the blood glucose level, the highest percentage of cases had hyperglycemia- diabetes mellitus (63.9%), but more than half (%53.6) of controls had normal blood glucose levels. Only 43.3% of cases have hypercholesterolemia, and most controls have normal serum cholesterol levels (87.6%). Concerning the body mass index (BMI), the highest percentage of cases were obese (68%) and normal weight among controls (39.1%). Concerning smoking as a risk factor, the highest percentage of cases were smokers (70.1%), and the controls were non-smokers (60.8%). Regarding the lack of physical activity, most of the study sample in the case group was inactive physically (74.2%), and it was nearly similar to the control group, which was 63.9%. This study found that more than half of cases had a family history of stroke (54.6%), while in the control group, most had no family history of stroke (74.2%).

Table 2: Anthropometric measurements and risk factors associated with stroke in the elderly

Anthropometric measurements and risk factors associated with stroke in the elderly	Case (n=97)	Control (n=97)
	F (%)	F (%)
Systolic Blood Pressure (mmHg)		
Normal Blood Pressure	35 (36.1)	78 (80.4)
Hypertension	62 (63.9)	19 (19.6)
Diastolic Blood Pressure (mmHg)		
Hypotension	20 (20.6)	16 (16.5)
Normal Blood Pressure	16 (16.5)	64 (66.0)
Hypertension	61 (62.9)	17 (17.5)
Heart Disease		
No	47 (48.5)	72 (74.2)
Yes	50 (51.5)	25 (25.8)
Blood Glucose Level (mg/dl)		
Normal Blood Glucose	30 (30.9)	52 (53.6)
Prediabetes	5 (5.2)	17 (17.5)
Hyperglycemia-Diabetes	62 (63.9)	28 (28.9)

Anthropometric measurements and risk factors associated with stroke in the elderly	Case (n=97) F (%)	Control (n=97) F (%)
Serum Cholesterol Level (mg/dl)		
Normal Cholesterol Level	55 (56.7)	85 (87.6)
Hypercholesterolemia	42 (43.3)	12 (12.4)
Body Mass Index		
Underweight	0 (0)	2 (2.1)
Normal weight	13 (13.4)	38 (39.1)
Overweight	18 (18.6)	23 (23.7)
Obese	66 (68.0)	34 (35.1)
Smoking (current)		
No	29 (29.9)	59 (60.8)
Yes	68 (70.1)	38 (39.2)
Lack of Physical activity		
No	25 (25.8)	62 (63.9)
Yes	72 (74.2)	35 (36.1)
Family history of stroke		
No	44 (45.4)	72 (74.2)
Yes	53 (54.6)	25 (25.8)
Total	**97 (100)**	**97 (100)**

Table 3 shows the odds ratio of risk factor exposure associated with the odds of stroke outcome. All risk factors for exposure to hypertension (OR = 7.846, CI= 3.074 to 20.029, P-value= <0.001 VHS), diabetes mellitus (OR = 7.108, CI= 2.629 to 19.215, P-value= <0.001 VHS), family history of stroke (OR = 5.949, CI= 2.192 to 16.147, P-value= <0.001 VHS), hypercholesterolemia (OR = 5.700, CI= 1.845 to 17.612, P-value= 0.002 HS), currently smoking (OR = 4.284, CI= 1.661 to 11.049, P-value= 0.003 HS), lack of physical activity (OR = 3.351, CI= 1.335 to 8.412, P-value= 0.010 S), obesity (OR = 3.340, CI= 1.289 to 8.653, P-value= 0.013 S), and heart disease (OR = 3.335, CI= 1.314 to 8.466, P-value= 0.011 S) were significant and associated with higher odds of stroke outcome. Therefore, most of the risk factors are modifiable and can be controlled by participants.

Table 3: Odds ratio of risk factor exposure associated with odds of stroke

Risk factors associated with stroke in the elderly	Standard Error	P-value		Odds Ratio	Confidence Interval 95%	
					Lower	Upper
Hypertension	0.478	< 0.001	VHS	7.846	3.074	20.029
Heart disease	0.475	0.011	S	3.335	1.314	8.466
Diabetes Mellitus	0.507	< 0.001	VHS	7.108	2.629	19.215
Hypercholesterolemia	0.576	0.002	HS	5.700	1.845	17.612
Obesity	0.486	0.013	S	3.340	1.289	8.653
Smoking (current)	0.483	0.003	HS	4.284	1.661	11.049
Lack of Physical activity	0.470	0.010	HS	3.351	1.335	8.412
Family history of stroke	0.509	< 0.001	VHS	5.949	2.192	16.147

The present study aimed to determine risk factors associated with stroke among the elderly. Currently, prior stroke is reported in over 5% of individuals aged between 65 and 74 and over 10% of those aged 75 and older[8]. Prevention of stroke occurrence and recurrence in healthy and unhealthy elderly adults is possible by controlling modifiable risk factors through diet and lifestyle changes. Age and Gender were found to be matching criteria between the case and control groups because they are the major confounding factors contributing to stroke occurrence among elderly people. This finding is in good agreement with a large number of previously studies reporting the above mentioned factors as major risk factors for stroke among the elderly [1-3,9].

In the present study, hypertension was found to be one of the most frequent risk factors associated with odds of stroke outcome. This finding is in line with the results of the study conducted in India by Sorganvi et al. (2014), who concluded that a higher risk of stroke among the participants, more than half of whom were over 60 years old, was associated with systolic and diastolic hypertension[9]. The prevalence of increased blood pressure increases with age, with 70% of the elderly suffering from hypertension [10]. According to the present study, diabetes mellitus was a significant risk of stroke, and the patients' blood glucose levels revealed that over half had uncontrolled hyperglycemia [10]. The results of our study also demonstrated that having a family history of stroke on either the paternal or maternal side is a risk factor for stroke occurrence. These authors claimed to be the first to report the association between family history of stroke and development of large-vessel disease (LVD), small-vessel disease (SVD), and cryptogenic stroke [7,11]. Another risk factor for stroke occurrence in the present study was hypercholesterolemia. In line with this finding, Aronow (2006) reported that half of participants aged over 65 had hyperglycemia [12-15].

Conclusion

This is a study that quantifies the contribution of different factors to the overall risk of stroke. Hypertension and diabetes were associated with higher odds of stroke and are the greatest risk factors for all types of stroke. Other risk factors are a family history of stroke, hypercholesterolemia, current smoking, lack of physical activity, obesity, and heart disease, and they were significantly associated with higher odds of stroke. Fortunately, most of the risk factors are modifiable and can be controlled by participants through life style modifications.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Nursing, Nursing Department, Hawler Medical University, Erbil, Iraq and all experiments were carried out in accordance with approved guidelines.

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Antimicrobial, antioxidants activity and Nutritional Properties of High Protein Breads from Vignaradiata

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Abstract

The aim of the current study was to identify the effect of replacing wheat flour with mung bean flour at different levels (0, 5, 10, 15, 20 and 30%) represented as (C, M1, M2, M3, M4 and M5) respectively in some chemical properties of flour, in addition to studying the effect of replacing on some sensory characteristics of the bread. The chemical compositions results of the flour indicated that there was a significant differences between a flour treatments compared to the control flour (100% wheat flour). Also, as the replacing of wheat flour with mung bean flour increased the moisture content decreased while the protein and ash content increased. The sensory evaluation results showed that there was a significant differences between the control bread sample and other bread samples for most of the bread attributes and the best replacing level was using 10% mung bean flour with 90% wheat flour. In addition, the amino analysis results indicated that the wheat flour (control) has the lowest amino acid containing and as the wheat flour replacing increased the amino acids content increased.

Keywords: *Wheat Flour, Mung Bean Flour, Amino Acid Analysis in Flour, Bread Sensory Evaluation.*

Introduction

Legumes are one of the most important sources of protein, mostly when applied with other protein sources such as grains to achieve an integrated protein source of amino acids [13] . The application of legumes in diet formulae has increased to reduce the occurance of certain diseases such as diabetes, heart disease, lowering blood cholesterol levels and the risk of colon cancer[14]. The adding of legume flour to wheat flour is ideal for developing the nutritional value of the bread blends, because of the supplemented with amino acids and fiber[10]. Mung bean (*Vignaradiata*) are type of legume that has oval shaped with greencolor containing 24% protein[11]. The Mung bean contains a high percentage of protein (20 - 27)% and fibers and the type of amino acids found in the mung similar to soybeans, but with less proportion of fat and high activity of antioxidants . The mung beans are also rich in lysine amino acid and the sprouted mung beans contain vitamin C, which is not found in non-sprouted mung bean[1]. The extract of the mung bean was the most effective against the disease of diabetes and cancer and also showed an activity as antimicrobial and antioxidants. In addition, mung bean contains protein, fat, carbohydrates, vitamin B1, B2, carotene, niacin, folic acid and minerals such as calcium, phosphorus, iron, etc.,. Mung bean is combined with cereals which include high concentration of methonine and cysteine to increase its nutrients[2]. Due to the nutritional qualities of mung bean, the current study aimed to evaluate the effect of replacing wheat flour with different levels of mung bean flour on some chemical characteristics of the flour blends, in addition to studying the effect of substitution on some of the sensory characteristics of the bread.

Materials and Method

Materials: Wheat flour and mung bean were purchased from a market in the holy city of Najaf. The wheat flour and mung bean were kept at cool storage untile use.

Method:

Preparation of Mung Bean Flour: The mung bean flour was prepared according to the method described by[11]. The mung beans were cleaned manually by

removing stones and dirt from them. Wash the cleaned mung with distilled water to remove the suspended soil and then dry using an electric oven at a temperature of 60°C and then grinding using the electric grinder. The resulting flour was sieved using sieve size (0.5 mm) to get the flour. The flour was filled in the polyethylene bags and store in the freezer until use.

Location of the experiment: The experiment was held out at the Food Science laboratory, Collage of Agriculture, University of Kufa in May, 2018.

The bread was prepared in a laboratory using the method mentioned by[8]. Wheat flour was replaced by mung bean flour according to the levels represented in Table (1).

Table (1): Replacement levels of Wheat Flour with Mung Bean Flour

Weight of mung bean flour (g)	Weight of wheat flour (g)	Flour type Replacement rate (%)	Sample Code
-	100	0	C
100	-	0	MC
5	95	5	M1
10	90	10	M2
15	85	15	M3
20	80	20	M4
30	70	30	M5

Chemical Composition of Prepared Flour Samples: Determination of Moisture Content The moisture content in the flour samples was estimated in the wheat flour and wheat flour replaced part of it with the mung bean according to the method[3]. Place 2-3 grams of the wheat and mung bean flour sample in a crucible of a known weight in an oven of 105 ° C until the weight is stabilized then cooled and weighted.

Determination of Ash: Ashes were estimated in the flour samples according to the method described[3] by burning the sample in the muffle furnace at 525 ° C until the color changed from gray to white.

Determination of protein: Protein content was determined in the flour samples using the Kjeldahl method described by [15]. The total nitrogen ratio was calculated and multiplied by factor 6.25 to extract the protein percentage.

Determination of fat: The percentage of fat was estimated using the Soxhlet method described by [15]

Amino Acid profile (unit) in Wheat Flour with Different Level of mung bean Flour:

Amino acid exrtraction: The amino acids were taken away according to the method, where the weight of (5 g) of the sample and placed in a bottle of volume (10 ml) and add to it (3 ml) of HCl (6M) with 0.1% of NaOH and 0.1 mg tartric acid and mix well for 15 min, The sample was filtered using a plastic filter (0.45um) and then taken to the apparatus for injection.

Amino acid Derivation: 1 ml of the extracted sample add to 200 µl of dihydroethophthalene (5%). The sample is used for 2 min. Then, 100 microliters of the last mixture were taken and injected into the HPLC, The test was done in the laboratories of the Ministry of Science and Technology/Environment and Water Department using amino acid analysis using the method. The carrier phase consisting of (methanol: acetonitrile: 5% formic acid) (C2-NH2) with a length of (25 cm * 4.6 mm * 10um) to separate the amino acids while the fluorocarbon detector was used to detect amino acids at wavelengths (Ex = 445 nm), Em = 465 nm).

Preparation of Standard Material: (0.01 g) of the standard mixture of high purity amino acids (99.9%) was dissolved in non-ionic water and was transferred to a 100 ml conical flask and completed the size of the mark until it became 100 ppm.

Amino acid analysis conditions:

Mobile phase = acetonitrile : buffer (30 : 70)

Injection: Injection program, including derivatization steps with OPA.

Injected volume = 100 uL

Column = ZORBAX Eclipse-AAA; 3.5µm; L x i.d. = 150 x 4.6 mm

Detector: Florescence (Ex = 360 nm, Em = 450 nm)

Sensory Evaluation of the Bread: The sensory evaluation of the bread samples was carried out by replacing different levels of wheat flour with mung bean flour by faculty and students of Food Science Department at the University of Kufa according to the form described by[9]. The prepared bread were presented

on ten Judges who were interested with breads. The bread samples were analyzed based on (diameter (cm), thicken (Mm), top layer colour, bootom layer colour, pulp coloure,uniformity of pulp texture,pulp softness,odor, chewing and bread leavininig.

Statistical Analysis: All results are given as means of three replicates and the data are transfered as means ± standard deviations. Also, the results were imperiled to one way ANOVA and individual sample T Test using SPSS (version17). The tretments means were detached by comparing the means at $p \leq 0.0001$.

Results and Discusion

Chemical characterization of blends from wheat and mung bean flour: The chemical composition of the flour blends is shown in Table (1). Moisture, protein, fat, ash and carbohydrates for 100% wheat (C); 100% mung bean flour (MC), 95% wheat flour with 5% mung bean flour (M1), 90% wheat flour with 10% mung bean flour (M2), 85%wheat flour with 15% mung bean flour (M3),80% wheat flour with 20% mung bean flour (M4) and 70%wheat flour with 30% mung bean flour (M5) ranged from (9.17% to 6.88%), (11.90% to 18.31%), (1.34% to 1.37%), (1.10% to 1.46%) and (76.67% to 73.39%) respectively for the different flour blends. The moisture content for 100% mung bean flour was significantly the highest (9.17%) compared to other flour samples, while the moisture content was not significant between the flour samples M2 and M3 . This result is in agreement with[5]. The moisture contents for all the flours blends under the study are about the recommendated amounts for dependable keeping of testes by the standards organization of FDA and shows that they will have development kepping value as moisture content in extra of 14% in flours has more danger of bacterial exploit and mould evolution which produce unpleasent changes in the flour[12]. For the fat content, Table (2) showed that there was no significant differences between the flour blends samples. For the protein content, the mung bean flour showed a significant higher protein content (25.10%) compared to all other samples. In addition, the protein results indicated that as the replacement increased the protein content increased significantly except M3 and M4. However, the ash content results of the samples indicated that there was an increased with increasing in the replacement of wheat flour with mung bean flour (1.10% to 1.46%). Increase in the ash ratio represents that the samples with high percentage of ash will be appropriate suppliers of minerals. While the Carbohydrate content reduced significantly with increased substitution of wheat flour with mungbean flour (76.67% to 73.39%). Decrease in carbohydrate content could be because of the low carbohydrate content of mung bean flour as observed in similar works using legumes[7].

Table (2): Chemical Composition of the wheat flour with different level of Mung bean flour

Means ± Stderr					
Carbohydrate (%)	**Ash (%)**	**Protein (%)**	**Fat (%)**	**Moisture (%)**	**Four Treatment**
76.67 ± 0.02	1.10 ± 0.005	11.90 ± 0.05	1.34 ± 0.18	9.17 ± 0.01	Wheat Flour Control
62.53 ± 0.04	3.21 ± 0.003	25.10 ± 0.03	1.64 ± 0.003	7.50 ± 0.005	Mung Bean Flour Control
76.09 ± 0.04	1.18 ± 0.02	12.70 ± 0.05	1.16 ± 0.02	8.85 ± 0.03	M1 (5%)
76.29 ± 0.003	1.26 ± 0.003	13.90 ± 0.01	1.23 ± 0.02	7.31 ± 0.01	M2 (10%)
74.53 ± 0.05	1.34 ± 0.02	15.60 ± 0.04	1.25 ± 0.02	7.28 ± 0.003	M3 (15%)
74.02 ± 0.03	1.41 ± 0.005	16.10 ± 0.05	1.30 ± 0.06	7.16 ± 0.01	M4 (20%)
73.39 ± 0.02	1.46 ± 0.01	18.31 ± 0.87	1.37 ± 0.006	6.88 ± 0.04	M5 (30%)
0.1085	0.0392	1.0147	0.2343	0.0418	l.s.d
0.0001	0.0001	0.0001	0.01	0.0001	P(value)

Determination of Sensory Properties of breads: Table 3 showed the sensory features of combined bread of the different levels of mung bean flour supplementation added to the wheat four. For the diameter of the bread, the results showed that there was a significant differences between all the bread samples and M5 bread sample has significantly the lowest diameter (15.96cm). In addition, the bread thickness results indicated that there was a significant differences between all the bread samples and also M5 bread sample has significantly the lowest thickness (2.12Mm) while the control bread (100% wheat flour) has significantly the highest thickness (6.16Mm). For the top layer color, Table (3) indicated that there was significant differences between the bread samples compared to the control bread while there was no significant differences between (M2, M4 and M5) bread samples. Moreover, the results of the table showed that there was a significant differences between the bread samples compared to the control bread in the bottom layer color but there was no significant differences between M4 and M5 bread samples and between M1 and M2 bread samples. A notable diference is collected by the estimation of the crumb colour between the combined bread treatments and the 100% wheat bread. The results noticeably showed that bread prepared from 10% mung bean flour had significantly the highest score crumb colour (9.87) and the lowest score recorded by bread prepared from 100% of wheat flour (7.90). There is an raise in intensity of crumb colour with higher level of fortification. The results for crumb texture exposed that the bread made with 90 and 80% wheat flour with 10 and 20% of mung bean flour had significantly the highest scoring rate (8.06, 8.03) respectively .

Amino Acid Profile: As the performance of protein is basically affected by its amino acid constitiuation therefore the amino acid profile of samples was measured. The results of Table (4) showed that the all hydrophobic and hydrophilic amino acids content values of the wheat flour replaced with 5, 10, 15,20 and 30% mung bean flour were increased compared to the control flour (100% wheat flour). This increase might be due to their higher contents in mung bean flour than wheat flour[17] reported that amino acids derived from mung bean are an effective complement to those obtained from cereals. Enriching the essential amino acid content of crop plants has both economic and humanitarian impression. Among the essential amino acids, methionine has received the most attention in legumes for 6 protein quality improvement[4].

Table (3): Amino Acid Profile (mg/g) of Wheat Flour with Different Levels of Mung Bean Flour

Treatment / Amino Acid	Control Wheat	Control Mung bean	M 1 (5%)	M 2 (10%)	M 3 (15%)	M 4 (20%)	M 5 (30%)
Aspartic Acid	5.6	3.6	4.2	5.3	7.3	12.1	18.6
Phenylalanine	7.6	5.2	6.3	8.7	11.4	13.5	16.7
Lysine	8.7	8.7	9.9	11.0	16.7	19.7	25.4
Valine	11.6	6.9	7.4	9.3	12.3	16.4	20.6
Glutamic Acid	6.7	5.5	6.1	8.2	10.4	14.9	19.4
Arginine	4.4	12.0	13.5	15.1	18.6	22.4	27.6
Glycine	6.3	18.9	20.1	23.7	29.8	32.2	37.4
Alanine	10.5	7.4	9.4	12.3	17.1	20.4	26.9
Methionine	6.2	7.9	10.2	14.2	15.9	20.3	27.1
Lucien	5.2	6.9	8.7	10.7	13.1	19.7	22.4

Conclusion

The sensory evaluation results showed that there was a significant differences between the control bread sample and other bread samples for most of the bread attributes and the best replacing level was using 10% mung bean flour with 90% wheat flour. In addition, the amino analysis results indicated that the wheat flour (control) has the lowest amino acid containing and as the wheat flour replacing increased the amino acids content increased.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Kufa, Najaf, Iraq and all experiments were carried out in accordance with approved guidelines.

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Cytological and Cytogenetic Characterization of the Mouse Hepatocellular Carcinoma (HCAM) Cell Line

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Abstract

The common type of liver cancer is hepatocellular carcinoma, which often emerges in the setting of major chronic liver disease and has a poor prediction. This study aimed to characterize the cell line of hepatocellular carcinoma established from mice infected with liver cancer. The cell lines characterization was well-defined by morphology, growth curve, and chromosomes analysis. The morphological study was characterized by light microscope and appeared to be extended multipolar epithelial-like cells with a doubling time of 17 h. Cytogenetic test of these cells showed changes in chromosomes with many numerical and structural anomalies. Our results of growth rate, morphological, and cytogenetic properties confirmed that HCAM cell line comprises malignant cells of liver origin.

Keywords: *Cytological, mouse hepatocellular carcinoma (HCAM), cell line.*

Introduction

Liver cancer is one of the most malignant cancers in the world and the third most common reason for cancer-related death[1]. Hepatocellular carcinoma is a type of liver tumor that is considered to be one of the most common causes of death associated with cancer[2] . Cancer cell lines have been widely used in pre-clinical studies and regarded as primary tools for tumor treatment advance and prognosis of the tumor therapy[3]. Early passages of hepatocellular carcinoma provide a better experimental pattern for the study of liver cancer as it resembles the original tumor[4]. Cytogenetic analysis has been used in cancer cell chromosomes from the perspective of morphology and has provided direct evidence for early tumor research[5]. Also, detection of chromosomal breakpoints and chromosomal abnormalities is performed by chromosomal characterization, that can be related to the deregulation of carcinogenic genes[6]. The population doubling time is an essential characteristic of a cell line that can be associated with an important pathophysiological factor[7]. This study aimed to characterize and analyze the characteristics of the HCAM cell line.

Methodology

Cell Culture: The Murine cell line of Hepatocellular Carcinoma Ahmed Majeed (HCAM) was provided from the Iraqi center of cancer and medical genetics research (ICCMGR), Mustansiriyah University. It was grown-up *in vitro* in serum media of RPMI-1640 (10% fetal bovine serum FBS), 100 µg/ml of each streptomycin and ampicillinthen transferred the suspension to a tissue culture flask at 37°C incubation.

Cytogenetic Study: The cells of HCAM were karyotyped at passages (4, 8 and 12). The protocol adjusted by the cytogenetic laboratory at ICCMGR. Before 6 hours of treatment, change media of HCAM cell line and the cells monolayer were processed with colcemid for 25 min and then scattered with trypsin. The obtained cells were suspended treated with 10 ml of

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solution (KCl) for 45 minutes at 37°C and then fixed in fix solution glacial acetic acid and methanol (1:6, v/v). The cell suspension was dropped onto a glass slide and the chromosomes stained with Giemsa dye, and under the microscope, metaphase of chromosomes numbers were counted[8].

Morphological Observation: At monolayer of HCAM cells, the cells fixed in 4% formalin for 5 min, then washed the fixed cells in three times of tap water for 5 min, and after dehydrated the cells in ethanol (70%, 90%, and 100%) at ascending grades. Moreover, stained with H & E stains for observation by inverted microscope [9].

Cell Growth Curve: The growth rate of HCAM cancer cells was obtained by reaching the cells at the number (10000 cells/well) into ten tissue culture flasks (25 ml). By using a Neubauer hemtocytometer, cells were counted at 24-hour intervals for ten days at passages (5, 9 and 12) and the average value of duplicates was used to estimate the doubling time (DT) and scheme their growth curve. The HCAM cells (DT) were calculated with the aid of Graph Prism 5.0 software by exponential growth equation.

The following formula used to determine (DT):

Doubling time (hours) = 0.693 (t – t0)/ln(Nt/N0).

(t) : the time in hours, (t0): the time at which exponential growth occurs, Nt: the cell number at time t, and (N0): the cell number at t0[10].

Genomic DNA isolation: The genomic DNA was extracted directly from the cultured HCAM cells using manual Animal Genomic DNA Isolation Kit (Applied Biological Materials, Canada) according to the manufacturer's instructions.

PCR: The PCR reaction for the P53 gene amplification is described briefly as following; The primer pair of P53 gene is forward 5'-GCG TAA ACG CTT CGA GAT GTT-3' Reverse: 5'-TTT TTA TGG CGG GAA GTA GAC TG-3', used to amplify a fragment of 400 base pairs (bp). In the PCR test, five µL DNA was denatured and used as a template. The PCR reactions were carried out in (Agilent 8800 gradient PCR) (Agilent Technologies Stratagene, United States). Briefly, the PCR reactions were performed in 25 µL containing RNase -free water 7.5 µL, Herculase II PCR 2× Master Mix 12.5 µL, forward primer one µL and reverse primer one µL, DNA template 3 µL . Reverse transcription was carried out at 45°C for 5 min and one initiate denaturation cycle at 72°C for 1 min PCR reactions were subjected to 40 cycles consisting of denaturation for 20 seconds min at 95 °C, different annealing temperature for 20 seconds at 59.5°C, and 60.5° C, sequentially. Extension for 30 seconds at 72°C and one final extension cycle at 72°C for 5 min. In the end, 50 µL of the reaction mixture with five µL loading dye then loaded on a 1% (w/v) agarose gel, containing three µL ethidium bromide, for electrophoresis and visualized by VISION Gel Documentation System (Scie-Plas, Cambridge, UK).

Sequencing: Sequencing reactions were performed to the purified PCR products in both directions by using 3730XL DNA Analyzer (Applied Biosystems Inc, USA). The complementary sequences were aligned using ApE (A plasmid Editor) software (v2.0.55, May 4, 2018). Sequencing was accomplished at the National Instrumentation Center for Environmental Management (NICEM), College of Agriculture and Life Sciences, Seoul National University (South Korea). [11]. The obtained nucleotide sequences of the P53 gene of HCAM isolate were submitted to GenBank under the submission ID: 2235321.

Statistical Analysis: The statistical analyses were accomplished by Graph Pad Prism version 7 (Graph Pad Software, Inc., La Jolla- CA- USA).

Results and Discusion

Maintenance of HCAM cell line: The hepatocellular carcinoma of murine (HCAM) were applied by (ICCMGR). Hepatic cancer cells were maintained in serum media of RPMI 1640 (10% FBS). The cells were incubated at 37°C (figure-1). Cells were passaged twice a week in tissue culture flask (50 ml size), usually at approximately 80% confluence (Figure 2).

Morphology Observation: Microscopic observation found that hepatic cancer cells had polygonal multipolar epithelial-like cell shape, with polymorphism of nuclear and several nuclei in most of the cells, in addition, most of the cells which expressed the features of cell shape (Figure-2).

Cell growth and doubling time analysis: The growth kinetics of HCAM cells were elaborated at passages (5, 9, and 12). From the 24th hour of incubation, the HCAM cells began to grow, and the difference in

growth speed became after 74 hours figure (1-2). The population doubling time for HCAM was 17 hours. The growth curve was shown in Figure (3-A).

Chromosomal Changes: Chromosomal changes were determined during the characterization of hepatocellular carcinoma by karyotype analysis. The results indicated that HCAM cells showed numerical aberration from 80 to 100 chromosomes Figure (3- B). However, both cells showed abnormal chromosome structure and morphology differences of chromosomes Figure (3 –C).

PCR: Partial P53 gene amplification bands are shown in (Figure-4) The P53 gene product exhibited specific band at 400 bp. Based on P53 gene product partial sequencing NCBI blast result, showed similarity with three partials sequenced P53 gene which is Mus musculus p53 tumor suppressor gene AF190269.1, Rattus norvegicus p53 tumor suppressor (p53) gene, partial cds AH010014.2, and Rattus norvegicus p53 tumor suppressor gene, exon 10 and 11, partial cds; AF190270.1.

This study provides comprehensive information for hepatocellular carcinoma cell line as *in vitro* models of mouse in Iraq.

The cell proliferation rate of HCAM was measured and shown that this line of cells double after 48 h and show a high level of division as a monolayer with 72 hours. It means that this cells number is adequate to communicate with each other and access the average. Several cell lines that show the morphological characteristics that consistent with the differentiation degree of the tumor from which the cell line is derived. An obvious morphological change of HCAM cells was tended to grow in clusters without contact inhibition. These results are inconsistent with[12], it was showed the highest viability and live cells, but the lowest dead cells then passaged at 72 hours. Doubling time (DT) of HCAM is 17 hour, which is more rapid than other HCC. Many of HCC cell lines had doubling time ranged from 24.95 hours to 110.60 hours[13]. Whereas, HSC-Li cell line is more rapid than HCAM with doubling time 8 hours[14]. The differences between other cell lines may be referred to as an external environment or nutrition supplied. Chromosomal aberrations are widely in the malignant tumor, and many of these chromosome changes are potential prognostic[15]. Chromosomes features are characterized by their structure and length abnormalities in contrast with normal chromosomes of mice, which may lead to an increase in the number of cell chromosomes to more than 40. The presence and accumulation of genetic alteration which target genes lead to chromosomal aberration. So, hypo methylation of the repetitive DNA sequences at the centromeric regions in HCC may have led to somatic rearrangements that involve unequal recombination[16]. Methylation of DNA is a critical modification of the epigenetic genome that is involved in many cellular processes regulation including chromatin structure, transcription, inactivation of X chromosome and stability of chromosome, and human diseases are associated with aberrant DNA methylation[17].

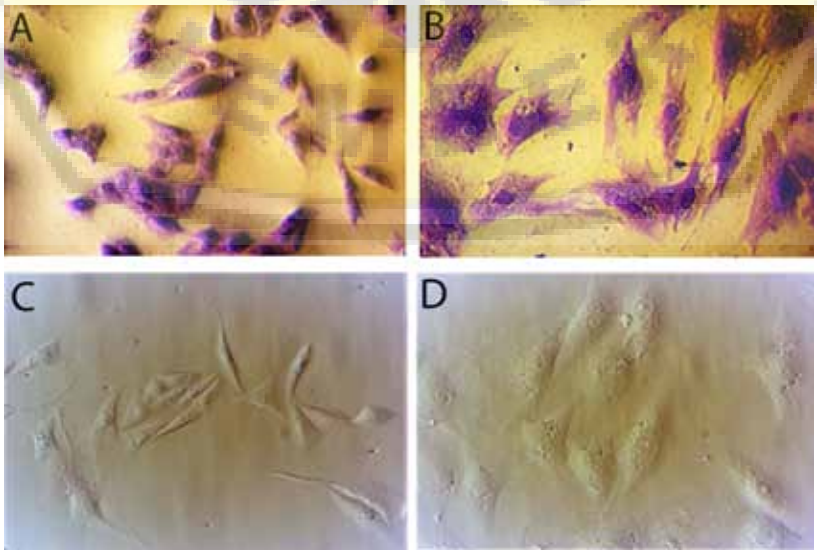

Figure (1): Cell growth and in vitro characteristics of HCAM.

Cells were cultured in a tissue culture flask for 48 hours and then stained with crystal violet, showing epithelial cell with apparent nucleoli A: 24 h 20X, B:24 h 40X (crystal violet dye), C: 24h 20X, D: 48h 40X.

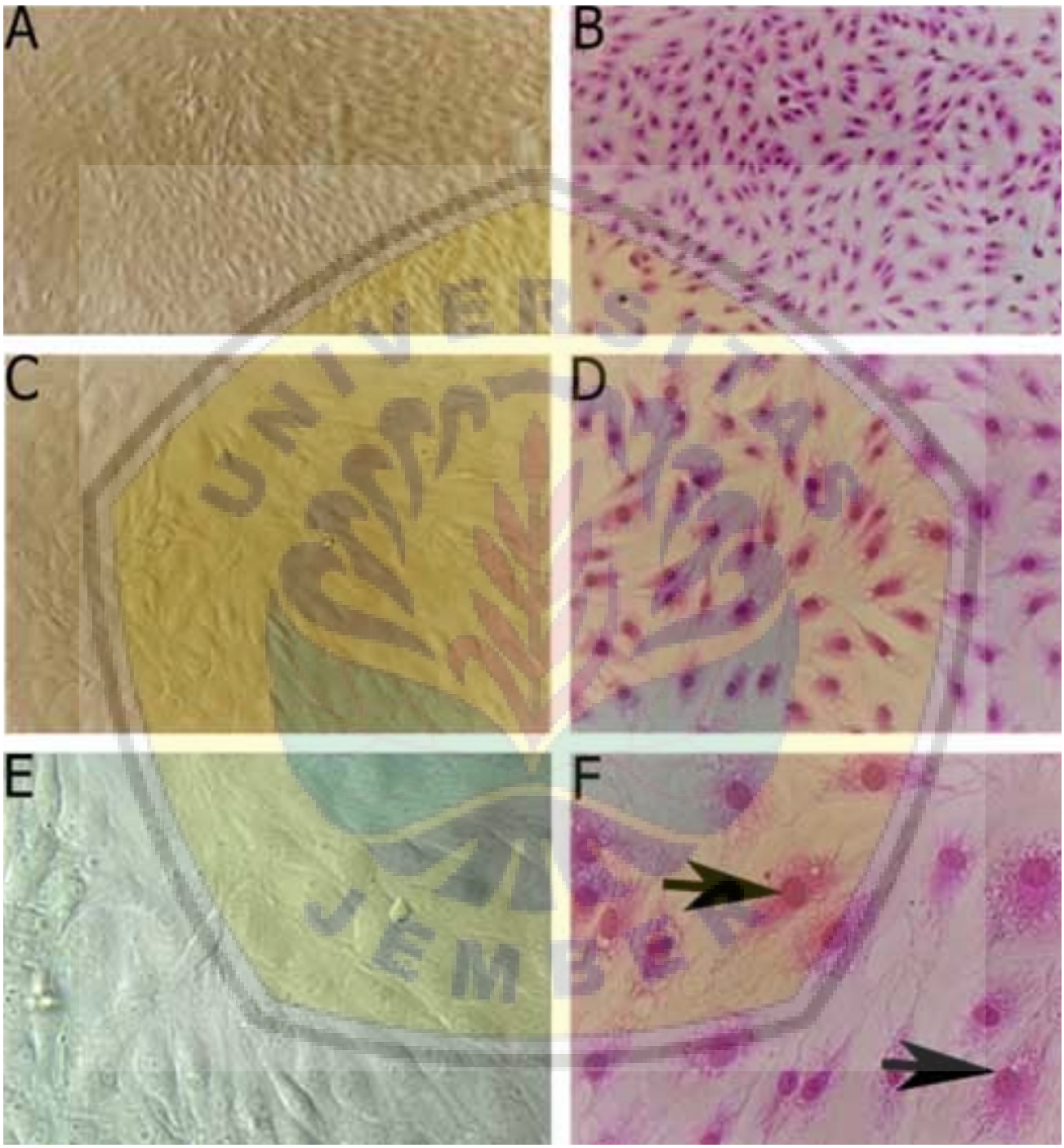

Figure (2): Cell growth and Cell morphology in vitro characteristics of HCAM.

Cultured cells for 72 hours and then stained in H & E stained. (A: X100), (B: X100 H & E stain), (C: X200), (D: X200 H & E stain), (F: X400)(E: X400 H & E stain) showing epithelial cell with nuclear polymorphism and several nucleoli.

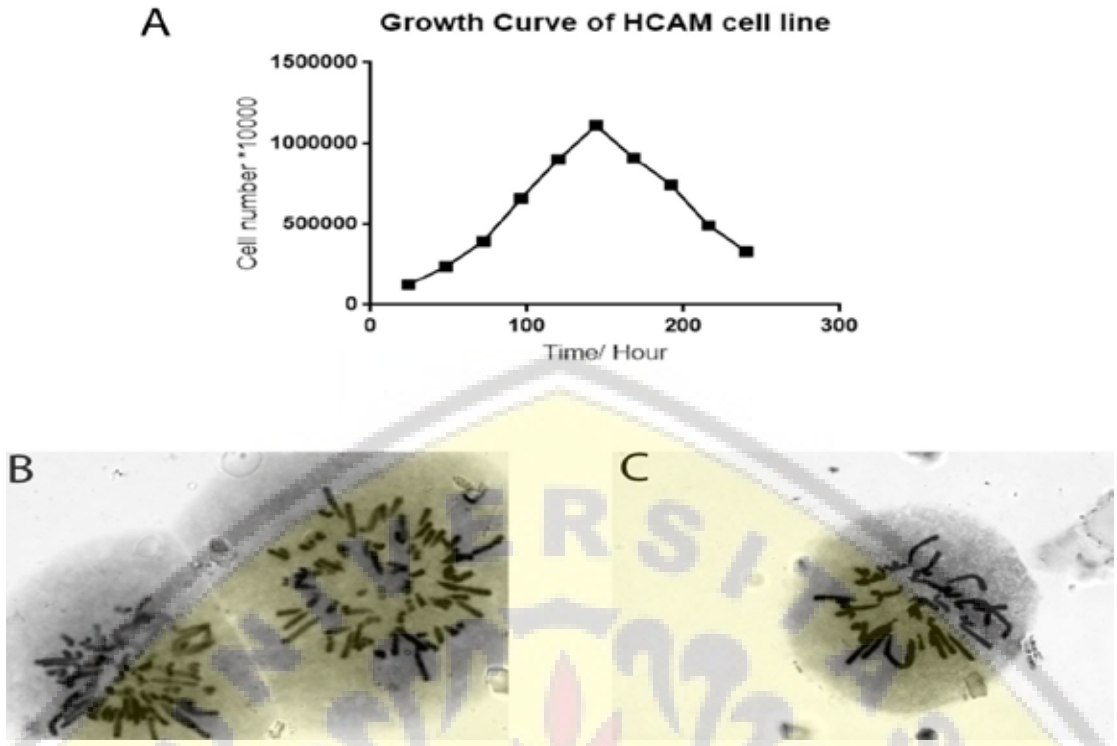

Figure 3: (A) The growth curve for HCAM cell line. (B) Cytogenetic study shows an aberrant number of chromosomes (X1000). (C) Cytogenetic study shows structural changes in chromosomes (X1000).

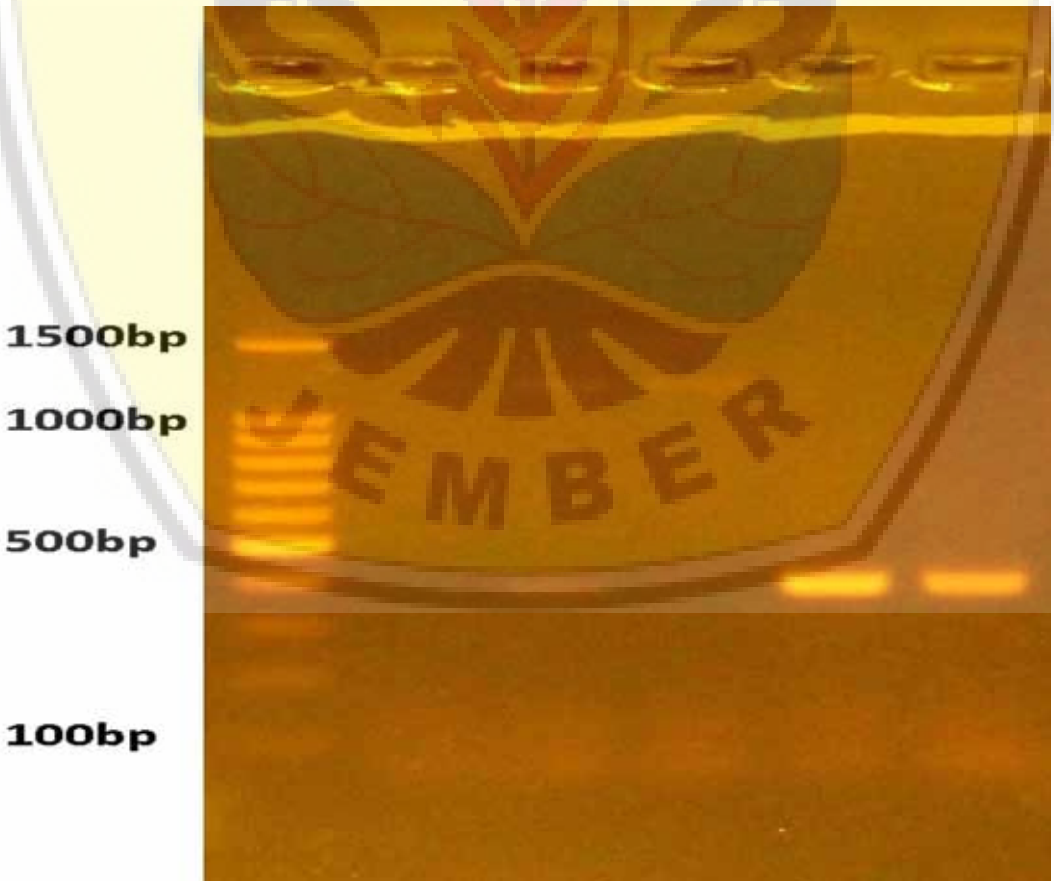

Figure 4: PCR amplification of P53 gene from HCAM cell line, using the forward and the revers primers. The P53 gene product exhibited specific band at 400 bp.

Conclusion

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the college of education, Ibn alhaithum – Baghdad University and all experiments were carried out in accordance with approved guidelines.

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Application of Genetic Method in Protection of Potatoes from Pests and Diseases

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Abstract

The research was carried out on the experimental ground of chair of biotechnology and phytopharmacology. According to the data received with the aid of chair of arable farming, soil science and agricultural chemistry, the soil of the ground is typical middle- loam heavy dust - like black soil. Humus content - 3.9%.it is clear, that only a small amount (3, 2–12, 6%) did not have external signs of disease according to years and lists. According to the results of performed researches, the beginning of potato vegetation (May month) in 2010 was characterized with humidity deficit (the rate of rain was 19, 5 mm lower, than average for the long period) and high air temperature (average within a month 3, 4°c higher than average long-term).Compared with rogue's mosaic, mosaic torsion of leaves in general was characterized with smaller extension. On its own it had higher extension in 2010 (19, 1% in the first list and 17, 2% in the second). Indicate the high efficiency of growing of selected varieties, which exceeds greatly efficiency of standard sorts Serpanok, Zabava.

Keywords: *Genetic method, pests, diseases.*

Introduction

According to the opinion of Largenumber of researchers, selection and growing or resistant varieties is one of the most efficient ways of getting or stably high potato crops which are justified on ecologic and sanitary and hygiene grounds[1] .As well as manufacture of products free from chemical weed and pest killers in the process of the prurience of e research it was expected to distinguish such varieties, which confirms its timeliness[2].

Connection of research with scientific agenda, plans, topics: The research was carried out in connection with work programs of chair of biotechnology and phytopharmacology.

The purpose of research was to select potato varieties, suggested for growing in Ukraine, which are resistant to the most spread diseases and pests, and which are characterized with other useful economic features.

Research Method: The applied method are generally accepted in the process of performance of the experiments with potato.

Research Novelty: For the first time the varieties were selected in the North-Eastern part of forest steppe of Ukraine, which are resistant to the most spread pests and are characterized with a complex of other useful features, that is Vymir, Latona, Dovira, Roko.[3]

Research Practical Importance: Selected varieties of potato, resistant to the most spread diseases and pests with a complex of other useful features (Vymir, Latona, Dovira Roko)[4], and are recommended for practical use.

Paper Approbation: The paper was presented at meeting of chair of biotechnology anphytopharmacology of Sumy National Agrarian University, conference of students Sumy National Agrarian University (2011).

Publications: The students of Sumy National Agrarian University, December 8-12, 2011 (Attachment A).

Paper Composition and Volume: The diploma paper consists of eight chapters, summary, recommendations for production, bibliography. The paper consists of 91 computer typed pages, contains 14

tables. 6 drawings. 5 attachments. Bibliography consists of 46 items, including 28 items in Latin.

The research was carried out on the experimental ground of chair of biotechnology and phytopharmacology[5]. According to the data received with the aid of chair of arable farming, soil science and agricultural chemistry, the soil of the ground is typical middle- loam heavy dust - like black soil. Humus content - 3.9%.

Weather conditions within the period of performance of experiment were distinct in long-term average annual data. During the majority of ten-day periods of 2011 the air temperature was higher, than before[6]. The higher temperature was also fixed in 2010, when the difference with average long-term temperature in some periods amounted to 11°C. Because of high temperature, the lack of humidity was fixed, especially in 2010 this mach with[7].

Taking into account the presence in Ukraine of areas with invasion of Heteroderarostochiensis Wollenweber, it is important to select the varieties with genetic resistance to eelworms[8]. The data of table No. I confirm that some selective establishments of the country pay attention to selection of such varieties.

Table 1. Classification of varieties, registered in the Registry, according to maturity group and resistance to potato root eelworm (Heteroderarostochiensis) depending on the originator establishment (country) this mach with[8]

Selective establishments of Ukraine, other countries	Varieties, pes.	Including %				
		Resistant to eelworm	Early	Middle-early	Mid-season	Middle-late
Institute for Potato Research of Ukrainian Academy of Agricultural Sciences	38	32	26	26	34	14
Polissia experiment station	25	32	44	40	4	12
Research and Production Association "Chernihivelit-kartoplia" CISC	6	50	33	0	67	0
Institute for Agriculture and Breeding for Western region	4	0	0	25	5	0
Sumy National Agrarian University	8	88	50	38	12	0
Lviv National Agrarian University	3	100	33	0	67	0
Germany	29	76	48	38	7	7
Netherlands	22	73	37	18	27	18

First of all these are Sumy and Lviv National Agrarian Universities, which have higher rate, than the varieties from Germany and Netherlands.

In order to get high crop, it is necessary that varieties have resistance to viral diseases. According to our data (table No. 2) it is clear, that only a small amount (3,2 – 12,6%) did not have external signs of disease according to years and lists according[9].

Besides, the varieties with two or more signs of viral diseases dominated. We selected the varieties with the highest evidence of such resistance that is Vymir[10]. Zaviia Dniprianka, Nezabudka, Vrnisazh, Kuroda and some other, which are considered to bevery essential for growing in areas with great viral diseases shedding. Comparing with fungus diseases under conditions of the North-Eastern forest-steppe of Ukraine, the viral diseases had greater shedding. The data of table No. 2 display difference in showing of resistance to viral of diseases depending on environmental conditions. A number of researches have proved, that adherence to procedure of potato growing, especially application of sufficient amount of balanced mineral and organic feeding, providing of plants with humidity suppress the

signs of viral diseases, that is many viruses are in latent. According to the results of performed researches, the beginning of potato vegetation (May month) in 2010 was characterized with humidity deficit (the rate of rain was 19,5 mm lower, than average for the long period) and high air temperature (average within a month 3,4°c higher than average long-term), which in our opinion was favorable for manifestations of viral diseases. That is why only 6,4% of varieties had no signs of involvement according [11]. We consider that because of lack of genetic control on virus resistance many varieties had signs of two or more diseases.

Table 2. Manifestation of viral diseases among varieties.

Year	List	Estimated pcs.	Including %			
			Symptom-free	Manifestation of		
				One	Two	Three
				Disease (s)		
2010	First	157	6,4	41,3	45,9	6,4
	Second	157	3,2	42,8	50,2	3,8
2011	First	127	5,5	33,5	51,0	10,0
	Second	127	12,6	20,7	50,7	16,0

The last had frequency 6,4% which was equal to the number of varieties without signs of disease: A little less than a half of varieties had signs of two diseases in different combinations.

The data received (table No. 3) attest to the biggest extension of rugose mosaic and mosaic torsion of leaves; Apart from the second list in 2010 the separate manifestation of the firs disease was higher than of the second this mach with[12].

Environmental conditions of 2011 had various influence on manifestation of rugose separately, as well as in combination with other viral diseases. In the first case, the number of plants with signs of disease according to two lists (18,9 and 18,0%) was almost equal matching with[13]. However, while its combination with other diseases, a part of varieties under the first list amounted to a half of varieties under research. The opposite concerned group manifestation of signs of these diseases. Only according to the first list in 2011 the frequency of varieties with rugose mosaic and other diseases was higher. Compared with rugose mosaic[14], mosaic torsion of leaves in general was characterized with smaller extension. On its own it had higher extension in 2010(19, 1%) in the first list and 17, 2% in the second). The opposite was fixed in 2011, when the part of varieties with the signs of disease in the first list was smaller in comparison with the second. Apart from the second list, carried out in 2011, the part of varieties, combining the signs of mosaic torsion of leaves with other diseases, was almost equal (within 34,1-38,0%) However, in the second list in 2011 their number was significantly below (2,3 times smaller in comparison with minimal data rate in 2010 and the first list of 2011). According to some scientists' opinion (44), the variety is a "compromise" between crops. Quality of bulbs and a certain level of resistance to the most spread and harmful diseases. Though on the other hand, differences in genetic control on the stated and other signs allow combining them in one variety, however, it is hard to fulfill it, in witness where of the history of potato selection can be mentioned. Selected varieties with resistance to viral diseases were characterized with manifestation of other economic-essential signs (table No. 4). That is, productivity[15]. Marketability of crop (Dniprianka, Vymir), average mass of bulb (Vymir, Kosen 95), a number of bulbs under the bush. Depending on necessity of presence of the complex of signs, some of them were recommended for growing in the area. Taking into account that higher crops, as well as other economic-essential signs had the varieties of different groups of ripeness, standard varieties in state variety trial were applied as the basic variant.

Table 3. Manifestation of the main economic-essential sings among the varieties, resistant to viral diseases.

Variety	Resistant to viral diseases		Productivity, g/bush	Crop marketability,%	Average mass of bulb (g)	Average number of bulbs, pcs.
	2010 r.	2011 r.				
Vymir	3k8	6/n	709	88	83	9
Zaviya	6/n	6/n	448	84	52	9
Kuroda	Mn18	6/n	539	84	70	8
Dniprianka	3k8	3k8	412	94	52	7
Kosen95	Noj18	6/n	497	85	73	7
Nezabudka	Mn18	Mn18	434	62	42	11
Malynskyibilyi	Mn18	3k8	425	76	43	10
Zernisazh	Ck8	6/n	539	86	61	9

Table 4. Economic efficiency of growing of the varieties, resisters to hazardous organisms.

Variety	Crop, ton/ha	Standard excess, ton/ha	Profit, UAH/ha	Standard excess, ton/ha	Efficiency, %
Standard variety serpanok, basic	20,1	-	16810	-	146
Variety under research vymir	28,9	8,8	28821	12011	243
Variety under research latona	30,4	10,3	27635	10825	226
Standard variety zabava, basic	19,7	-	11174	-	96
Variety under research dovira	40,4	20,7	33972	22798	268
Standard variety yavir, basic	29,3	-	24202	-	203
Variety	38,2	8,9	37835	13633	301

Conclusion

It was determined that the majority of varieties resistant to eelworm (Globoderarostochiensis), suitable for growing in Ukraine, were selected in Lviv (100%) and Sumy (88%) National Agrarian Universities . Manifestation of sign is controlled by gene Ro-l.In the Register of varieties, suitable for growing in Ukraine, there varieties resistant to aggressive pathotypes of potato cancer. The best of them according to complex of economic-essential signs are Vodograi, Svaliavskyi. Gorlytsia. A small number of varieties (within 3,2-12,6% of all accountable) was detected, which have no signs of viral diseases. The majority had the signs of involvement of two viral diseases (45,9-51.0%). According to two lists the most wide-spread (separately or together with other diseases) had rugose mosaic, in 2010-13,2-26,1% and 29,1-33,8% accordingly, and in 2011-18,0-18,9% and 14,2-48,1% . Mosaic torsion of leaves had lower manifestation. The possibility of combination of resistance to Globoderarostochiensis with manifestation of other economic-essential signs was found, which is equalto resistance to viral diseases.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Foreign Languages, Sumy National Agrarian University and all experiments were carried out in accordance with approved guidelines.

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Pattern of Smoking behavior in a Sample of Kurdistan Region People: A Household Survey

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Abstract

Background and Objectives: Worldwide cigarette smoking harms nearly every organ of the body, causes many diseases, and decreases the health of smokers generally. This study will identify the Pattern of smoking behavior in a sample of Erbilan people and find the relationships between smoking behaviors and their socio-demographics characteristics among Erbilan people through household survey in Erbil city, Kurdistan Region-Iraq. A cross-sectional, self-administered, anonymous household survey was conducted in June 2018 among Erbilan people in Erbil city. Analyses are based on 400 participants. A special questionnaire was used. Data on age and gender, smoking behavior of them, number of cigarette smoked per day, and age of starting smoking were obtained. A total of 400 participants of adult's current smoker among Erbilan people in Erbil city revealed that the percentage of current smokers was significantly higher in men than women (91.5%, 8.5% respectively). The highest rate of smokers was among the age group 38-48 year in both sexes. 68.0% of Erbilan people started smoking at the age of 18-21 years.

Keywords: *Smoking behavior, Erbil, household, Kurdistan region, Iraq.*

Introduction

Globally cigarette smoking harms nearly every organ of the body, causes many diseases, and reduces the health of smokers in general[1,2]. Tobacco smoke contains many chemicals harmful that are harmful to both smokers and nonsmokers[3]. It is comprise more than 7,000 chemical in tobacco smoke, at least 400 of which are known and proven to be harmful and carcinogenic, comprising of hydrogen cyanide, carbon monoxide, and ammonia, in addition among the 400 known harmful chemicals in tobacco smoke, at least 69 can cause cancer[4,5]. Worldwide, tobacco use causes nearly 6 million deaths per year, and current trends show that tobacco use will cause more than 8 million deaths annually by 2030[6]. Cigarette smoking is responsible for more than 480,000 deaths per year in the United States, including nearly 42,000 deaths resulting from secondhand smoke exposure, by other mean one in five deaths annually[8], or 1,300 deaths daily. More than 16 million Americans are living with a disease caused by smoking, for every person who dies because of smoking; at least 30 people live with a serious smoking-related illness[9]. The risk of death in the smokers measured by the number of cigarettes smoked daily, the duration of smoking, the degree of inhalation and the age of commencement[1], also smokers die 10 years earlier than nonsmokers whereas their direct relationship between smoker age with risk of death by cigarettes[10]. It is predicted that 20% of women worldwide will be smokers by 2025 when compared with 12%[11]. Furthermore, smoking causes more deaths each year than the following causes combined as Human immunodeficiency virus (HIV), Illegal drug use, Alcohol use, Motor vehicle injuries, Firearm-related incidents[12]. Moreover, smoking causes about 90% of all lung cancer deaths in men and women,

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also women developing lung cancer by 25.7 times[1], about 80% of all deaths from chronic obstructive pulmonary disease (COPD) are caused by smoking and besides that 12 to 13 times more likely to die from COPD than nonsmokers, also more women die from lung cancer each year than from breast cancer, cigarette smoking increases risk for death from all causes in men and women[2]. Cigarette harder for a woman to become pregnant and can affect her baby's health before and after birth and also increase risks for birth defects and miscarriage, likewise affect men's sperm, which can reduce fertility [4]. Additionally, smoking is causes type 2 diabetes mellitus and can make it harder to control; the risk of developing diabetes is 30–40% higher for active smokers than nonsmokers, whereas smoking causes general adverse effects on the body[13]. Nonetheless percentage of U.S. adults aged 18 years or older who were current cigarette smokers [4]: 16.8% of all adults (40 million people): 18.8% of males, 14.8% of females, more than 29 of every 100 non-Hispanic American Indians/Alaska Natives (29.2%), nearly 28 of every 100 non-Hispanic multiple race individuals (27.9%), More than 18 of every 100 non-Hispanic whites (18.2%), more than 17 of every 100 non-Hispanic Blacks (17.5%), about 11 of every 100 Hispanics (11.2%), More than 9 of every 100 non-Hispanic Asians 9.5% [4]. Thousands of young people start smoking cigarettes every day, daily more than 3,200 people younger than 18 years of age smoke their first cigarette, an estimated 2,100 youth and young adults who have been occasional smokers become daily cigarette smokers [14]. In 2011 nearly 7 in 10 (68.9%) adult cigarette smokers wanted to stop smoking. Approximately 100,000 U.S. smokers are expected to stay quit for good as a result of the 2012 (*Tips from former smokers)* campaign [15]. Likewise, the tobacco industry spends billions of dollars each year on cigarette advertising and promotions, in 2012, $9.17 billion was spent on advertising and promotion of cigarettes more than $25 million every day, or more than $1 million every hour[16]. Smoking behavior may not be nearly as fixed or stable among young adults as is generally assumed. In recent survey data, as many as one fifth of smokers reported starting smoking after the age of 18 a substantial increase over historical norms. Even among smokers who first try smoking in their youth, ''regular'' or daily smoking may not develop until much later, typically between the ages of 20–21. The variable patterns of tobacco use among young adults may partly be explained by the significant life transitions experienced by young adults[17]. In the United States the risk of dying from cigarette smoking has increased over the last 50 years in men and women. Smokers are more likely than nonsmokers to develop heart disease, tuberculosis, certain eye diseases, asthma, blood disease, strokeandlung cancer and estimated to increase the risk for coronary heart disease by 2 to 4 times [14], which causes diminished overall health and increased absenteeism from work and increased health care utilization and cost.

Materials and Method

A cross-sectional survey was conducted in June 2018. Criteria for inclusion in the study were Erbilan people in Erbil city. Erbil city is a capital of Kurdistan Region-Iraq, which has a population of approximately (1.487.266) million people depending on the statistical data retrieved from Kurdistan region statistic office of Ministry of Planning in the Government of Kurdistan region- Iraq in 2015. A multiple cluster sampling method was usedto select 400 adult current smokers from Erbilan people in Erbil city. A closed-end questionnaire was conducted with individual participants of current adult smoking of Erbilan peoplerandomly by distributed 400 questionnaires to partakers through household survey. Data was collected through direct face-to-face interviews technique (self-administration). The sample comprised from both genders (male and female) of the eligible participants and excluded all other not Erbilan people. The data collected included socio-demographic information such as age, gender, education leveland socioeconomic status. Frequency distributions were used to describe the data. Regarding statistical analysis, (SPSS version 18) used for data entry and analysis of the result, Chi-square test has been used in the present study for determining the significance of the result, P value equal to or less than 0.05 ($P \leq 0.05$) was considered as statistically significant. The modified questionnaire used items from an instrument developed by the WHO and Centers for Disease Control and Prevention (CDC). Also a pilot study done by choosing twenty persons, who are not included in the study, have been asked to fill the questionnaire to identify and correcting the weakness of the questionnaire before using it with real respondents. Also, during the present study, the questionnaire has been distributed and explained to all participants in order to make it more reliable and valid. Sample size was determined using a confidence level of 95% with 5% degree of precision of the expected proportion and estimated prevalence of 12%.

Results and Discussion

Of the 400 participants of Erbilan people agree to participate to survey between the ages of 18 to 59+ years, the percentage of current smokers was significantly higher in men than women (91.5%. 8.5% respectively). Moreover, the current adult smokers were higher in age group (39-48) years old about 68.0% of Erbilan people, and also the level of education of Erblian smokers were higher in level of (no education) by 77.8%.

Likewise, the percentage of level income of current smoker was higher of (bad) socioeconomic status approximately 61.8% in most Erbilian family as revealed in Table 1.

As shows in table 1 the age (39-48) group of the age first start smoked among Erbilan people was higher in age group (18-21) old years old group about 60.0% which (X^2 = 208.493[a], p value=.0001). While in same table, the number cigarette smoke per day was higher among group how smoke (31 or more) about 86.8%. Furthermore, among whom craving of cigarette was higher among (often) group about 72.5% as revealed in table 2. Nonetheless, the percentage of number of packs was higher in among respondent who smoke (more than 1000 cigarette) group about 88.2%. Finally, the ratio of participants how soon after wake up usually smoke first cigarette was between groups (31-60 minutes) about 61.2%.

Another results described during the present survey about reason for regular smoker in gender was differ among men and women of adult current smoker, which in men were 309 participants (84.4%) higher in (Smoking made me feel less stressed and helped me focus and concentrate better) group. while in women were 33 participants (97.1%) higher in (Smoking helped me control my weight) group which (X^2 = 208.493[a], P = .0001).Furthermore, the reason of regular smoker of age group (39-48) years old was higher by percentage 71.7% in (Smoking made me feel less stressed and helped me focus and concentrate better) groups which (X^2=51.093[a], P = .0001). However, the reason of regular smoker in income level was identified in (bad) socioeconomic status by percentage 85.4% in (Smoking made me feel less stressed and helped me focus and concentrate better) group which (X^2=82.858[a], P = .0001).

Table 1: Demographic characteristic of the 400 participants among Erbilian current adult smoker

Variable	Frequency	%
Gender		
Male	366	91.5
Female	34	8.5
Age		
18-28	20	5.0
29-38	17	4.3
39-48	272	68.0
49-58	81	20.2
59+	10	2.5
Level of Education		
No education	311	77.8
Basic (Primary/intermediate)	75	18.8
Secondary	12	3.0
Higher education	2	0.4
Income Level		
Bad	247	61.8
Middle	141	35.2
Good	12	3.0

This study described the pattern of smoking behavior among Erbilain people and the relationship between smoking style and demographic factors in a population-based on sample of over 400 current adult smokers in Erbil city. Whereas, smoking behavior is one of the most studied of human behaviors and thousands of studies have documented its health consequences. The present survey discovered that the percentage of adult current smokers were higher in males than females. Furthermore, in a recent nationally representative study across 187 countries, large reductions in the estimated prevalence of daily smoking were observed between 1980 and 2012; for men, the prevalence decreased from 41% to 31%, and for women it decreased from 11% to 6% or 1.7% per year[31]. These data also illustrate that the global percentage of current smoking is nearly five times as high in men as in women; however, substantial differences between countries exist[32]. In the UK, 20% of men and 19% of women are current smokers[30]. Cigarette smoking became prevalent among men before women, and smoking prevalence in the United States has always been lower among women than men [9]. Likewise, a survey on 4361 adolescents living in Tehran (Iran) indicated that 30.7% of boys and 20.6% of girls had smoked hookah[20].

Table 2. Shows the number of cigarette do smoke per day

			How many cigarette do smoke per day				Total
			10 cigarettes or less	11-20	21-30	31 or more	
Gender	Male	Count	0	3	26	337	366
		% within gender	.0%	.8%	7.1%	92.1%	100.0%
	Female	Count	1	0	23	10	34
		% within gender	2.9%	.0%	67.6%	29.4%	100.0%
Total		Count	1	3	49	347	400
		% within gender	.3%	.8%	12.3%	86.8%	100.0%
Age	18-28	Count	0	0	13	7	20
		% within age	.0%	.0%	65.0%	35.0%	100.0%
	29-38	Count	0	0	3	14	17
		% within age	.0%	.0%	17.6%	82.4%	100.0%
	39-48	Count	1	3	33	235	272
		% within age	.4%	1.1%	12.1%	86.4%	100.0%
	49-58	Count	0	0	0	81	81
		% within age	.0%	.0%	.0%	100.0%	100.0%
	59+	Count	0	0	0	10	10
		% within age	.0%	.0%	.0%	100.0%	100.0%
			0	0	13	7	20
Total		Count	1	3	49	347	400
		% within age	.3%	.8%	12.3%	86.8%	100.0%

Conclusion

Cigarette smoking is prevalent among Erbilian adults in Erbil city, particularly males higher than females, most of who begin to smoke rather early in life and continue for many years. Health and an awareness of risks of smoking should be the cornerstone for any organized tobacco control activities, which are urgently needed to combat the expected future epidemic of smoking-related health problems. In conclusion, this study reports and comments on the ongoing high percentage of current male smokers among Erbilan people. It raises awareness that unless public health efforts are taken broadly and comprehensively, tobacco will remain a big issue in public health problem. Public health policies and action need to focus on high risk sub-populations identified through this survey, principally adult males from a lower income group, and with less formal education.

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Effect of Rehabilitation Program Using Electric Massage in the Treatment of Muscle Spasm with Racine Femoral of 400 Meters Barriers

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Abstract

The aim of the research was to use the electrical stimulation EMS type body relax in the treatment of muscle spasms of the muscle with the femoral thighs of the contestants 400 m contraindications. The researcher assumed the electrical massage used positive influence in the treatment of muscle spasms. As for the research methodology, the researcher used the experimental method of one group. The research community determined that 400 meters of contraindications for the muscles of the thighs of the 400 meters of the contenders in Najaf. The sample of the research was (6), And used the form of measuring the degree of pain according to the test and the physical tests Schober and the rehabilitation program and the use of the technique of electrical stimulation EMS of muscle relaxant and the researcher used statistical program spss and from using the following statistical means (median, spring deviation, The electrical massage of the muscle relaxation a major role in the lower the level of muscle spasms and improve the flexibility of 400 meters contenders.

Keywords: *Rehabilitation program, treatment of muscle spasm.*

Introduction

What has happened in terms of training and treatment in the world has been the result of scientific studies programmed according to the correct directions and the effective use of the results of research and studies that have the key role in reaching scientific facts [1] that contribute to the development of the level of treatment and rehabilitation of injured players and the speed of the return of the player to field. And athletics events from the events that specialists have developed through the use of all means that increase the player's physical and functional potential [2], especially through the appropriate ways and means for the players and through the equipment and devices used by athletes in the training modules, but the high intensity used in training and frequent repetitions lead to Increased pressure on the muscles causing the mother and spasms in the working muscles and this requires the use of modern techniques to overcome such cases as the technology of the newly used in the training and therapeutic this technique can be used to eliminate muscle tension injuries, especially in the muscles of the two men and in a special current for this purpose known as body relax [3]. This type of current acts on the relaxation of the muscles. Hence the importance of research in the use of electrocardiogram technique for the treatment of muscular tension in the lumbar region For the players of 400 meters barriers in clubs Najaf province. Physical strength is an activity that needs to mobilize maximum muscle strength to overcome weight of gravity[4]. These weights cause pressure on the spine, especially the lumbar spine, causing pain in the lower back area As a large proportion suffer from this injury[5] and most rehabilitation programs for this injury need a relatively long period of time from the moment of pain relief until the arrival of the player to the normal situation that was before the injury and this period may reduce the motivation of the player to implement the rehabilitation programs correctly than It leads to chronic pain in the lower back area. Therefore, the researcher saw the use of electrical stimulation EMS and body relax to eliminate muscle tension and thus eliminate the pain [6] of the lower back of the players of physical strength.

Search Goals: The use of electric massage technique to get rid of muscle strain in the muscle with

thoracic thigh. Identification of the effect of electric massage in the relief of convulsions in the muscle with thoracic thigh.

Methodology

The researcher used the one-group experimental approach as the most appropriate method to solve the research problem.

Community and Research Sample: The research community was identified as 400 meter players in Najaf Governorate who suffer from chronic muscle cramps and muscle spasms in the lower back. The sample consisted of (10) players and a sample of them was chosen by (6) players who were selected by the intentional manner, ie 60% of research community .

Means of collecting information, instruments and tools used: The researcher used more than one means that can help him to reach the facts. Many research tools have been used to ensure that accurate and accurate data are obtained to fulfill the research requirements, including:

Information gathering method:

Arab and foreign sources

- Observation and experimentation.
- Testing and measurement.
- Questionnaire.

Devices and tools used:

- A stimulus electric muscular chinese – made .
- Fitness room
- Tape measure
- Electronic timing clock type (Dimond) number (1).

Field Research Procedures:

Identification of research tests:

First: Measure the level of pain according to the range of motor (1).

The level of pain was measured through a pre-prepared form where the motor ranges can be measured according to the Shopper test to determine the extent to which the injured player suffers.

- **Shopper test:**

Purpose of the Test: Measure the elasticity or amount of the extension that occurs in the biceps brachial muscle.

Description of the Test: From lying position the therapist raises the injured leg up and determine the angle of the thigh at the limits of the level of pain.

Recording Method: Measure the distance between the feet player and earth and record the degree of pain as feel the player and record reading (the amount of flexibility).

Scientific foundations of tests

First: Validate the test: In order to verify the validity of the tests, the researcher relied on honesty through presenting the tests to experts and specialists to determine the most reliable. All of them (100%) agreed on the validity of these tests and applied them to the members of the research sample.

Second: the stability of the test: In order to calculate the coefficient of stability of the test, the researcher used the method of (midterm fragmentation), where the test was applied on Saturday (19/1/2019) at four o'clock in the afternoon and the test was divided into two groups of individual and husband The researcher worked to extract the correlation coefficient between the two parts as in Table (1).

Third: Objectivity: For the purpose of extracting the objectivity of the test in this study, two arbitrators were used to present the results of the tests applied to the sample items and then were statistically processed by extracting the coefficient of correlation (Pearson) to express the coefficient of objectivity.

Pre-Tests: The researcher conducted the pre tests for the research sample on Monday (21/1/2019) at 2:00 pm in the Youth Forum of Kufa/Najaf.

Main Experience: The researcher used electric massage technique EMS and body relax type, which accompanies simple exercises of muscles to relieve cramping and muscle contraction and reduce the level of pain and rehabilitation of muscles with Racine femoral . The implementation of the main experiment prepared for members of the research sample on Sunday (23/1/2019) and for (6) week by two sessions per day, noting that the

time of the session does not exceed 20 minutes and thus the number of sessions of qualifying implemented (14) session The objectives of these sessions to the following:

1. Increased relaxation of the femoral muscle.
2. Reduce the frequent muscle contractions that produce abnormal muscle spasms of the thighs.

These sessions were performed by wearing shorts that contain the electrodes attached to the muscle with the femoral thigh and through the body relax icon of the muscular relaxation is increasing the current of the pole on the muscle and after completing the exercises simple conditioning accompanying the electric massage.

Post-tests: The researcher conducted post tests for the members of the research sample on Thursday (31/1/2019) at 4 pm at the Youth Forum of Kufa/Najaf and the same method of pre testing.

Statistical method used in research: The researcher used the statistical program spss. The following laws were used:

- Mediator.
- Spring deviation.
- Wolukoxin test.
- Arithmetic mean.
- Standard deviation.
- Pearson's simple correlation coefficient.

Presentation, analysis and discussion of results.

Present the results of the differences in the values of the variables investigated.

Table (1): Showing the values of the median, the spring deviation, the calculated value of wolukoxin, the level of significance for the level of pain, and the elasticity of the lower back muscles for pre-and post-test

T T	Variables investigated	Pre - Test		Post-test		Calculated value	Level of significance	The result
		Mediator	Spring Deviation	Mediator Mediator	Spring Deviation			
1	The degree of pain	4.75	0.65	3.5	0.53	3.064	0.02	Moral
2	Lift the leg up from lying position	45.5	0.53	52.57	0.74	0.061	0.02	Moral

Level of significance (0.05): Table (2) shows that the nature of the individuals in the study sample showed significant differences between the pre and post tests in the degree of pain and elasticity of the posterior thigh muscles to the front and upper. The values of the variables were used by the wolukoxin test for the interrelated samples to extract the differences, which was the pain level that reached the calculated value (3.64) And the level of significance (0.02), which is below the level of significance (0.05)

Which indicates that there is a significant difference between the pre-test and the post-test and for the post-test in this variable. The researcher believes that the reason for this development was the result of the use of body massage, which in turn helped to alleviate the pain in the biceps femoral members of the sample, The value of the leg forward and higher was calculated at (3.61) and the level of significance (0.02), which is less than the level of significance, indicating a significant difference between the two tests.

The results of the research showed that the results of the study showed significant differences, ie, there is a difference between the tests of the pre-test and the post-test and for the benefit of the post-test and notes through the effect of electrical massage of the body relax in the reduction of pain levels clearly, ie reduce muscle spasm resulting from stress and the repeated pressure on the lower back muscles due to the high load of training or weights raised in the exercises and thus increase the possibility of the player to perform movements in this area without feeling pain or discomfort during physical performance as the pain factor causes It impedes the

work of the functional muscles and affects the movement and causes inflammation that hinders the work of the muscles as well as affect the ability of joints to move and there is a common relationship between pain and dynamic determination in the region so it is normal to improve the ranges of motor and maximum strength and handling Strength as a result of reduced pain.

Conclusion

The researcher concluded through his experience that: The electric massage for muscular relaxation have a clear effect on the pain level of the sample. Increasing the long - motor range of infected leg to racer 400 meters barrier.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Physical Education and Sports Sciences - University of Kufa and all experiments were carried out in accordance with approved guidelines.

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Assessment of Nurses Knowledge Regarding Prevention and Precautions for Patients with Hepatitis in Diwaniya Teaching Hospital

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Abstract

Objectives: To assess nurse's knowledge regarding prevention and precautions of hepatitis, and find out the relationship between nurses knowledge regarding hepatitis prevention and precautions with selective socio-demographic variables. A descriptive study was conducted at medical or surgical ward and hemodialysis center unit in Diwaniya teaching hospital. The study was carried out from (1st September 2018) to (12th May 2019), A purposive (non-probability) sample was selected (100) from nurses that working medical or surgical ward and hemodialysis center unit in Diwaniya teaching hospital. The instrument was presented to (17) experts from several universities to be valid, the reliability of the instrument was determined through the implicated the Cronbach's Alpha, the reliability of this instrument was (r = 0.81). The result of study was showed that The represented (69%) nurses had a moderate knowledge towards Prevention and Precautions of Patients with Hepatitis in AL-Diwaniya teaching hospital. In addition, the present study pointed out there was no significant relationship between among nurses knowledge regarding prevention and precautions of patients with hepatitis in Al-Diwaniya Teaching Hospital and their demographic characteristics at p-value >0.05. Excepting with their education has been associated significantly at p-value ≤ 0.05.

Keywords: *Assessment; Nurse; Knowledge;Prevention;Precautions; Patients; Hepatitis.*

Introduction

Viral hepatitis virus are a transitional illness which affected liver of the human body and is transmitted from one person to another can be caused by viruses, which consists of five types and three of viral hepatitis are essential in public health care which included hepatitis A, B, and C virus. Both virus of hepatitis B and hepatitis C infection reasons around 80% of hepatocarcinoma (HCC) that considered the fifth widespread cancer in men and the seventh most common in women [1].In addition to, hepatitis is an essential contagious disease which challenges to health worldwide and infectious disease that caused equally of the morbidity which divided between settings in high-income and low-income. Also, HAV and HEV is similar in transmutation and incubation period, while HBV, HCV, and HDV are chronic diseases of the liver caused by the fibrous thickening of tissue and scarring of connective tissue and hepatocarcinoma[2] viral hepatitis in many countries that have various strategies and by application of these strategies will help in prevention and controlling this disease. Proper effective strategies and policy-making are tools to achieve these goals. In 2013, the World Health Organization a report published about prevention and control of hepatitis that described countries status around a world concerning systems, plans, and strategies that use for hepatitis program. Despite many barriers, there are such as still a lack of accurate data on the infection, efforts adequate policies for fighting hepatitis, knowledge in the community and service providers, sufficient funding, and the use of the guidelines and standardized procedures. Other challenges include the lack of up-to-date diagnostics and the adoption of treatments that are not evidence-based[3]. In US of hepatitis C virus is a widespread virus that infected Americans approximately more than 4 million and about (2.7 to 3.9) million did not recover and had a chronic infection at some time in the past[4]. Nurses are a danger face which

life threaten during contact with blood and body fluids or accident exposure which contagion through blood-borne pathogen especially HBV and HCV[5]. Therefore, nurses role are very important about standard precautions, also every nurse should be educated around the basic rules of standard precautions and protocols of infection control to prevent all nurse from getting an infection. Training needs to be implemented starting in the wards through the unit manager to improve the entire nurse's knowledge and practice [6].According to the Centre for Disease Control guidelines universal precaution is a group of activity which is required to prevent infections from blood borne or body fluid-borne infection or protect health workers and patients from infection. As well as, four essential practices in universal precaution are hand washing, prevent direct contact by using protective barriers, safe handling, and disposal of sharps. Most important pathogens related to universal precautions are HBV and HCV [7]. In addition to, vaccine which prevent spread infection and also, it is available in the US ago 1995 and 1981 and uses to prevent infection with HAV and HBV. however, hepatitis C virus with infected persons have no active immunization and acute infections of hepatitis C virus without antiviral treatment can be a chronic disease and cause damage of liver tissue which lead to death [8].

Method

A descriptive study was conducted at medical or surgical ward and hemodialysis center unit in Diwaniya teaching hospital. The study was carried out to assess of nurses' knowledge regarding prevention and precautions of hepatitisfrom (1st September 2018) to (12th May 2019), A purposive (non-probability) sample was selected (100) from nurses that working medical or surgical ward and hemodialysis center unit in Diwaniya teaching hospital at Diwaniya governorate, the instrument was presented to (17) experts from several universities to be valid, the reliability of the instrument was determined through the implicated the Cronbach's Alpha, the reliability of this instrument was (r = 0.81), The data analyzed was conducted through the application of "descriptive statistics (frequencies", "percentages", "mean of scores", "Standard deviation") and "inferential statistics (Chi-squared test)", the data was collected by utilizing the questionnaire which included two parts:

Part I: Demographic data and professional information of the sample include (Age, Gender, Educational level, socio-economic status of the nurses, level educational, total years of experience in the nursing field, and training courses).

Part II: This part consists of (5) elements which include measurement of knowledge related to nature of the hepatitis which contain(20) items, measurement of knowledge related to transmission of hepatitis contain(18) items, measurement of knowledge related to prevention and precaution of hepatitis contain (16) items, measurement of knowledge related to precautions in giving injection to patients with hepatitis contain(6) items, while measurement of knowledge related to management and treatment of patients with hepatitis which contain(13) items. It consisted of (86) questions as multiple choices, each question has (3) choices and was scored through giving I known answer (3), uncertain (2), and I don't known (1).

Results

This figure (1) concerned with assessment all domains about the knowledge of nurses regarding nature transmission of hepatitis, (74%) and (70%) had moderate knowledge. As well as, the knowledge regarding prevention, giving an injection, and treatment hepatitis (59%), (61%), or (41%) them respectively had a high level of knowledge. The overall represented (69%) nurses had a moderate knowledge towards Prevention and Precautions of Patients with Hepatitis in AL-Diwaniya Teaching Hospital. There was no significant relationship between nurse knowledge and their demographic characteristics, p-value (> 0.05) except the number of education level related to hepatitis there was a significant relationship at p-value (< 0.05).

The study was conducted in three areas at AL-Diwaniya teaching hospital which include (35%) of nurses were working in the surgical department, also (35%) in the medical ward department, and only (30%) were working in a hemodialysis center, these findings were agree with (13). The findings pointed out that the majority of the nurses (38%) their ages between (20-24) years old, these findings were agree with [14,15].Regarding gender results which the percentage of females was high at about (58%) and (42%) of males because females are more numerous than males where they chose the sample and some males also refused participating in the study. The result was compatible with [16]. Highest proportion findings were made sufficient income, it constituted (60%). Only a small percent (3%) were insufficient economic status, this result agreed with[19].

The study result showed that the most of those were married and constituted (60%) out the total number and (30%) were nurses single in the study group, this means the number of nurses married is higher than the number of nurses single, this result agreed with[13]. In view of a large number of medical institutes were found in the hospital most of the nurses were instituted graduated, is composed (35%). On the other hand, where their years of experience was (1-4) years they were trained in our country, This result agreed with[21]. Also, the results of years of experience agree with the result of [22] that explain years of experience job was(1–5) years and composed (47%) was higher among primary health care workers in Saudi Arabia. The majority (69%) of nurses were moderately knowledge towards Prevention and Precautions of Patients with Hepatitis in Diwaniya Teaching Hospital. It could be mentioned that the knowledge score pattern was comparable but the values were different. It might be due to the fact that the number of items set for the questionnaire by the authors was different for different studies. The majority of overall knowledge of the nurses towards prevention and precautions of patients with hepatitis in Al-Diwaniya teaching hospital(69%) were moderately knowledge. Also, this result agreed with the finding study in South Africa 2015 and the overall mean knowledge score for health care professionals was adequate knowledge regarding viral hepatitis notification. The results depict there was a no significant association between nurses their knowledge related to nature of habitats and their demographic characteristics at p-value >0.05.except their education, there were significantly associated at p-value ≤ 0.05. In addition to, the resultsdepicts there was a no significant association between nurses their knowledge related to the transmission of habitats and their demographic characteristics at p-value >0.05 except with their training course there were significantly associated at p-value ≤ 0.05. Moreover, there results was no significantly association between nurses their knowledge related to prevention of habitats and their demographic characteristics at p-value >0.05. However, the finding revealed there was a no significant association between nurses their knowledge related to precautions in giving an injection to patients with hepatitis and their demographic characteristics at p-value >0.05. The study result agreed with (26, 27). Additionally, results depicts there was a no significant association between nurses their knowledge related to management and treatment of patients with hepatitis and their demographic characteristics at p-value >0.05, the finding disagreed with [21]that showed and explained the relationship among knowledge of the nurses regarding hepatitis C infection and demographic data, there was significant relation among knowledge nurses about treatment and their demographic characteristics.

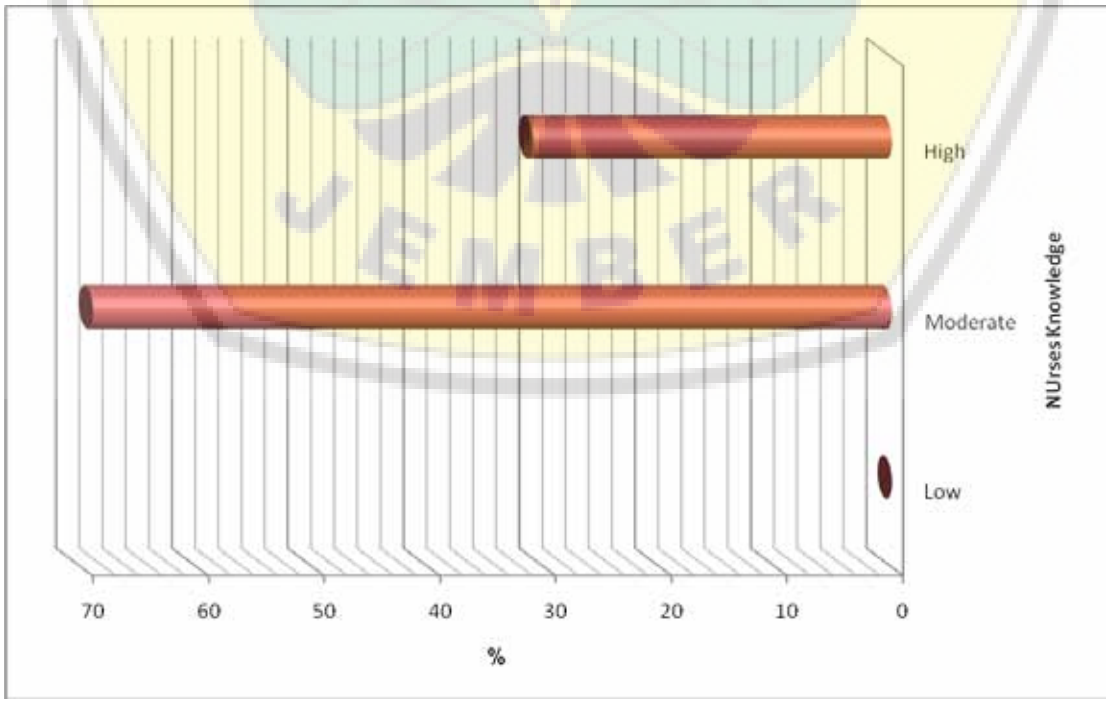

Figure 1. Assessment of Nurses Knowledge about hepatitis by their Domains

Conclusion

From the results of the present study, we can conclude thatis good knowledge of nurses toward prevention and precautions of hepatitis and this showed by the result of the assessment, however, showing all nurses knowledge towards prevention and precaution with hepatitis patients were moderately knowledge. Also, explain no relationship between nurses knowledge and their demographic characteristics.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Nursing-University of Babylonand all experiments were carried out in accordance with approved guidelines.

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Evaluation of Nurses Practices toward Care of Children Undergoing Cardiac Correction "Ventricle Septal Defect" in Baghdad Teaching Hospital at Baghdad City

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Abstract

The study aimed to assess and evaluated nursing practices of the nurses and their demographic characteristics. A descriptive study which initiated from 20th November 2017 to 25th of April 2019, carried out in 3 teaching hospitals (Ibn Al - Nafees Teaching Hospital for cardiovascular and thoracic surgery, Ibn AL-Betar Center for Heart Diseases, and Iraqi Center for Heart Diseases) in Baghdad City**.** The study sample was 50 nurses who were working in the cardiac units of these hospitals. The data was collected through using questionnaire format and the questionnaire consisted of 2 parts. The first one is demographic characteristics and the second part includes observational section of nurses' practices and this consisted from 4 items pre and post operation. The data were analyzed through the application of descriptive statistic frequency, percentage, and the application of inferential statistical procedures, which include Pearson correlation coefficient and chi-square. The socio-demographic characteristics of 50 nurses included 24 (48%) who were in age group of 19-28 years, 31 (62%) were married, 20 (40%) were graduates of Nursing institute graduate, 28 (56%) had 1-5 years of hospital work and 37 (74%) had 1-5 years of work in the cardiac units. 80% had previous related training courses.

Keywords: *Nurses' Practices, ventricular septal defect, cardiac correction, Evaluation.*

Introduction

A congenital heart defect is a problem with the structure of the heart which may present at birth. These defects can involve the walls of the heart, the valves of the heart and the arteries and veins near the heart which disrupts the normal flow of blood through the heart[1]. The most common form of congenital heart disease in childhood is the VSD, occurring in 50% of all children with congenital heart disease and in 20% as an isolated lesion (Minette & Sahn, 2006). A ventricular Septal defect is a hole in the part of the septum that separates the ventricles . The hole allows oxygen-rich blood to flow from the left ventricle into the right ventricle instead of flowing into the aorta and out to the body as it should and it is occur in many locations and sizes which will determine in part the consequences of the ventricular Septal defect [2]. The incidence of VSD in all live births is approximately 1.5 to 3.5 per 1000 term infants and 4.5 to 7 per 1000 premature infants[3].

The symptoms and physical findings associated with ventricular septal defects (VSDs) depend on the size of the defect and the magnitude of the left-to-right shunt[3]. Small Ventricular Septal defect don't cause problems and often may close on their own, because it is allow only a small amount of blood to flow between the ventricles; Medium are less likely to close on their own and may require surgery to close and may cause symptoms during infancy and childhood, They're sometimes called nonrestrictive Ventricular Septal

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defect and less likely to close completely on it is own, but it may get smaller over time and cause symptoms in infants and children, and surgery usually is needed to close them: in large opening, the child may breathe faster and harder than normal. Symptoms may not occur until several weeks after birth [4].

Ventricular Septal defect are described by the anatomic location of the defect as seen from the right ventricle. The most common types are per membranous, outlet, inlet, and muscular. The etiology of ventricular septal defect is not known, but a combination of genetic and other factors has suggested a multifactorial cause [5]. If opening is small, it won't cause symptoms because the heart and lungs don't have to work harder. The only abnormal finding is a loud murmur [6]. Small defects are expected to close spontaneously in the first year of life; however, larger defects can result in severe complications [7] Nurses play a critical role in the lives of children with congenital heart disease (CHD) and their families, and identifying subtle changes in the assessment of the complex cardiac patient [8]

Methodology

A descriptive study was conducted on nurses who work in cardiac units from the October 16th, 2018 through April 25th, 2019. The study was conducted at 3 teaching hospitals (Ibn Al - Nafees Teaching Hospital, Ibn AL-Betar Center for Heart Diseases, and Iraqi Center for Heart Diseases) in Baghdad City. The study sample 50 nurses who were working in the cardiac units. The educational level of nurses included school of nursing, secondary nursing school graduate and nursing institute graduate and graduate of Nursing College. The data were collected through using observations chick list, which comprises two parts. The first one was demographic characteristics and the second part was nurses' practices. The questionnaire used three level of evaluation in different period of data collection

Part I: Demographic Characteristics: The demographic Characteristics for the nurses include nurses' age, gender, level of education, the nurses` marital status, number of years of employment at hospital, number of years of experience in the cardiac unit, sharing in training sessions, number of training courses, and Type of the training session.

Part II: Nurses' Practice: This part is concerned with data related to the nurses' practices and comprises 4 major item, have been rated and scored according to the three point Likert scale for nurses' practices and score as (first, second, third observation). The validity of the questionnaire was determined through a panel of 16 experts. The reliability of the questionnaire was determined through a pilot study. The data were analyzed through the application of descriptive statistic frequency, percentage, and the application of inferential statistical procedures, which include Pearson correlation coefficient and chi-square.

Results and Discusion

In part 1, The socio-demographic characteristics of 50 nurses included 24 (48%) who were in age group of 19-28 years, 31 (62%) were married, 20 (40%) were graduates of Nursing institute graduate, 28 (56%) had 1-5 years of hospital work and 37 (74%) had 1-5 years of work in the cardiac units. 80% had previous related training courses Table (1).

In Part II, table 4 shows the distribution of nurse's practice items toward care of child undergoing cardiac correction with three levels score.

Table (1): Causes correlation ship of the contingency coefficient and significant level responding under and upper cut off point in compact form of nurses' practices among gender

Gender \ Nurses' practices		Under cut off point	Upper cut off point	Total	*C.C. test	**P-value	CS
Male	F	1	14	15	0.089	0.529	N.S
	%	2.0%	28.0%	30.0%			
Female	F	1	34	35			
	%	2.0%	68.0%	70.0%			
Total	**F**	**2**	**48**	**50**			
	%	**4.0%**	**98.0%**	**100.0%**			
Confidence level = 0.471							

The result indicated that the nurses have a high level of practices in most of intervention items in pre operation and have moderate level in some of nursing intervention after operation.

There is no significant relationship between nurses' practices and level of education and a significant relationship between years of experience in Units. So, the null hypothesis is rejected because the p-value is equal to 0.000; in this case it is statistically significant.

Table (2): Causes correlation ship of the contingency coefficient and significant level responding under and upper cut off point in compact form of nurses' practices among level of education

Nurses' practices / Level of education		Under cut off point	Upper cut off point	Total	*C.C. test	**P-value	CS
Nursing college graduate	F	2	15	17	0.247	0.132	N.S
	%	4.0%	30.0%	34.0%			
Nursing institute graduate	F	0	20	20			
	%	0.0%	40.0%	40.0%			
Secondary nursing school graduate	F	0	13	13			
	%	0.0%	26.0%	26.0%			
Total	**F**	**2**	**48**	**50**			
	%	**4.0%**	**96.0%**	**100%**			
Confidence level = 0.868							

Table (3) Causes correlation ship of the contingency coefficient and significant level responding under and upper cut off point in compact form of nurses' practices among years in cardiac units

Nurses' practices / Years of experience in cardiac units		Under cut off point	Upper cut off point	Total	*C.C. test	**P-value	CS
1-5 yrs.	F	0	28	28	0.424	0.012	S
	%	0.0%	56.0%	56.0%			
6-10 yrs.	F	2	11	13			
	%	4.0%	22.0%	26.0%			
11-15 yrs.	F	0	3	3			
	%	0.0%	6.0%	6.0%			
16 yrs. & more	F	0	6	6			
	%	0.0%	12.0%	12.0%			
Total	F	2	48	50			
	%	4.0%	96.0%	100.0			
Confidence level = 0.988							

Throughout the course of the present study, it has been noticed that approximately (70.0%) of the study sample were females and the highest proportion (48.0%) of them was 19-28 years old. Atsha in 2016 conducted a study on nurse›s knowledge at pediatric teaching hospitals in Baghdad city (toward children with meningitis). The researcher of this study found that more than half of the sample (65.0%) was females and 45% of

the nurses were in age group of 20-29 years old (Atshan, 2016), this results agreement with the present study.

In regard to marital status, the majority (62.0%) of the sample were married. These results agree with findings of Atiyah (2017), when he conducted a study to determine the effectiveness of education health program on nurses› practices toward neonates care with sepsis in incubator in neonatal intensive care unit in teaching hospitals at Baghdad city. Atiyah (2017) found that (62%) of nurses were married (Atiyah, 2017).

Concerning the level of education (40.0%) was nursing institute graduates of the study sample. Masehab in 2007 conducted a study to evaluated nurses' practices toward children undergoing cardiac catheterization in Baghdad teaching hospitals at cardiac units. The researcher of this study found that (30.0%) graduated from institute of nursing and that result agrees with the present study. Hickey, Gauvreau, Tong, Schiffer, and Connor in 2012 conducted a study to determine the characteristics of nurses and organization in the United States of America. Hickey et al. (2012) [5] reported that 70 percent of nurses had baccalaureate degree in nursing who works in child care unit [5]. This research not agrees with the present study.

Regarding years of experience in hospitals, more than half of the study sample had (1-5) experience years in hospitals that represented (56.0%), and (74.0%) of them had (1-5) experience years in cardiac units [5]. This result agreement with Curley, Hickey, Gauvreau, and Connor in (2013), they conducted a study to determine the effect of critical care nursing and organizational characteristics on pediatric cardiac surgery mortality in the United States of America. Curley et al. (2013) reported that the distribution of nursing experience included (52%) of the nurses having less than or equal to five years of nursing experience, nursing experience in cardiac units (62%) of the nurses had at most five year [5].

The findings indicated that most of the study sample (80.0%) had opportunity to be involved in training sessions concerning cardiologist and (70.0%) of them were sharing in training session inside the country and (4.0%) of study sample were sharing outside the country. That result disagrees with the study of Masehab in 2007when he found that (93.3%) has no training sessions concerning cardiologist.

The result indicated that the nurses have a high level of practices in nursing intervention of child before operation, and have high level of practice in explaining the nursing care to the child family pre and post operation. The result indicates that there is inefficiency in nurses' practices in child nursing intervention pre and post operation with moderate level.

The data analysis was conducted on a questionnaire that assessed of observation testing on three evaluation in various times which should be done in cardiac unit based on a rating scale of close ended responses, which had been reported and manifested out of the mean of scores of these items. The result has indicated that there has been no significant relationship between nurses' practices and gender, age, marital status, years of experience in hospital, sharing in training session, type of training session.

The result has indicated that there has been no significant relationship between nurses' practices and level of education, and a significant relationship between years of experience in Units and nurses' practices. [7] conducted a study to determine critical care nursing's impact on pediatric patient outcomes.

Conclusion

Most of nurses were in age group of 19-28 years, being married, were institute graduate, had 1-5 year work in cardiac units. The result indicates that there is inefficiency in nurses' practices in child nursing intervention pre and post operation and no significant relationship between nurses' practices and gender, age, marital status, level of education, years of experience in hospital, sharing in training session, and a significant relationship between nurses' practices and (years of experience in units, and number of training session).

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Ministry of Health, Iraq and all experiments were carried out in accordance with approved guidelines.

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Assessment of Nurses' Knowledge towards Prevention of Sepsis at Neonatal Care Unite in Hilla Hospitals

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Abstract

A descriptive study is conducted throughout the period of (September 9th 2018 to Funerary 20th 2019) in order to determine the nurses' knowledge toward prevention of sepsis in neonatal care unit in Hilla Hospitals and to determine the relationship between nurse's knowledge and their Scio-demographic characteristics. A non-probability (purposive sample) of (50) nurses who are working at neonatal care units. These sample distributed in four hospitals includes; Babylon Teaching Hospital for Maternity and Pediatric, AL-Noor hospital, Hilla Teaching Hospital, and Imam Sadiq Hospital. Data are collected through the use of a self-report by the used questionnaire as means for data collection. Data are analyzed through the application of descriptive and inferential statistical data analysis approach that includes, frequencies, percentages, mean of scores, standard deviation; Chi-squared test. The study results indicate that the (58%) of nurses within age (21-25) years old female graduated a Diploma degree. The majority of (70%) were fairly knowledge of nurses in Hilla City Hospital. As well as, the education, years of employment, years of experiences, and training course have been significant with nurses knowledge at p-value <0.05.

Keywords: *Assessment, Knowledge, Septicemia, Nurses.*

Introduction

Septicemia or sepsis are synonyms that indicate a serious disease in humans and animals characterized by a generalized inflammatory reaction as a result of bacterial infection and the emergence of germs and metabolites in the blood and tissues, leading to sepsis. The most common causes of sepsis are staphylococci and nodules, and rarer ones are pneumococci and colorectal partners. These labels have been used inconsistently in the past by medical professionals, for example as synonymous with transgression[1]. Sepsis is characterized by inflammation of the entire body. The body may show symptoms of inflammatory response to infection by the immune system's response to microbes in urine, blood, lungs, skin or other tissues. Another term used for infection is septicemia. Severe sepsis is the systemic inflammatory response, in addition to infection in addition to the presence of organ failure[2]. Clinical studies have shown that cases of septicemia may be persistent or intermittent. Continuous blood poisoning occurs primarily in patients with vasculitis (e.g., endotracheal inflammation, inflammatory thrombophlebitis, inflammation associated with vascular catheterization), or with major septicemia (e.g., septic shock). Intermittent blood poisoning occurs in patients with localized infections (e.g., lungs, urinary tract, skin, soft tissues)[3]. Neonatal sepsis is a type of sepsis that specifically refers to a bacterial infection in the blood (inflammation of the bloodstream), such as meningitis, pneumonia, pyelonephritis, or gastroenteritis associated with fever. Symptoms of circulatory or respiratory failure are not clinically useful because these

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symptoms often do not arise in newborns until the child is about to die and can not be prevented[4]. It can be said that sepsis remains a major cause of death and morbidity, especially during the first five days of life in the newborn and in low- and middle-economic countries. Hospital infection also remains a major cause ofmortality in children despite progress encountered in the last decades [3]. Science on epidemics and publically health problems mortality rate is progressively known as a very Global Public Health Challenge it must be addressed if on the basis of reducing the disparity between child mortality between rich and poor countries. More than four million occur deaths newborns per year in low- and middle-economy gain. over one-third of infant deaths square measure calculable to result to severe infections, and 1/4 is because of the correlative clinical of neonatal sepsis [5]. Most dangerous period in human life is the time of birth and the early days of life. 3 million children die in the first week of life every year, and up to two thirds (2/3) of this die in the first 24 hours after birth. Bacterial septicemia is one of the seven dangerous signs presented by middle and low income countries that can be used to select or determine children with very severe satisfactory obstacles, including septicemia [4]. The major cause of morbidity and mortality worldwide is still posed by septicemia, despite significant advances in antimicrobial medical care, infant life support measures and early detection of risk factors. neonatal sepsis and pneumonia have been estimated by the World Health Organization in its report 2000-2003, especially in developed countries, responsible for approximately 1.6 million deaths each year. In poor countries, antibiotic resistance is an important resource problem [6].

Methodology

Study Design: A descriptive study is conducted to explore knowledge of nurses regarding prevention sepsis at neonatal care unit in Hilla City hospitals for the periods of September 9th 2018 to February 20th 2019.

Study Sample: A non-probability "purposive sample" of (50) nurses who are working at neonatal care units. These sample distributed in four hospitals includes; Babylon Teaching Hospital for Maternity and Pediatric, AL-Noor hospital, Hilla Teaching Hospital, and Imam Sadiq Hospital who accepted to be involved in the study.

Study Instrument: data collection tool that included the following:

Part I: Which composed of demographical characteristics.

Part II: This part is composed of (50) item and divided into (6) sections. They include: Nurses' knowledge about bacterial septicemia (definition), Nurses General information related septicemia, Nurses' knowledge about ways of transmission, Nurses' knowledge about the prevention of bacterial infection, Nurses' knowledge about infection control for bacterial septicemia and precautions in neonatal care and Nurses' knowledge about management of neonate with sepsis.

Data Collection the Method: The data is Collected through the use of a developer questionnaire Self-management "Self-Administrative" nurses. The researcher introduced himself to the participants and explained the purpose of the study in order to get oral agreement.

Statistical Analysis: The statistical data analysis approach by using (SPSS-ver.20) is used in order to analyze and evaluate the data of the study. A descriptive statistical data analysis approach used to describe the study variables : Frequencies, Percentages, and standard deviation. Inferential statistical data analysis approach: used by application of the Chi-square test.

Results and Discusion

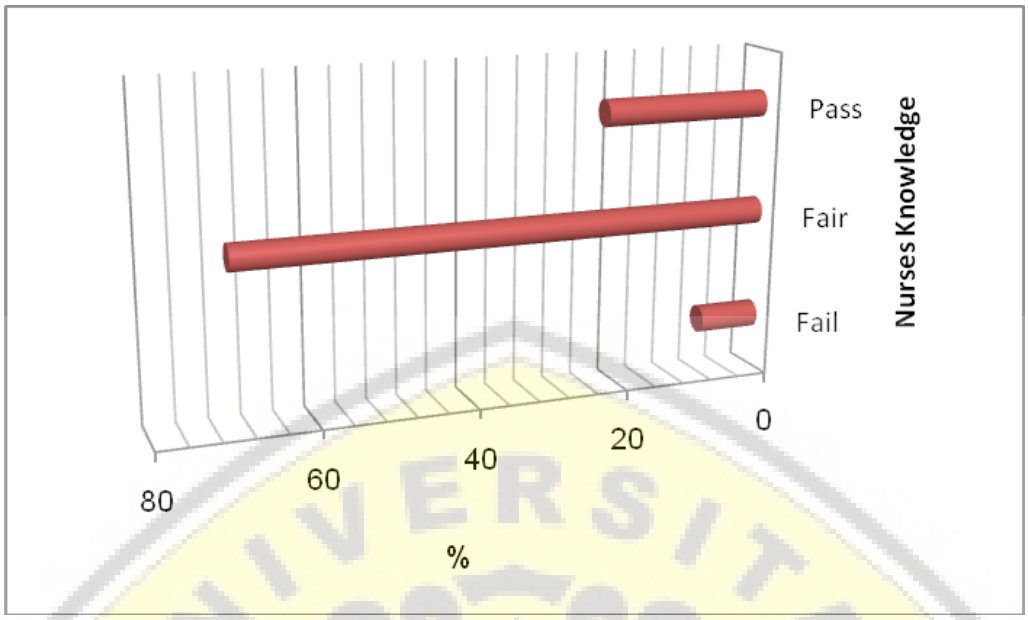

Figure (1): Nurses Knowledge to Prevent of Septicemia in Hilla City Hospital

Finding reveals that the majority of (70%) were fairly knowledge of nurses in Hilla City Hospital

Table (1): Statistical Association between Overall Knowledge of Nurses' about Prevention of Septicemia and their Demographic Characteristics

Demographic data	Rating	Overall Knowledge			Total	d. f	Sig
		Fail	Fair	Pass			
Age (years)	21-25 Years	3	19	7	29	4	x^2 obs.= 2.171 x^2 crit.=5.991 NS
	26-30 Years	1	12	4	17		
	31< Years	0	4	0	4		
	Total	4	35	11	50		
Gender	Male	0	19	4	23	2	x^2 obs.= 4.786 x^2 crit.=5.991 NS
	Female	4	16	7	27		
	Total	4	35	11	50		
Marital Status	Single	2	11	5	18	2	x^2 obs.= 1.085 x^2 crit.= 5.991 NS
	Married	2	24	6	32		
	Total	4	35	11	50		
Residency	Urban	2	29	10	41	2	x^2 obs.= 3.384 x^2 crit.= 5.991 NS
	Rural	2	6	1	9		
	Total	4	35	11	50		
Education Level	Secondary nursing school	1	9	0	10	6	x^2 obs.= 22.139 x^2 crit.= 12.592 S
	Diploma in nursing	2	17	3	22		
	Bachelor in nursing	0	9	8	17		
	Others (??)	1	0	0	1		
	Total	4	35	11	50		

Demographic data	Rating	Overall Knowledge			Total	d. f	Sig
		Fail	Fair	Pass			
Years of employment in nursing	<1 Years	1	5	3	9	6	x^2 obs.= 3.510 x^2 crit.= 12.592 NS
	1-5 Years	3	24	8	35		
	6-10 Years	0	5	0	5		
	11 and More Years	0	1	0	1		
	Total	4	35	11	50		
Years of experiences in neonatal care units	<1 yer	1	15	5	21	4	x^2 obs.= 1.540 x^2 crit.= 5.991 NS
	1-2 yer	3	18	6	27		
	3 and more yer	0	2	0	2		
	Total	4	35	11	50		
Training course about septicemia	One only	2	4	0	6	2	x^2 obs.= 6.981 x^2 crit.= 5.991 S
	Non	2	31	11	44		
	Total	4	35	11	50		

"χ^2obs.= Chi-square observer, χ^2crit.= Chi-square critical, Df = Degree of freedom, S= significant, NS = non significant, HS = high significant"

This analysis depicts the relationship between nurses knowledge towards prevention of septicemia in neonatal care unit and their demographic characteristics. Insignificant associated between their knowledge and their demographic characteristics at p-value >0.05. except, there is education and training course about septicemia there is a significantly associated at p-value ≤ 0.05. Present study findings reveals that the (58%) of the study population are within first age groups (21-25) years old. As well as the mean age is (1.50) at standard deviation (0.64). This result come because that the majority of the nurses they dealing directly with the patients are from those with this age group because the action with the patients require a high physical activity and the nurses who are advanced age fail to dealing with the patients. This results consisting with finding of study has been conducted at neonatal critical care unit in University of El-Mansoura for Child's Hospital. Findings depicts that the (35% and 30%) of nurses are within age groups (20-25) years old respectively [7]. Female nurses in the study were more than half of the study sample. It constituted (54%) out total number of the study population and the remaining is male. This results come because there is a growing need to female nurses especially in maternity and pediatric hospital, and today more females than males during the expansion of the opening of institutes and colleges of public health. This results agree with findings of study was conducted in Nigeria that deals with knowledge of nurses related to prevention and management of neonatal sepsis. Their findings of these study indicated that (91.7%) of study population were female nurses as more involved with children [8].

The distribution of study sample between married and single. Where the proportion of married couples was the majority, it constituted (64%) out total number. It's also, there is no divorced, separated and widowed among those findings. As well as, the urban residents of them constituted the largest percentage (82%) out total number of the study population. This result come because most of these age groups are the age of marriage, especially after the completion of the study and appointment in the field of nursing. Where the Iraqi young after graduating from the study and the presence of employment opportunity take the side of marriage Results of present study come with findings of study has been assessed knowledge of nurses who works at neonatal care unit in district hospitals at Minia Governorate. By a descriptive design was conducted on (41) nurses and questionnaire as a means of data collection. Findings reveals that the most of nurses were married, it constituted (75.6%) out total number of the study participants and most of them residents in rural areas [9]. The differences with present study, the hospital in Minia Governorate were distributed in rural areas while in the current study, Hilla hospitals were distributed in urban areas.Also, results were in the same line with (Abd-Alla, 2008) who

observed that most of nurses who works in pediatric critical care units were married [10]. The above results agree with findings of study has been conducted at neonatal intensive care units among "pediatric nurses" in Menofia University Hospital and EL-Bagour Central Hospital. as assessed their knowledge and identification of sepsis. By a descriptive design and convenient sample conducted on (90) nurses and the using the questionnaire data were collected. Findings reveals that (54.5%) were diploma in nursing graduated and (100%) without training program [11]. Results depicts that the (74%) of nurses were diploma attainment as institute graduated [16].Findings presented the overall nurses knowledge to prevent septicemia in neonatal care unit. Present study reveals that the majority of (70%) were fairly knowledge of nurses in Hilla City Hospital. These results come in the same line with results of study conducted at selected hospitals of Biratnagar in Nepal. A cross-sectional descriptive study and developed questionnaire to assess knowledge of nurses regarding neonatal sepsis. By an structured interview data were collected and analyzed through the used descriptive and inferential Ch-square data approach. Results reveals the majority of knowledge were moderately [17].While, While a study was conducted in Syria related to assessing the quality of nursing performance of the newborn in the incubator. It was found that about two-thirds of the sample had approximately (33%) of the moderately level of nursing performance [18].Furthermore, a study conducted in Southwestern United States in regarding the neonatal sepsis as early recognition by the nurses. Their findings confirmed don' not identify these indicators related to the level of nursing knowledge but was associated with work in the intensive care unit for newborns [19].Findings depicts the relationship between nurse's knowledge towards prevention of septicemia in neonatal care unit and their demographic characteristics. There is a non-significant association between their knowledge and their demographic characteristics at p-value >0.05. Except, there is education and training course about septicemia there is a significantly associated at p-value ≤ 0.05. A study conducted in Italy has been investigation a domains of nurses' knowledge. Their results in the same line with results of those study, it depicts the level of education was significantly with nurses knowledge [20].As well as, a quasi-experimental study of training program on the care of newborn sleep on the knowledge of nurses in Iran effect. The results showed that the average degree of knowledge of nurses after training has increased significantly compared to training at P <0.001 [21].

Conclusions

Overall knowledge in terms of prevention of sepsis at neonatal care unit in Hilla Hospitals, nurses were fairly knowledge and educational attainment, years of employment in hospital, years of experiences, and training course have affected those knowledge. its needs to be employed intensive training courses related to neonatal care unit to improve knowledge and exploitation of young energies and studies could be undertaken to involve the national level of evaluation of nurses practice in neonatal care unit.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Pediatric & Mental Health Nursing, Collage of Nursing/University of Babylon - Iraq and all experiments were carried out in accordance with approved guidelines.

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Assessment of Some Salivary Parameters in Xerostomic Hypertensive Patients

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Abstract

This study included 100 subjects, xerostomic hypertensive and 30 control persons. A high-molecular-weight glycoprotein-α-amylase complex is a growth inhibiting factor that able to inhibit Glucosyltransferases (GTFs) from S.mutans. Consequently, it assists in the control of S.mutans colonization. The enzyme α-amylase helps digestion to be initiated in the oral cavity. The α-amylase is mentioned to as a very good sign of the function of the salivary glands, and represents 40% to 50% of the protein content of saliva. Amylase is found in developed enamel pellicle and may modulate the adhesion of bacteria. Amylase may bind with high affinity to a nominated group of oral streptococci and contribute to bacterial clearance. The immunoglobulins in saliva mainly belong to the IgA subclass (more than 85%) and, to a lesser amount, to the IgG and IgM subclasses.eptor super family, The level of IgA is changed by many circumstances, such as infections, malnutrition, obesity, smoking, salivary flow rate, stress, hormonal factors, emotional states and physical activity. A decreased level of IgA in elderly people is accompanying with an increase in root caries and candidiasis. Latest research showed no association between IgG and caries. Saliva contains cytokines, and interleukines (IL).

Keywords: *Salivary parameters, Xerostomia, Buffering Capacity, Salivary flow rate, Dental caries, Hypertension.*

Introduction

Hypertension is defined as blood pressure readings raised on at least two cases with or without provocation[8]. Even though more than 70% of hypertensive patients are aware of the disease, only 23–49% is under treatment, and fewer (20%) achieving control Hypertension prevalence differs by race, age, education, and so forth. Xerostomia, A medical case associated with a decrease in the amount of saliva produced and an alteration in the saliva chemical composition causing a dry mouth called Xerostomia. This case can have a harmful consequence on many aspects of oral function and general wellbeing. By reducing taste sensation and impairing chewing ability, Xerostomia can cause a significant deterioration in quality of life[9]. Moreover, Xerostomia may alter consistent eating patterns, decreasing the pleasure of eating as a result of impaired or diminished taste sensation. Patients with xerostomia frequently report an avoidance of some foods, for example the dry foods (such as bread) and pasty foods (such as peanut butter), due to the incapability to chew or swallow effectively[10]. Furthermore, xerostomia may damage a patient's capability to speak, cause cracks and fissures in the oral mucosa and halitosis. It can also cause denture wearing to be very uncomfortable due to a decreased surface tension between the dry mucosa and the denture. All the above mentioned points can lead to poor nutrition habit[11]. Numerous aspects of oral function, pain, caries and oral infections could be affected by Xerostomia[10]. Saliva is liquid material formed from major (parotid and submandibular glands) and minor salivary glands in the human and animal mouths[12,13]. Water is the main components of human saliva, comprises 99.5%, in

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addition to white blood cells, epithelial cells (from which DNA can be extracted), enzymes (such as amylase and lipase), electrolytes, mucus, gingival crevicular fluid (GCF), food debris, hormones and antimicrobial agents such as secretory IgA and lysozyme[14]. The enzymes found in saliva play a vital role in the process of food digestion that entrapped within dental crevices, thus protecting teeth from bacterial decay[15]. Saliva also helps the function of lubrication and permitting the initiation of tasting and swallowing[12]. There are three major enzymes found in saliva: 1- α-amylase or ptyalin, secreted by the acinar cells of the parotid and submandibular glands, starts the digestion of starch before the food is even swallowed; it has a pH optimum of 7.4. 2- Lingual lipase, which is secreted by the acinar cells of the sublingual gland; has a pH optimum around 4.0 so it is not activated until entering the acidic environment of the stomach. 3- Kallikrein, an enzyme that proteolytically cleaves high-molecular-weight kininogen to produce bradykinin, which is a vasodilator; it is secreted by the acinar cells of all three major salivary glands. In addition to Antimicrobial enzymes that kill bacteria and lysozyme[12]. The immunological contents of saliva involve the Immunoglobulin IgA (that produced by the plasma cells in connective tissues), IgG and IgM (both produced mainly from the GCF) [16]

Materials and Method

Materials: A Mitis salivaris agar base (we obtained from HiMedia, India), Cystine Trypticase Agar (CTA) (we obtained from bioMérieux, France), Bacitracine antibiotic powder(we obtained from AppliChem, Germany), Gram stain solutions(germany),sucrose (france), mannitol(china), IgA Saliva ELISA KIT(LDN/ Germany), a-Amylase Saliva ELISA(LDN/Germany), Human OPG(Osteoprotegerin) ELISA Kit (My biosource 2USA)

Method: The total sample consisted of 70 xerostomic hupertensive patients and 30 healthy control women aged 50_65 years, their age was recorded according to the last birthday [17] they were carefully informed about the aim of the investigation and they were freely allowed to accept med. informed and ethical approval had been obtained. Saliva Sample collection was made in early morning at time between 8am to 9 am. Subjects were instructed not to eat or drink for 3 hours in same day prior to sample collection. Around 1-3 ml of whole un-stimulated saliva was collected simply by drooling into an sterilized graduated tubes, with the forward tilted head or by allowing the saliva to accumulate in the mouth and then expectorate into a tube (avoiding any possible contamination), the resulting saliva was centrifuged for 3000 rpm for 10 min. The clear supernatant was collected and stored in freezer at -20°C.

Result

The differences between the study group and the control group in regards to the Amylase level were non-significant, however the mean value (168.75) was higher in the study group when compared to the control group (149.51) as illustrated in Table 1 and figure 1.

Table (1): Groups Descriptive and statistical test of amylase

Statistics	Groups	
	Patient	Control
Minimum	.138	7.038
Maximum	397.177	365.342
Mean	168.753	149.515
±SD	106.844	105.638
T	0.828	
Df	98	
P value	0.410	
C.S	NS	

Table (2): Descriptive and statistical test of IgA among groups

Statistics	Groups	
	Study	Control
Minimum	1.270	5.943
Maximum	713.574	660.202
Mean	270.825	262.654
±SD	217.919	228.744
T	0.169	
Df	98	
P value	0.866	
C.S	NS	

The mean value of igA were 270.80 and 262.65 for patients group and control group respectively, Differences between the two study groups were statistically not significant as shown in table 2 and figure 2.

The results of the salivary osteoprotogerin level in both studied group were showed in Table 3 and figure 3 there were no significant differences in the osteoprotogerin level between the study and control groups despite it is higher in the control group as compared to the study group. The study reveals a negative relationship between the salivary osteoprotogerin level and the hypertension.

Table (3): Descriptive and statistical test of osteoprotogerin among study groups

Statistics	Groups	
	Patient	Control
Minimum	-75.009	-25.865
Maximum	1943.524	1790.892
Mean	437.356	464.892
±SD	422.718	530.372
T	.252	
Df	45.522	
P value	.802	
C.S	NS	

Table (4): Correlation between caries severity andsalivary biomarkers

Groups		Amylase		IgA		Osteoprotogerin	
		r	p value	r	p value	r	p value
Patient	D1	.006	.963	-.274	.021	.125	.303
	D2	.119	.326	-.189	.116	.152	.210
	D3	.228	.058	-.339	.004	.106	.384
	D4	.014	.909	-.261	.029	.033	.784
Control	D1	.254	.176	.162	.392	.244	.195
	D2	.217	.249	.088	.644	.454	.012
	D3	.262	.162	.150	.430	.297	.110
	D4	.344	.062	.015	.939	.095	.618

Current study is designed to study more about the influence of hypertension on salivary function, and it revealed a decline in salivary flow rate among the study group compared to the control one and the differences were statistically highly significant. Currently, saliva considers as a significant marker in diagnosis, treatment, and control of different systemic diseases, occasionally, the initiation of salivary changes even occur prior to serum and systemic changes[18,19]. Therefore, there is a strong tendency toward exploiting saliva to diagnose diseases in the early stages[20,21]. Exploiting Saliva is safe, non-invasive for the examiner, easy, cost effective and does need wide-ranging equipment and facilities. In the study group, the results revealed a positive relationship between D1, D2 and D3 and the amylase level, while D4 give a negative relationship, all with no significant differences. In addition, the results showed a strong negative relationship between D1, D3 and D4 and the IgA biomarker with highly significant differences, while D2 shows a weak negative relationship with the IgA in the same group. In regards to the osteoprotogerin in the study group, the results indicated a positive relationship between all caries severity grades and the osteoprotogerin with no significant differences. In control group, the three studied salivary biomarkers (amylase, IgA and osteoprotogerin) showed a positive correlation with the caries severity. Diet is the key feature for the relationship between the amylase and the dental caries; because starch is common in the human regime, knowledge of its association with salivary α-amylase is well known. Therefore, a synergistic effect between sucrose and starch may be due to the boosted

fermentation of starch by α-amylase with a consequent increase in caries activity. The defensive role of salivary IgA against dental caries has been examined in several studies. However, the association between them remains unresolved due to mutable sampling method, diverse inclusion criteria for subjects and different laboratory examinations. Numerous studies have confirmed a direct correlation between IgA levels and Caries severity; it reported increased levels of salivary IgA in relationship with decreased caries activity. However, no studies have been found to demonstrate the relationship between IgA and dental caries in hypertensive patients which considered as a limitation for our study. The results of the present work gave different findings in regards to the relationship between the caries experience (DS, MS, FS and DMFS) with the salivary biomarkers (amylase, IgA and osteoporoton) in both the study and the control groups. Several studies have been displayed this relationship in free disease people, however, the lack of resources regarding this relationship in hypertensive patients considered as a limitation in this part of our research. Therefore, our data should be interpreted carefully and more examinations is needed to find out the exact relation between salivary biomarkers and dental caries experience in hypertensive individuals. It was found that the effect of starch on caries development is provided by the findings that amylase inhibitor significantly decreased caries experience in rats fed a processed starch diet [30]. In a study of the association between α-amylase activity and caries experience, it was found high caries experience with low α-amylase activity and the only significant variance noted between the caries inactive and high caries experience individuals was the level of α-amylase. For specific IgA level for normal and hypertensive subjects, it has been shown that salivary IgA does not have a straight protective role against dental caries experience but reflects a past exposure of the subject to some microorganisms for example Streptococcus mutans in their oral cavities. Decreasing the level of IgA leads to increasing the prevalence of dental caries experience. Consistently, as it is indicated that a higher incidence of caries experience is associated with lower concentration of IgA. The dental caries with the secretion of salivary IgA in patients was discussed in diverse studies; some indicated that increasing the number of decayed teeth resulted in increase of salivary IgA level. In contrast, some other studies indicated that the amount of salivary IgA decreased following the increase in the number of decayed teeth, this decreasing could be as a result of body defense mechanism along with other factors such as age, IgA assessment method, sample size, and race.

Conclusion

We found in this study that simple diffrenenes in IgA, Amylase and osteoprotogerin levels between xerostomic hypertensive and control persons,however; the mean values were higher in the study group when compared to the control group for Iga and Amylase while the opposite for osteoprotogerin.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of dentistry, University of Baghdad, Iraq and all experiments were carried out in accordance with approved guidelines.

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Association of TLR4 Polymorphisms with Susceptibility to Urinary Tract Infection Caused by Gram Positive Bacteria in Pregnant Women

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Abstract

Urinary tract infection (UTI) is the most common disorder caused by bacterial agents in pregnancy. This study aimed to investigate the association of TLR4 gene polymorphisms with susceptibility to urinary tract infection caused by Gram positive bacteria in pregnant women a total of 39 clinically confirmed UTI pregnant women and 35 healthy control were enrolled in this study. Urine and blood samples were collected in Babylon teaching hospital for gynecology and pediatrics in Babylon province, Iraq during the period from January 2018 to February 2019. Urinary sample isolates were identified by traditional method. DNA was extracted using blood samples. TLR4 gene amplification and SNP genotyping was done using PCR-RFLP. Cytokine profile was assessed using ELISA technique. The present study showed 22 (56.4%) isolates was *Staphylococcus* species and; 17 (43.6%) was *streptococcus* species. the results showed the presence of homozygous variant in 16 patient from the study group at site 299 (A/G). twentyhomozygous variant and 9 heterozygous variant at site 399 (C/T). Serum IL17 results showed a significant difference (p value=0.016) between patients and controls. Serum TNF-α results showed a significant difference (p value=0.021) between patients and controls.

Keywords: *UTI, SNP, TLR4, TNF-α, IL17.*

Introduction

Urinary tract infections (UTI) are serious health problemsaffecting millions of people each year [1]. It is caused by invasion of a range of pathogenic microorganisms into the urinary tract system. Urinary tract infectionsare classified into three types: acute pyelonephritis, lower UTI and asymptomatic bacteriuria. The acute pyelonephritis is the most severe type of the disease[(2)]. Although the majority of bacteria causing infections among all patient populations are gram-negative bacilli, Gram-positive cocci contribute to large numbers of infections among hospitalized and institutionalized patients. *Staphylococcusaureus* is a Gram-positive cocci occurring in group;non motile, non-capsulatedand it is catalase, DNase and coagulase positive, and ferment mannitol. *Staphylococcus aureus* only accounts for between 0.5% and 2% of all urine positive cultures, this gram-positive pathogenis not typically considered a major cause of urinary tract infection[(3)]. The urinary tract relies predominantly on innate immunity for its defense [(4)].In the urinary tract, chemokines and cytokines are produced by epithelial and immune cells and mediate recruitment of neutrophils to the site of infection, induction of pyrexia, secretion of IgA and release of neutrophils from the bone marrow [(5)]. The innate immune system in the urinary tract comprises various resident and recruited cells that express a wide range of pattern recognition receptors (PRRs) such as Toll-like receptor 2 (TLR2), TLR4, TLR5 and TLR11 which enable early recognition of pathogens and transduce this signal to induce a rapid and robust pro-inflammatory immune response[(6)]. The important role of TLR4 in UTI has now been translated into humans. For

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example, in pediatric populations it has been shown that TLR4 gene polymorphism, resulting in a dysfunctional receptor, makes the patients susceptible for ABU with a low inflammatory response [7]. The magnitude of host response varies among persons with ABU, probably due to individual variation in TLR4 function, thus a genetic predisposition toward development of UTI and ABU seems possible [8].

Materials and Method

A case-control study included 39 clinically confirmed UTI pregnant women with different gestational ages, their ages ranged from 15 – 44 years old attended to gynecology consulter clinic in the Babylon teaching hospital for gynecology and pediatrics in Babylon province, Iraq during the period from January 2018 to February 2019. Thirty five apparently healthy pregnant women with different gestational ages whom their urine culture results showed negative results and their ages had a range of 16 – 44 years old were taken as a control group. General urine examination and urine culture were carried out for all participants (patients and controls).

A midstream urine samples were collected in a sterile screw-cap containers from all participants and immediately subjected to aerobic culture on MacConkey and Blood agar medium. General urine examination were also conducted for each sample.Five milliliters of venous blood was collected from all participants; two milliliters of which was kept in EDTA tube, then forwarded for human DNA extraction. The other three milliliters was transferred into plane tube. The latter was undergone centrifugation where the serum was obtained and preserved at -20ºC until be used.DNA was extracted from blood samples using ready kit (gSYNCTM DNA Mini Kit Whole Blood Protocol/Geneaid/ Korea) according to the manufacturer's instructions. Extracted DNA from blood samples was used in PCR for amplification of TLR4 gene. Two pairs of specific primers of TLR4 gene (table 1). PCR Mastermix (NEB/USA) was used for amplification of TLR4 gene.Successful PCR amplification was confirmed by agarose gel electrophoresis [9]. Restriction endonuclease digestion for TLR4 PCR products (15 UTI patient, and 35 controls) was done using *Hinf I* and *Nco I* endonucleases (New England Biolabs Inc./USA).Serum IL17 and TNF-α concentrations were estimated according to the instructions provided by the manufacturing company (Elabscience/USA).

Table (1): Primers used in this study

Genes	Primers sequence 5'→3'	Amplicon size (bp)	Reference
TLR 4 Asp299Gly	F: ATACTTAGACTACTACCTCCATG R: TTGTTGGAAGTGAAAGTAAG	213	Zakeriet al. (2011)
TLR 4 Thr399Ile	F: TGTTATCAAAGTGATTTTGGGAGAA R: AGGTAAATGAGGTTTCTGAGTGATAGG	185	

Statistical Analysis: The Statistical Package for the Social sciences (SPSS, version 19) was used for statistical analysis. Numeric variables were presented as mean and standard deviation while nominal variables were expressed as number and percentage. student test was used to compare mean difference between any two groups in case of normal distribution. Odds Ratio, Chi-square and or corrected Ch-square tests were used for the study of associations between nominal variables. P-value was considered significant when it was less than or equal to 0.05.

Results and Discusion

Bacterial Isolates: Patients with *Staphylococcus* speciesinfection accounted for 22 (56.4%); and only *streptococcus* specieswas 17 (43.6%). All control subjects were free of infection. These results are shown in table 2.

Single nucleotide polymorphism of TLR4 and susceptibility to UTI: Restriction fragment length polymorphism of PCR products of *TLR4*-A299G gene revealed only two genotypes; AA, and GG. In UTI

patients, the AA, and GG genotypes account for 16 (42.6%) and 23 (57.4%) respectively, compared to 5 (14.28%) and 30 (85.72%) respectively, in control group. The RFLP-PCR products of *TLR4*-T399I revealed three genotypes; CC, CT, and TT. In UTI patients the CC, CT, and TT genotypes account for 10 (25.6%), 9 (23.2%) and 20 (51.2%) respectively, compared to 25 CC genotypes (71.42%), and 10 TT genotypes (28.58%) only in control group, table (3). Logistic regression test for the association of genotype with incidence of UTI in pregnant women revealed high significant protective association between GG genotype of Asp299Gly SNP in TLR4 gene and UTI in pregnant women (OR=0.158, 95%CI= 0.211-1.396, p=**0.032**). For the SNP Thr399Ile in the TLR4 gene, there was no significant association with UTI in pregnant women (table 3).

Table (2): Isolated bacteria in patients enrolled in the present study

Type of bacterial isolate	Number	Percentage
Staphylococcus species	22	56.4%
streptococcus species	17	43.6%

Table (3): SNP Thr399Ile in the TLR4 gene, there was no significant association with UTI in pregnant women

TLR4 SNPs	Cases=15 N (%)	Control=35 N (%)	P-value	OR (95%CI)
Asp299Gly				
AA	16 (42.6%)	5 (14.28%)	0.032	1.0
GG	23 (57.4%)	30 (85.72%)		0.158(0.211 - 1.396)
Thr399Ile				
CC	10 (25.6%)	25(71.42%)	0.431	1.0
CT	9 (23.2%)	0 (0.0%)	0.765	0.400 (0.217-0.924)
TT	20 (51.2%)	10 (28.58%)	0.548	3.430 (0.899-23.45)

N: number, OR: odds ratio, CI: confidence interval, *TLR4: Toll-like receptor-4,* SNP: Single nucleotide polymorphism

Table (4): Mean IL-17 serum concentration in UTI patients and control

Study Groups	N	Mean±SDpg/ml	p value
Patients	39	151.28±14.70	0.016
Control	35	78.898±19.413	

N: number, SD: standard deviation.

Table (5): Mean TNF-α serum concentration in UTI patients and control

Study groups	N	Mean±SDpg/ml	p value
Patients	39	68.85±20.81	0.021
Control	35	78.898±19.413	

N: number, SD: standard deviation.

Serum IL17 concentration: This study found that there is a significant difference (p value=**0.016**) in serum IL-17 concentration between UTI pregnant women infected with Gram positive bacteria and control group, table (4).

Serum TNF-α concentration: This study found that there is a significant difference (p value=**0.021**) in serum TNF-α concentration between UTI pregnant women infected with Gram positive bacteria and control group, table (5). This finding was in agreement with previous study conducted in Iraq by Al-Wazni and Hadi[10] who found that the most predominant isolated

pathogens was Gram positive bacteria (83%). This work is also concordant with another two studies conducted by Almukhtar [11] in Iraq and Tadesse*et al*., [12] in Ethiopia, who both reported that the percentage of gram positive bacteria was higher than Gram negative bacteria (44%) and (45.6%) respectively.

The presence of *Staphylococcus*species and *Streptococcus* species indicated that the gram-positive cocci are also causative agents of urinary tract infections. Although, *Staphylococcus* species was known for years as a rare urinary isolate, Oneof the studies showed the high frequency of *Staphylococcus* and was the main cause of UTI in Nigeria[13], where, the most prevalent isolates were *S.aureus* and *S. saprophyticus*, and it's the first isolated microorganism in the current studywith a rate of 40.8% of total UTI positive cultures. *Staphylococcusaureus* has been reported to colonizethe vagina in 4%-22% of pregnant women[14]. Some of studies hadpreviously linked the increasing cause of UTIs by *Staphylococcus* to increased use of instrumentation such as bladdercatheterization[15], [16].

This study indicate that homozygous mutant (GG) of TLR4SNP Asp299Gly has a protective role againstUTI (Odds ratio indicates that pregnant women carrying this allele is 6.32 fold less likely to affect with UTI). This finding is in agreement with Hawn *et al*., [17] who found that TLR4_A896G is associatedwith protection from UTI in women. To explain these findings, Arbour*et al*., [18]were the first to report that individualswith either the Asp299Gly and/orThr399Ile polymorphisms had a blunted (hypo-responsiveness) response toward inhaled LPS.

In this study, TLR4 *Thr399Ile* genotype has been observed in UTI pregnant women only while the genotype *Ile399Ile* has been found in UTI patients and controls. Both genotypes (*Thr399Ile* and*Ile399Ile*) were with no statistically significance and showed no association with the development of UTI in pregnant women. This finding was in agreement with Chaloob and Mohsen, [19] who found no association between TLR4 *Thr399Ile* polymorphism and *Trichomonasvaginalis* infection in Iraqi women. It was also agreed to Ahmad-Nejad*et al*., (20) who reported that the mentioned genetic polymorphism correlate with neither development nor outcome of sepsis in patients from multidisciplinary surgical intensive care unit (ICU).Despite the fact that Humansubjects carrying the *Thr399Ile* polymorphism either exhibit amilder LPS-hyporesponsive phenotype or do not manifest itat all [18], [21], [22], there are multiple studies conducted in different populations that have linked the *Thr399Ile*polymorphism with different disease conditions for example Goepfertm*et al*., [23] reported that *Thr399Ile* polymorphism have a protective role against bacterial vaginosis in American pregnant women. A study conducted by Ajdary*et al*., [24] in north Iran reported that *Thr399Ile* SNP increase the risk to infection with cutaneous leishmaniasis.

In this study, the serum TNF-α concentration in control group was significantly higher than patients than in control group. This finding was comparable with Capossela*et al*., [25] who confirmed a significant decrease of TNF-α cytokine in chronic backpain patients compared to the healthy control group. Pavlicek*et al*., [26]reportedthat people with spinalcord injury have a lower plasma levels of TNF-α and othercytokines when compared with age matched able bodied healthycontrols. Decreased serum TNF-α cytokine levels in patients group could be attributed to the molecular mimicry mechanism of bacteria interferingwith host TLR signaling by Tcps (TIR domain containing proteins), through blocking endogenousprotein's association[27]. TcpC of *E. coli* and TcpB of *Brucellamelitensis*were found to impair the signaling of TLRs and the secretionofproinflammatory cytokines IL6 and TNF-α. Furthermore, *tcpC* was associated with the severity of urinary tract infections[28].

In this work it was found that serum IL-17 levels in patients was significantly lower than control group. And this finding was along with Andelid*et al*., [29] who reported that levels of IL-17 in obstructive pulmonary disease with chronic bronchitis were markedly lower compared to never-smoker controls. This study was also comparable to another study conducted by Baharlou and co-workers [30] in Iran who showed that the serum concentration of IL-17 in patients with bladder cancer was significantly ($p<0.0001$) lower than in healthy controls. Low levels of IL-17 cytokine in UTI pregnant women in this study could be attributed to the impaired cytokines signaling due to bacterial colonization and infection [29]. It's worthy to mention that serum levels of cytokines are time-dependent following the initiation of infection, therefore, a serial examination of IL-17 at different time intervals would be more conclusive [31]. Findings of this work could be artifact, but could also reflect complex andsystematic immunological interplay. Furthermore, age, sex, hormones, nutrition and BMI are commonlyreported to affect cytokine levels[32].

Conclusion

This study suggest that *Staphylococcus*species is the most predominant Gram positive causative agent of UTI during pregnancy. Polymorphism in TLR4 Asp299Gly has a protective role against UTI in pregnant women, Thr399Ile has no association with UTI. Serum TNF-α and IL-17 levels may decrease during bacterial infection.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of medicine, University of Babylon, Iraq and all experiments were carried out in accordance with approved guidelines.

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Detection of Some Virulence Factors Genes of Staphylococcus Aureus Isolated from Patients with Ventilator-Associated Pneumonia in Al-Hilla\Iraq

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Abstract

A total of (96) lavage specimens were taken from patients with ventilator associated pneumonia (VAP), and bronchioalviolar lavage (BAL), during the period from February to June (2018) admitted to the Al-Hillah General Teaching Hospital, Al- Imam Al-Sadiq Hospital and Tiba Center. Among them 24(25%) of specimens were found to be with *S. aureus* bacteriuria. In the present study, it was observed that the number of patients with 30(31.2%) isolates were classified as *Staphylococcus* spp. Among them, 24(25%) isolates were identified as *Staphylococcus aureus*, the remaining isolates 6(25%) were classified as coagulase negative Staphylococcal species. Molecular detection of virulence (*hla*, *tst*, *agrII* and *pvl*) genes, molecular investigation among all *Staphylococcus aureus* isolates showed that all isolates (100%), (91.6%), (0.0%), (0.0%) respectively.

Keywords: *Staphylococcus aureus,ventilator associated pneumonia, PCR technique,virulence genes.*

Introduction

Ventilator-associated respiratory infection is the commonest hospital-acquired infection in intensive care units (ICUs)[1,2]. The condition includes both ventilator associated tracheobronchitis (VAT) and ventilator-associated pneumonia (VAP) [3]. The bacterial pathogens responsible for VAP also vary depending on patient characteristics and in certain clinical circumstances, such as in acute respiratory distress syndrome or following tracheostomy, traumatic injuries, or burns. However, these differences appear to be due primarily to the duration of mechanical ventilation and/or degree of prior antibiotic exposure of these patients [4]. The diagnosis of VAP is usually based on clinical, radiographic, and microbiologic criteria and will be covered elsewhere [5]. Ventilator-associated pneumonia (VAP) is the most common nosocomial infection in the intensive care unit and is associated with major morbidity and attributable mortality. Strategies to prevent VAP are likely to be successful only if based upon a sound understanding of pathogenesis and epidemiology [6]. The major route for acquiring endemic VAP is oropharyngeal colonization by the endogenous flora or by pathogens acquired exogenously from the intensive care unit environment, especially the hands or apparel of health-care workers, contaminated respiratory equipment, hospital water, or air [7]. VAP is usually caused by bacteria, whereas fungi and viruses are rarely involved. Generally, early-onset VAP is caused by pathogens more susceptible to antibiotics, including *Streptococcus* pneumoniae, Haemophilusinfluenzae, and methicillin-susceptible *Staphylococcus aureus*[8]. Staphylococci are members of the newly formed family Staphylococcaceae. *Staphylococcusaureus* is an important bacterial pathogen causing pneumonia in both adult and pediatric populations [9,10]. In recent reports, workers have described the growing incidence of severe *S. aureus* pneumonia in otherwise healthy individuals, often caused by multi-drug-resistant strains [11,12]. In addition, *S. aureus* remains one of the most common causes of ventilator-associated pneumonia, contributing to significant morbidity and mortality. Little is known about the *S. aureus* virulence factors that play a role in lower respiratory tract disease [13,14]. The alpha-hemolysin or a-toxin (*Hla*) is one of the major virulence determinants implicated in the pathogenesis of *S. aureus*, associated to severe skin and

soft tissue infections (SSTI), necrotizing pneumonia. In addition, even sepsis *Hla* is the most prominent *S. aureus*cytotoxin that can act against a wide range of host cells including erythrocytes, epithelial cells, endothelial cells, T cells, monocytes and macrophages [15]. The accessory gene regulator (*agr*) operon of *S. aureus* is a key global regulon that coordinately controls many critical virulence pathways in this organism, including those involved in exoprotein, exotoxin, and adhesion expression [16]. The *pvl* locus is one of the most important genetic marker of CA-MRSA strains, which explains the cases of necrotizing pneumonia and frequency of skin infections and lesions associated with CA-MRSA [17].

Materials and Method

Patients and clinical specimens: A total of (96) lavage specimens were taken from patients with ventilator associated pneumonia (VAP), and bronchioalviolar lavage (BAL), during the period from February to June (2018) admitted to the Al-Hillah General Teaching Hospital, Al- Imam Al-Sadiq Hospital and Tiba Center. The patients' samples were chosen for convenience, and the method of recruitment was standard for a consecutive period of six months. Clinical samples were collected using Artificial respiration tube from lung and bronchoscope tube (from ventilator associated pneumonia VAP and bronchiectasis patients). Transferred to the laboratory by ice bag. No duplicate samples from the same patients and no environmental isolates were included in this study. This study included women, children and the elderly; the age groups of patients span from (2 to 94) years old.

Ethical Approval: The necessary ethical approval from ethical committee of the Hospitals and patients and their followers must obtained. Moreover, all subjects involved in this work are informed and the agreement required for doing the experiments and publication of this work is obtained from each one prior the collection of samples.

Colonial morphology and microscopic examination: A single colony from each primary positive culture on blood, MacConkey, mannitol and nutrient agar and identify it depending on its morphological properties (colony shape, size, color, borders, and texture) and exam it by light microscope after being stained with Gram's stain. After examination it, biochemical tests were done on each isolates to complete the finale identification[18-20].

Molecular Method:

Extraction of Genomic DNA: Genomic DNA was extracted by using a commercial extraction system (Genomic DNA Favorgen Kit).

Results and Discussion

Isolation and Identification of S. aureus Isolates: Total of (96) specimens were collected during this study for isolation of *S. aureus* isolates. Out of which, 30(31.2%) isolates were classified as *Staphylococcus* spp. Among them, 24(25%) isolates were identified as *Staphylococcusaureus*, the remaining isolates 6(25%) were classified as coagulase negative Staphylococcal species. The results were shown in Figure (1). However, 66(68,7%) isolates were identified as Gram negative bacteria similar with result in Europe and South America, *P. aeruginosa* (27%) is the most common causative pathogen taken all regions together, and *S. aureus* (20%) *Acinetobacter species* (14%) follow *P. aeruginosa* and deferent with result in the US, *S. aureus* (32%) is the most common causative pathogen, followed by *P. aeruginosa* (21%), *Enterobacter* species. *Acinetobacter* species (4.4%) while, according to a recent study on the causative pathogens of nosocomial pneumonia in Asia, *S. aureus* 27(%). On 22 (91.6%) were gave β- hemolysis, and two (8.3%) isolates showed alpha hemolysis according to [20] categorization in Table (3). Production of β and alpha hemolysins by *S. aureus* in (20) hours different with result option by [25] who obtained the beta hemolysis equal with alpha hemolysis.

Distribution of S. aureus isolates according to the age and gender: For the distribution of *S. aureus* isolates in different age group (1-94) years, the highest percentage 5(20.8%) of *S. aureus* isolates were found at (61-70) years old in regard to other age groups. For gender distribution of *S. aureus* isolates, it was found that out of (55) patients, 18(75%) isolates of *S. aureus* were found in male. However, *S. aureus* isolates in (41) female were found to be 6(25%). The results were shown in Table (4). These results were agreement with the results obtained by [26] men (79%) and women (21%). Despite a higher incidence of VAP among males but mortality was higher in females. In the present study, *S. aureus* was the all commonly isolated from lavage from patients with ventilator-associated pneumonia and BAL Bronchi alveolar lavage from patients with bronchiectasis, as shown in Table (5). Ventilator-associated pneumonia is one of the most common infections in the intensive

care unit and methicillin-resistant *Staphylococcus aureus* has emerged as a common cause of ventilator associated pneumonia. Characteristics of once weekly active surveillance culture of methicillin- resistant *S. aureus* colonization in predicting the development of methicillin-resistant *S. aureus* ventilator-associated pneumonia. This result agreed with present study, while not agreed with results who found that (12%) for *S. aureus* for bronchiectasis *S. aureus* was isolated from (61) VAP and (35) BAL in (36%, 5.7%) respectively. All the patients taken the samples from one week to months. The ventilator associated pneumonia patients taken Vancomycin and steroid drug, and some of them take the Tobago and three of them take alcohol.

Molecular Characterization of *S. aureus* Isolates by PCR technique:

Molecular detection of virulence (*hla*, *tst*, *agrII* and *pvl*) genes: Molecular investigation among all *S. aureus* isolates showed that all isolates (100%) were harboured the *hla* gene with a molecular weight of (209) bp as shown in Figure (3). *Staphylococcus aureus* causes serious infections that increase morbidity and mortality, especially life-threatening conditions are Hospital-associated pneumonia (HAP) and ventilator-associated pneumonia (VAP), caused by *S. aureus*[2]. The α-toxin is essential for the pathogenesis of *S. aureus* pneumonia. High a-hemolysin activity are markers for VAP found high percentage of *Hla* gene (100%), these results confirmed the major role of *hla* in the murine *S. aureus* pneumonia. Another study found that Alpha-toxin (*hla*) was found in most isolates (98.5%). On the other hand, observed *hla* gene in (81.81%) of isolates. Furthermore, the results of PCR among *S. aureus* isolates showed that the high prevalence (84.24%) of *hla* genes. the *tst* gene result, in the present study out of (24) *S. aureus* isolates, 22(91.6%) were found to be positive for this gene. This finding was relatively similar to the result (100%). On the other hand, the present result was more than the result in Iran who found (45%) of *S. aureus* isolates were harbored this gene. The prevalence of *pvl* gene in current study was (0.0%) that was agreed with results found that none of the *S. aureus* isolates from hospital environment were carried this gene. Absence of *pvl* among *S. aureus* isolates from hospital environment indicates its poor association with hospital acquired *S. aureus* infections. The accessory gene regulator (*agr*) system of *Staphylococcusaureus* is responsible for controlling the expression of many genes that code for virulence factors. In present study, the *agrII* gene in *Staphylococcus aureus* isolates was showed that (0.0%). These results were agreement with results obtained by [50] who found none of the isolates belonged to *agr* group II. While the present study was not agreement with study who found majority of isolates belonged to *agr* Group I (43.3%), followed by *agr* Group III (28.87%), *agr* Group II (22.68%), and *agr* Group IV (5.15%).

Table (1): Production of hemolysin by *S. aureus* isolates on blood agar

Alpha hemolysis	Beta hemolysis	Total
2(8.3%)	22(91.6%)	24(100%)

Table (2): Distribution of 24 *S. aureus* isolates in clinical samples

Patient\Profile	Age group (year)	No. (%) of S. aureus(n= 24)
Age group (Year)	1-10	1(4.1%)
	11-20	4(16.6%)
	21-30	2(8.3%)
	31-40	2(8.3%)
	41-50	3(12.5%)
	51-60	4(16.6%)
	61-70	5(20.8%)
	71-80	1(4.1%)
	81-90	1
	91-100	1
Gender	Males(55)	18(75%)
	Females(41)	6(25%)

Table (3): Occurrence of *S. aureus* isolates according to source of isolation

Clinical sample (lavage)	No. (%) of clinical sample	No. (%) of S. aureusisolates
VAP	61 (63.5%)	22(36%)
BAL	35 (36.6%)	2(5.7%)

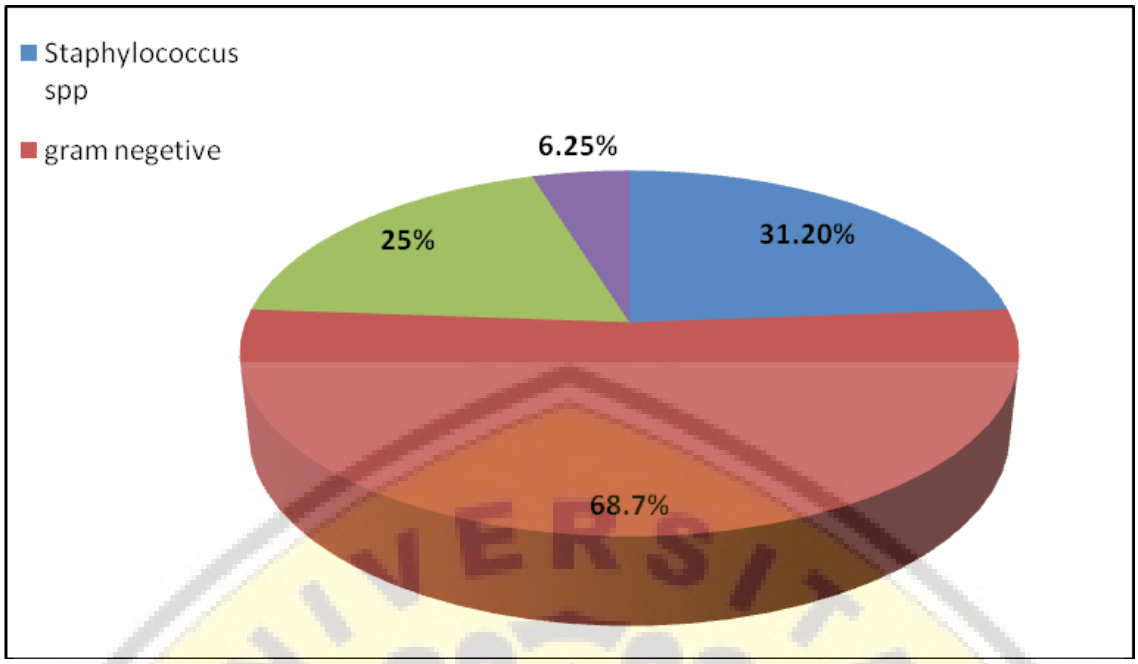

Figure (1): Frequency of S. aureus and other bacteria in clinical samples collected from Al-Hilla hospitals

Figure (2): Agarose gel electrophoresis image that showed PCR product analysis for hla gene in Staphylococcus aureus isolates. M (Marker ladder 2000-100bp). Lane (1-24) Positive hla gene Staphylococcus aureus isolates at 209bp product size.

Figure (3): Agarose gel electrophoresis image that showed PCR product analysis for tst gene in Staphylococcus aureus isolates. M (Marker ladder 2000-100bp). Lane (1-3, 5-15 and 17-24) negativetst gene Staphylococcus aureus isolates at 255bp product size.

Conclusion

The bacterium *S. aureus* has role in VAP and their hemolysin (*hla*) and toxic syndrome toxin (*tst*) genes were play obvious role in this infection.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Dept. of Microbiology, College of Medicine, Babylon and all experiments were carried out in accordance with approved guidelines.

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Development of Hatching Microstructure on Cp-Titanium Surface By Fiber Optic Laser Processing

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Abstract

Titanium is a common dental biomaterial. The response of the bone cells depends on the implanted surface texture to improve fixation and prevent unwanted adhesion. Laser surface texture of titanium and the impact of laser variables; power (P), scanning speed (V) and hatching distance (HD) on the textured area's shape and dimensions was evaluated. The surface texture was achieved with three rounds of fiber optic laser and a central wavelength of 1064 nm. Various surface textures were created with excellent uniformity and repeatability on a desired portion of the surface. Surface Texturing that was carried out directly by a fiber optic laser yield a hatch configuration over multiple length micron scales. Thus, several sets of hatches were formed with different hatch parameters. Surface topography and chemical composition characterization were investigated via scanning electron microscopy and electron dispersive spectroscopy, X-ray diffraction, and surface roughness. The most advantageous results of roughness have been detected in 20 mm/s scan speeds of laser beams. On the other hand, a dependence between roughness values, in terms of Ra (10nm) and Rz (11.7nm), and pulse power of 20 watts were observed.

Keywords: *Texturing, Hatch, Roughness, Fiber optic laser.*

Introduction

Different surface textures and their advantages regarding the speed of bone healing, osteointegration or stability were observed[1]. One main objective is to increase the surface area of the implants as it improves contact between the bone and the implant. On the other hand, a macro and micro- scale surface topography can be modified to clarify different responses.[1,3] Macro size topographies contribute to the initial stability of the implant. Micron and submicron characteristics have shown a significant advantage in osteoblast response and bone growth along the implant surface and biological fluid distribution[4]. Laser surface texturing had great potential to produce unique surface structures. The benefits were obvious. It can effectively change the surface without direct contact (avoiding unwanted contamination and impurities)[5]. Moreover, the heat absorption is fast, with the ability to focus the laser beam on little areas of the surface and reduce heat-affected area, thus only minor adverse concentrated areas of material deposition were formed around the texture[6]. Texturing by the laser is also easily automated and online monitoring[7]. Simplicity and reproducibility with cost-effective results. However, local heating during laser processing leads to more physical and chemical changes that can affect cell behavior[8]. The fiber lasers with much greater frequency offer great potential for high-speed surface texturing with attractive features such as low-cost, robust operation, compact size, low-intensity noise, and limited diffraction quality beam. During hatch formation, specific laser parameters can be used to create optimal physical and chemical properties with significantly reduced or no thermal effects for improved osseointegration.[9] Chen et al.[10] Report that bioactivity depends on surface topography.

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Methodology

Experimental Procedure:

Sample Preparation: This study was conducted on one side of a flat surface of commercially pure titanium (ASTM grade 2, McMaster-CARR, USA)circular discs (30x5) mm diameter and width respectively. The discs were ground and polished with a grit sequence of SiC papers (500 and 1000 grit) using a rotary grinding and polishing machine with 250 rotations per minute (rpm) in 2 minutes for each grinding step in distilled water. The purpose of polishing the discs before micro-texturing to create a uniform surface in order to measure the morphological changes induced by the laser.

Surface Texturing with the Laser: Laser texturization was carried out using a laser source under (25 K_{Pa}) atmospheric pressure in the open air. The process was carried out by moving the laser beam via a computer-controlled XYZ stage over the discs with scanning speeds measured in mm/s. In order to achieve complete surface coverage, consecutive laser tracks were graved by a lateral shift in the optical direction. Before and after the laser texturing, surfaces were ultrasonically cleaned in Ethanol 99.8% absolute (SIGMA- ALDRICH, Germany), Acetone absolute (SIGMA- ALDRICH, Germany), and Deionized water (Iraq) to remove surface contaminants.

EzCAD software was used to convert the surface texture detailed to laser machine instruction files. The pulse repetition rate (f) was set at 1 kHz for the current study and the pulse length (pl) was 100 ns. For all treatments pulse width of 5 ns was used.Laser texture was performed by using a red laser beam of 1064 nm of central wavelength. The offset rate for hatch was 20 (μm). Three laser parameters: power, scanning speed and distance of the hatch were selected after performing pilot study for various parameters in order to select the best parameters that provide clear textures with optimum dimensions for successful osseointegration which were then selected according to scanning electron microscope images and as follows:

Round 1: Power 20 W, scanning speed of 5 mm/s, and hatch spacing distance of 0.75 mm.

Round 2: Power 25 W, scanning speed of 10 mm/s, and hatch spacing distance of 1.25 mm.

Round 3: Power 30 W, scanning speed of 15 mm/s, and hatch spacing distance of 1.50 mm.

After texturing, the morphology of samples was inspected with a photographic system in front of the laser-textured area using an optical stereomicroscope (Olympus, Japan).

Characterization: Quantitative evaluation of the surface topography of the textured areas was done by using a scanning electron microscope (FEI company, model S-50, Netherlands inspects), provided confirmation of the hatching parameters and classification of the formed features. Cross-sectional information was obtained by dicing discs with a diamond and repolishing them to get a fresh cut.In addition, energy dispersive spectroscopy (EDS), (Energy Dispersive Spectroscopy, Bruker Company-Germany, X-Flash, Model-6L) was used to provide elementary information on the surface regions in and around the hatches.X-ray diffraction device (XRD-Bruker, D2 phaser, Germany, 2010) have been used to detect fraction phases derived from diffracted discs.Surface roughness (Ra) and the maximum vertical height of the highest peak to the lowest valley (Rz) were perpendicular to hatch length, defined by International Standard ISO 4287;88:1996 in the textured areas by scanning probe microscope (AA3000 Angstrom Advanced Inc., USA) with the ability to profile the bottom of the textures with depth and roughness parameters. The measurement was carried out at several locations in the textured areas for ten grooves and ridges over a surface area of approximately (1x1) mm covering several individual hatches. For each reporting (Ra) result, an average value of the average roughness (Ra) was extracted from the data obtained to characterize the surface finish.

Results and Discusion

Topography: The interaction of the focused laser beam to the surface of the titanium was visualized by means of high-quality photography during the processing. The results of the three laser rounds were similar in topography as compared in Figures 1 (A, B and C). Which represent homogenous surface melting. When the power was raised to 25 W, in round 2, the laser hatches were more visible because the superimposed shots produced a hatch in the scan direction. When V=10 mm/s, the void between each laser pulse produces a discrete pattern.

The laser textured area was also inspected with a photographic system using an optical stereoscope to capture and store images. As illustrated in fig. 1. (D, E, and F).

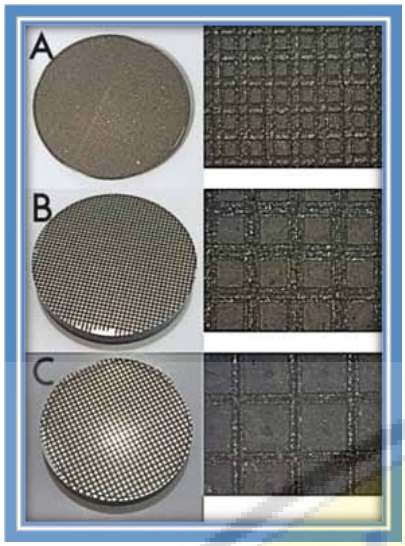

Figure (1): General view of the textured surface by fiber optic laser and Optical stereoscope pictures X40 from above left to right R1, R2, and R3 rounds.

Scanning Electron Microscopy: The impact of scanning speed in mm/s and hatch spacing distance in (mm) on the width of textures was analyzed after selecting the correct laser power. After scanning the surface by a laser beam with 5 mm/s and 0.75mm, the texture was obtained with a wide range of (130-152) microns. After scanning the surface by a laser beam with a 10 mm/s and 1.25mm, the width of the texture was (33-61) microns. After scanning the surface with a laser beam with a 15 mm/s and 1.50 mm, texture with a width ranging between (33-111) microns was obtained.

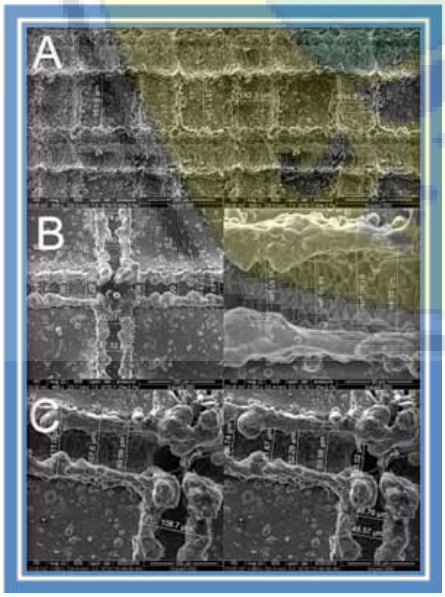

Figure (2): SEM micrographs with laser groove widths commercially textured pure titanium surfaces: (A) Round1 (B) Round 2and (C) Round 3.

After analyzing the microscopic results, a laser beam of 20W power, scanning speed of 5 mm/s and a hatch distance of 0.75 mm (R1) showed the best groove depth, the smallest heat-affected zone, the most regular edges, and the lowest vaporized material deposition. The depth of the groove was estimated at (198.8) micron compared to (130) micron for round 2. As shown in Fig.2 and 3.

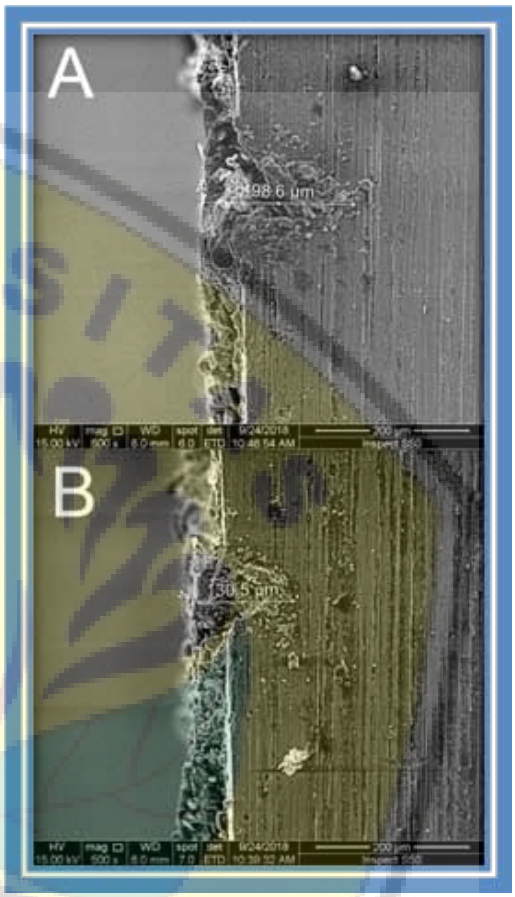

Figure (3): SEM micrograph 500X groove depths of a laser textured commercially pure titanium side surfaces as a function of the (A) Round 1 and (B) Round 2 parameter.

Energy Dispersive Spectroscopy: Chemical characterization and elemental concentrations in textured and untextured areas were summarized in Table 1. As noted, the main chemical change in the textured areas is titanium oxidation, which confirms the formation of oxides as the cause of coloration in the treated area. As shown in Fig. 4.

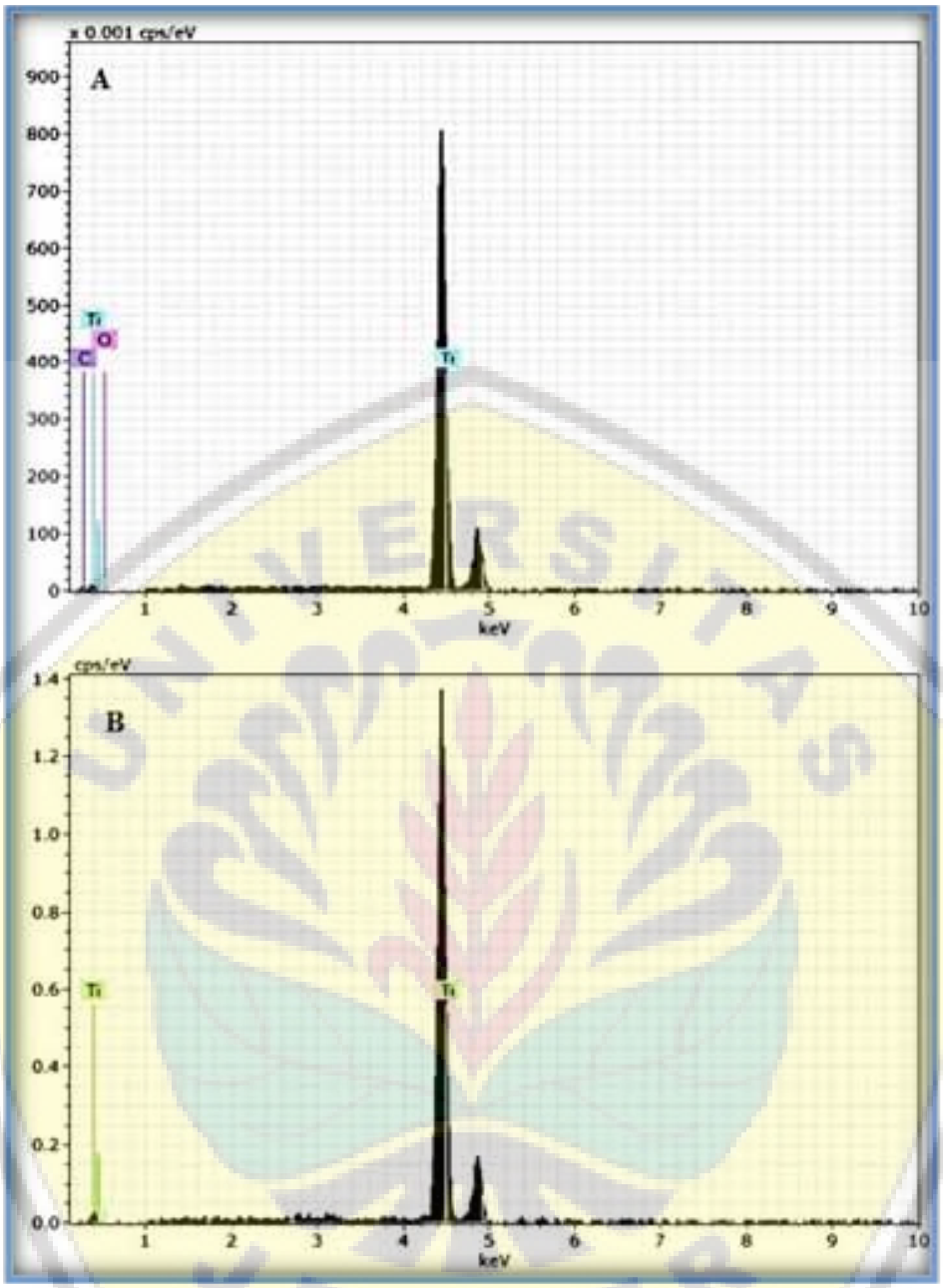

Figure (4): EDS analysis of the heat- affected zone of the titanium samples for various laser texturing processes: the textured lasers were (A) fiber optic and (B) untextured.

The laser texture tends to oxidize the surfaces, with the metallic titanium peak intensity disappearing, except for the fiber optic laser texture R1. The total TiO ratio increases while the Ti ratio decreases after laser texturing, indicating that the proportion of TiO increases in the oxide film, while the proportion of Ti decreases. As shown in Table 1.

Table 1: Elemental analysis of the fiber optic laser textured the substrate.

Element	Untextured	(R1)	(R2)	(R3)
Titanium	89.56	89.56	75.59	84.04
Oxygen	10.43	10.43	10.60	11.52
Nitrogen	0	0	11.77	2.47
Carbon	0	0	2.02	1.95
Sum	100	100	100	100

X-ray Diffraction: Figure 5 shows the X-ray diffraction patterns of the sample surface under the laser texture condition. The rapid resolidified layer in all samples can influence the balance of α and β phases of the original material and is a typical feature of laser processed metallic materials. The β-Ti amount of the non-structured material was 100 percent, as measured by X-ray diffraction (XRD). After laser texturing, the amount of β-Ti was lower than the non-structured material but was barely the same under all conditions at 100 percent.

Surface Roughness: Starting with untextured Ti samples with average values of arithmetic roughness Ra= 1.16 µm and a maximum height of the roughness profile Rz= 1.32 µm, the surface finish of the texturization shows that variations in laser texturizing parameters have a significant influence on the absorption of laser radiation, resulting in significant variability of the roughness. In addition, different shapes were observed in the profiles obtained for different combinations of pulse power and scanning speed, as illustrated in Figure 6.

The roughness profiles were created using the three parameter types shown in Table 2. The type of texture consists of microgrooves with a rough cross-section (fiber-optic/round 1 laser), forming a surface roughness distribution. These textures are not commensurate with the grain size of the material and have no relation to the material microstructure.

In order to understand, Ra and Rz values of the untextured surface are marked dark brown polished surfaces. When the roughness is above this level, light brown surfaces are marked, which were rougher when compared with the original values.

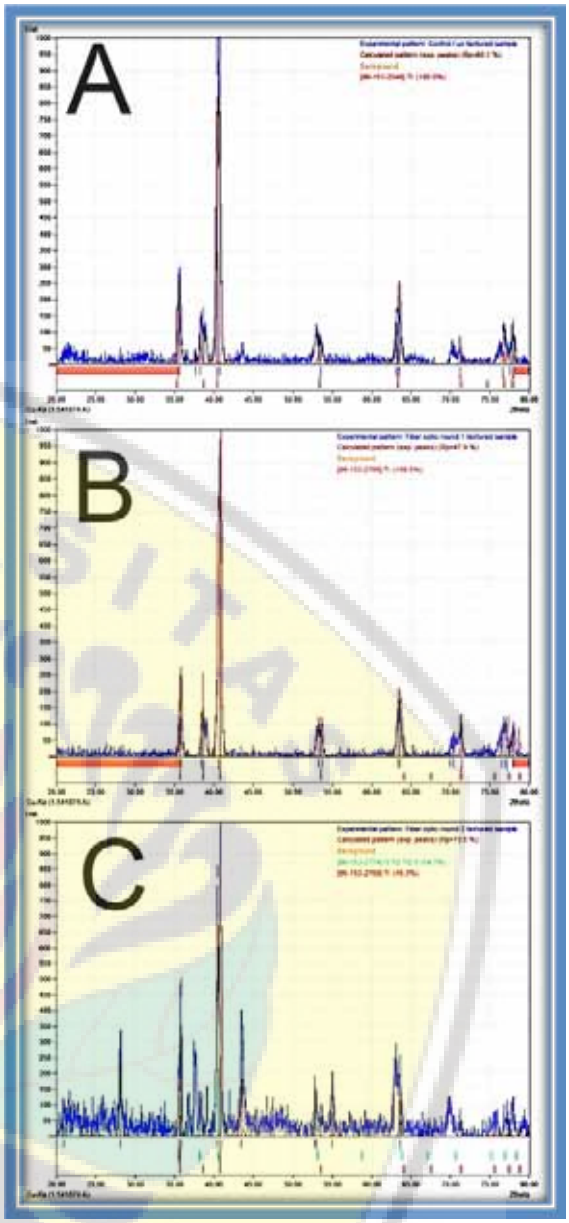

Figure (5): Analysis of the heat- affected zone diffraction patterns of the titanium samples for different laser texturing processes: (A) un textured region, (B) fiber optic (R1) and (C) fiber optic (R2).

Table (2): Average values Ra and Rz of the Ti substrate textured by different fiber optic laser parameters.

	Un textured	(R1)	(R2)	(R3)
Ra	1.16 nm	10.00 nm	6.78 nm	1.49 nm
Rz	1.32 nm	11.7 nm	7.85 nm	1.7 nm

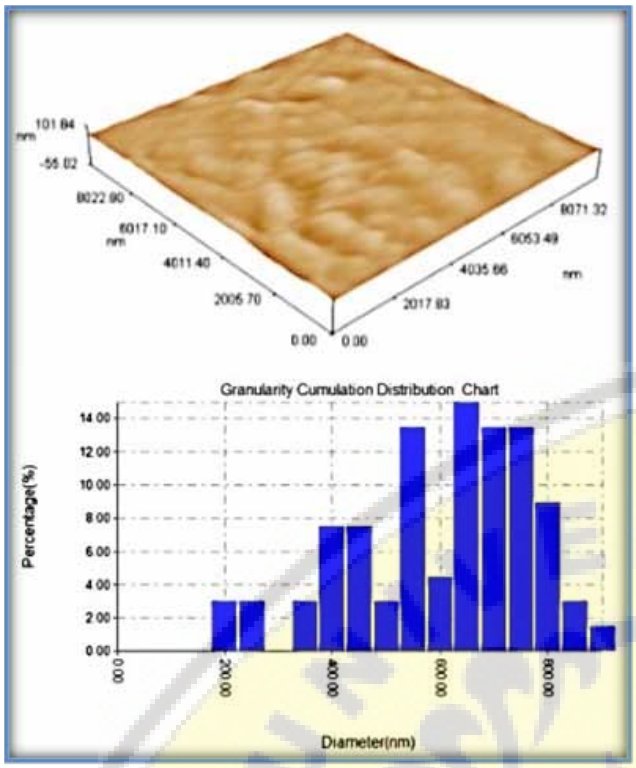

Figure (6): Analysis of surface roughness and distribution chart for untextured CP Ti sample.

The overall surface texture of fiber optic laser results is a combination of several different features: machined hatches; resolidified droplets overlapped on the ridges between the hatches; ribs indicating the edge of the craters generated by each individual laser beam overlapped on the bottom of the hatches. The surface has three distinct areas: the bottom of the grooves, the ridges between the grooves and the side walls of the grooves. as mentioned by Antończak. The two fundamental primary properties of hatches are the depth and width. As shown in Fig. 2 and 3.

Energy Dispersive Spectroscopy: The existence of a thermally affected area can be determined. It is observed that the zone affected by the direct incidence of laser pulses presents variations in the initial composition, allowing to detect alterations in the substrate microstructure and oxidation rates of the Ti.Although physical changes are the primary consequence of laser texturing, chemical changes also occur and can be measured by EDS. Changes in the chemical composition of the surface influence how cells attach and react to the metal. Which could be tested with cell studies. As mentioned by Vrancken et al. The surface feature revealed a large hatching distance which did not lead to significant changes in surface chemistry regardless of the laser power. This is consistent with a transient molten region on the surface, which preferably does not evaporate titanium due to its lower vapor pressure. And this can provide an opportunity to combine laser-created hatches with surface bio-activation. And these findings were in agreement with Yavas.

Conclusion

This study evaluates titanium laser parameters, including laser power (P), scanning velocity (V) and hatch distance (HD). The properties of the surface hatch had been width and depth. Those properties were related to a homogeneous textured layer, low energy of 20 Watt, a scanning speed of 5 mm/s, the resulting surface finish with the most reliable width and depth for osseointegration and those laser parameters were recommended for long-time period dental implants. At high speeds and powers, i.e. (10-15) mm/s, the resulting hatches were visible on the surface. The laser texturing approach contemplated the roughness values measured. Taking into consideration the initial values of Ra and Rz, The most roughness values were 10 μm (Ra) and 11.7 μm (Rz) for round 1 and the average values for round 2 and the minimum values were for round 3. After texturing, an X-ray diffraction and energy dispersive spectroscopy detected a TiO layer. It became expected that the oxide thickness expanded with increased heat input. The heat input related to the laser power applied, with minimal values for the round 1 laser parameters.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Dentistry, University of Baghdad and all experiments were carried out in accordance with approved guidelines.

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Effectiveness of an Instructional Program on Knowledge of Patients Undergoing Chemotherapy toward Self-care in Baqubah Teaching Hospital

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Abstract

The main aim of the study is to determine the effectiveness of an instructional program on the knowledge of patients undergoing chemotherapy toward self-care. A quasi experimental study design is carried out at Baqubah Teaching Hospital, from 7th October, 2018 to 22th April, 2019. The program and instruments were constructed by the researcher for the purpose of the study. A purposive random sample comprised of (60) patients undergoing chemotherapy was divided into two groups; study group consisted of (30) patients who were exposed to an instructional program and control group consisted of (30) patients who were not exposed to the program. The socio- demographic characteristics of the patients. Clinical data of the patients. Knowledge of patients undergoing chemotherapy toward self-care. Validity of the study instrument was determined through a panel of experts and reliability of the instrument was determined through Cronbach's Alphamethod. The analysis of the data used was descriptive statistics and statistical inferential, in order to find the differences between the study group and the control group. The study findings indicate that there are significant differences between pre and post-tests in the study group in overall III main domains regarding patient' knowledge toward self-care.

Keywords: *Effectiveness, Instructional Program, Knowledge, Chemotherapy, Self-care*

Introduction

Cancer is not a single disease with a single cause; rather, it is a group of distinct diseases with different causes, manifestations, treatments, and prognoses,cancer is a disease of the cells, which are the body's basic building blocks. The body continuously makes new cells to help us grow, replace worn-out tissue and heal injuries. Normally, cells reproduce and die in an systematic way. Sometimes cells unable to grow, divide and die in the normal way. This may cause blood or lymph fluid in the body to become abnormal.(1) Chemotherapy is a kind of treatment that uses drugs to attack cancer cell. It is called as "systemic treatment" since the drug, entering through the blood stream, travels throughout the body and destroys cancer cells at their sites. These drugs may rarely be intended to have a local effect, but in most cases, the target is to destroy cancer cells wherever they may exist in the body. Chemotherapy are chemically designed to target cells that are multiplying and growing rapidly. Once they reach the cancer cells, they act to retard their growth eventually resulting in their destruction. Chemotherapy is usually given in cycles. People receive treatment for one or more days. Then they have a recovery period of several days or weeks before the next treatment session(2). Firstly it was thought that chemotherapy drugs specifically kill the cancer cells only but now it is well known that it also damages to the normal cells resulting the chemotherapy dose dependent side effects such as Nausea, Hair loss,

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Fatigue, Constipation, Fever, Diarrhea, Stomatitis or Mucositis, Burning micturition, Infection, Skin rashes, Gum bleeding, Toothache, Cough, Jaundice, swelling, dizziness etc. and even death may also occur in severe cases. The main strategy of chemotherapy drugs based on the phenomenon that these drugs selectively target the tumor cells, largely by the means of genotoxicity partially caused by the production of reactive oxygen species, which does not specifically damages the cancer cells but also the normal cells[3].Self-care behaviors are preparation before receiving chemotherapy, self-conduct during and after chemotherapy and self-care at home. This way, patients can return to normal life in their own environment and society [4].Self- care as the practice of activities that individuals personally initiate and perform on their own behalf to maintain life, health and well-being. Processes for achieving these goals include selecting healthy lifestyles, self-monitoring and assessing symptoms, perceiving and assigning meaning to symptoms, evaluating the severity of the situation, and determining treatment alternatives. Outcomes of self-care activities include reduction in morbidity associated with illness, increase use of health resources, more effective coping strategies, enhanced role performance, and increased independence in performance of daily living activities and enhanced self- esteem and well-being[5].

Material and Method

To achieve the aims of this study, a quasi-experimental study was conducted in Baqubah Teaching Hospital from 7th, October 2018 to the 22th, April 2019.

The program and instruments were constructed by the researcher for the purpose of the study. A non- probability purposive sample of (60) patients undergoing chemotherapy were divided into two groups; study group consisted of (30) patients who were exposed to an instructional program and control group consisted of (30) patients who were not exposed to the program. The study instrument is composed of three parts: first part dealing with the socio- demographic characteristics of the patients, second part dealing with the medical information, while the third part dealing with the Knowledge test which consists from (24) items (multiple choices) questionnaires divided into (3) main dimensions related to patients knowledge towardself-care.

Each question was composed of (3) items in alternative form of a multiple choice and given the correct answer score (2) and the incorrect answer scored (1). About (25-30) minutes are given for the test completion.

The instructional program consists of three sessions and is implemented for four weeks period in oncology department. Time required for each session was (40-50) minutes .

Validity of the study instrument was determined through a panel of (17) experts and reliability of the instrument was determined through Cronbach's Alphamethod. The analysis of the data used was descriptive statistics and statistical inferential, in order to find the differences between the study group and the control group.

Data were analyzed through the use of SPSS application version 22.0. Descriptive data analysis including Mean of score (M.S),with their Standard Deviation (S.D), and frequency (f). Inferential data analysis includes Chi-Square test, Contingency Coefficients (C.C.) test, t-test, Pearson correlation.

Results and Discusion

Table (1): Distribution of Medical information for the study and Control groups No=60

No.	Variables	Classification	Study		Control		C.S.
			F	%	F	%	
1	When had you been diagnosed?	Less one month	3	10.0	1	3.4	.662 NS
		1-6 month	12	40.0	12	40.0	
		7-11	10	33.3	14	46.6	
		Year and more	5	16.7	3	10.0	
		Total	**30**	**100.0**	**30**	**100.0**	

No.	Variables	Classification	Study		Control		C.S.
			F	%	F	%	
2	Past family history of cancer	Similar type of cancer	5	16.7	3	10.0	.722 NS
		Other type of cancer	7	23.3	9	30.0	
		No history of cancer	18	60.0	18	60.0	
		Total	**30**	**100.0**	**30**	**100.0**	
4	Type of treatment given to him after diagnosis of the disease	Chemotherapy	17	56.7	21	70.0	.157 NS
		Radiation therapy	9	30.0	6	20.0	
		Surgery	4	13.3	3	10.0	
		Total	**30**	**100.0**	**30**	**100.0**	
5	Information about chemotherapy and self-care	Yes	8	26.6	8	26.6	1.000 NS
		No	22	73.4	22	73.4	
		Total	**30**	**100.0**	**30**	**100.0**	
6	source of information (8 have information)	Family and friends	1	12.5	1	12.5	.154 NS
		Books and magazines	3	37.5	0	0.00	
		Infected patients	1	12.5	0	0.00	
		Mass Media	1	12.5	0	0.00	
		Information Network	1	12.5	0	0.00	
		A Health Care Provider	1	12.5	7	87.5	

F = frequency, % = percentage, P.value, χ^2 : chi-square, NS = Non-significant at P>0.05.

Table (1): shows medical information for the study and control which as more of the participants in the study group have been diagnosed between 1-6 months (n = 12; 40.0%) followed by a lesser proportion for those who have been diagnosed within less than a month (n = 3; 10.0%). On the other hand, more than a third of participants in the control group have been diagnosed between 7–11 months (n = 14; 46.6%) followed by those who have been diagnosed within 1-6 months (n = 12; 40.0%). The majority of participants both in the study and the control groups reported that the family history of cancer was nonexistent (n = 18; 60.0) for both group. The majority of participants in the study group and control group had breast cancer (n = 9; 30.0%; n = 8; 26.7%) respectively .Furthermore, most of participants both in the study and the control groups reported that given him chemotherapy after diagnosis with cancer (n = 17; 56.7%) for the study group and (n = 21; 70%) for control group .Suffer from chronic disease shows that the highest percentage of the study and control groups that had experienced chronic disease (n = 16; 53.3%) for the study group and (n = 17;56.7%) . The highest percentage of participants in the both groups reported that they had not any previous information about chemotherapy and self-care (n = 22; 73.4%). Ultimately, less than a fifth of participants in the study group who reported that they had previous information about chemotherapy and self-care reported that the sources of such information included the books and magazines (n = 3; 37.5%). On the other hand, less than a third of participants in the control group, who reported that they had such information, reported that the sources of such information include a health care provider (n = 7; 87.5%) . The results show that there is no significant relationship for the selected variables at p-value > 0.05. There was no statistical significant difference majority of items between pretest and posttest of study sample for the control groups patients knowledge. revealed that the total mean for patients knowledge toward the instruction program domains at pretest was middle level of knowledge (1.2, 1.1,1.2) and at posttest was middle level of knowledge (1.2, 1.2,1.1) domains of Patients knowledge about cancer and chemotherapy, self-care of chemotherapy side effects, and the patients knowledge about self-care during daily living activities. There was statistical significant difference majority of items between pretest and posttest of study sample for the study groups patients knowledge revealed that the total mean

for patients knowledge toward the instruction program domains at pretest was middle level of knowledge (1.1, 1.2,1.1) and at posttest was high level of knowledge (1.6, 1.7,1.8) domains of Patients knowledge about cancer and chemotherapy, self-care of chemotherapy side effects, and the patients knowledge about self-care during daily living activities .

Table (2): The correlation between some variables with patients knowledge toward self-care for the study group

Knowledge / Variables	Posttest study (N=30)		
	Pearson Correlation	P-value (2-tailed)	Sig.
Age	.463**	.010	S
Level of eduction	-.371*	.043	S
Marital status	-.170	.369	NS
Occupation Status	-.202	.284	NS
Residency	.157	.407	NS
Monthly Income	.194	.305	NS
When had you been diagnosed?	-.005	.979	NS
Past family history of cancer	-.173	.361	NS
Type of treatment given to him after diagnosis of the disease:	-.085	.655	NS
Do you have information about chemotherapy?	.319	.086	NS

**. Correlation is significant at the 0.01 level (2-tailed)., *. Correlation is significant at the 0.05 level (2-tailed).

Table 2 Revealed that there was significant relationship between the knowledge of instruction program, age and level of education at p≤ 0.01 level .Also, was no significant relationship between the knowledge of instruction program and marital status, occupation status, residency, monthly income, When had you been diagnosed, past family history of cancer, Type of treatment given to him after diagnosis of the disease and information about chemotherapy and self care at p≤ 0.01 level. In this study the statistics showed that more than a quarter of participants in the study group have been diagnosed between 1-6 months (40.0%) followed by a lesser proportion for those who have been diagnosed within less than a month (10.0%). On the other hand, more than a third of participants in the control group have been diagnosed between 7–11 months (46.6%) followed by those who have been diagnosed within less than a month (3.4%). This results agree with (Haryani et al, 2017) found have been diagnosed for less than one year (77.5%).[9] More half of participants in the study group and control group reported that they had not family history of cancer (60.0%) . Family member with cancer in the past can provide some information about disease and how to control the side effects of treatment. Lu et al., (2014) reported family health history is one of the strongest known cancer risk factors. For example, patients with three or more first-degree relatives with breast or prostate cancers have a four-fold and 11-fold increased risk for those diseases, respectively. With a detailed family health history, clinicians can identify these patients early and initiate personalized prevention strategies, such as increased screening, prophylactic surgery, risk-reducing therapeutics, and lifestyle changes during earlier, more treatable stages.[15] Most patients given chemotherapy after diagnosis with cancer (56.7) for study group and (70.0) for control group . This results supported by Moursy and Ead (2014) 50 participants about Self-Care Practices of Chemotherapy Patients at This study was conducted at the Oncology Therapy Unit, Alexandria Main University Hospital. The inpatient unit of chemotherapy consists of 12 beds, showed that 78% of patients had surgery, and all the studied patients received chemotherapy, while 18% of the studied patient received radiotherapy.[11] More than half of the participants in the study group reported that they do not have any previous information

about chemotherapy and self-care (73.4%), and a larger proportion for those in the control group who also reported that they do not have any previous information about chemotherapy and self-care (73.4%) . This finding supported by (Choenyi et al,2016) Regarding previous knowledge of chemotherapy and its home management 30 patients (50%) had previous knowledge and 30 patients (50%) didn't have any previous knowledge about chemotherapy and its home management.[13]

Conclusions

The majority of the study sample within age group (50 – 59) years, male,primary school graduates, married, unemployed, barely sufficient monthly income, and live in rural areas in the study group and urban areas in control group. The majority of the study group have been diagnosed within 1-6 months, and control group have been diagnosed within 7- 11. The majority of the study sample not have past family history of cancer, with breast cancer, suffer from chronic disease, do not have information about chemotherapy and self-care. There was no statistical significant difference majority of items between pretest and posttest of study sample for the control groups patients knowledge toward self-care. The knowledge of the patients toward self-care has been improved after implementation of the instructional program in the study group as shown in the post test results in all of the domains including: Patients knowledge toward cancer and chemotherapy, Patients knowledge toward self-care of chemotherapy side effects and Knowledge of patients undergoing chemotherapy toward self-care during daily living activities. The finding of the study indicates there was a statistical significance between (age and level of education) with patients knowledge. The finding of the study indicates there was no significant between (marital status, occupation status,residency, monthly income, When had you been diagnosed, Past family history of cancer, Type of treatment given to him after diagnosis of the disease, and Do you have information about chemotherapy?) with patients knowledge.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Adult Nursing Department, College of Nursing/University of Baghdad/Iraq and all experiments were carried out in accordance with approved guidelines.

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Effects of Abuse and Neglect on Adolescents in Kirkuk City

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Abstract

Abuse and Neglect is a social and public health problem with a serious impact on adolescents physical and mental health,well-being and development throughout their lives–and, by extension, on society in general. A descriptive design study in which assessment approach is applied to achieve the objectives of the study and was carried out to assess the levels of abuse and neglect, and indicate the possible effects of abuse and neglect on adolescents in Kirkuk city. The period of the study was from the December 15th 2018 to April 15th 2019. The data are analyzed through the use of Statistical Package for Social Science (IBM-SSPS version 24). The descriptive and inferential statistical procedures were used for analysis of data. The finding of the study revealed that physical abuse, sexual, emotional abuse, and neglect are causally linked to mental and physical health outcomes.

Keyword: *Effect, Abuse, Neglect, Adolescents.*

Introduction

Abuse and neglect is among the most prevalent and most complicated psycho-social issues in today society[1]. Every day, thousand of children and adolescents are burnt, beaten, suffering from hunger or abused by their caregivers. Though certain adolescents are targeted as victims of various forms of physical or sexual abuse, yet, they do suffer from psychological abuse and neglectlike being ostracized, ridiculed or scared[2]. Abuse and neglect can affect all domains of development—physical, psychological, cognitive, behavioral and social—which are often interrelated[3]. Data from the studies of abuse and neglect in the United States has indicated strong associations between abuse/neglect and health problems in adolescents,indicate that exposure to abuse doubled the odds of adolescents having overall poor physical health[4,7]. Researchers have found that abuse and neglect is associated with behavior problems in adolescence internalizing (being withdrawn, sad, isolated, depressed), and externalizing behaviors (being aggressive or hyperactive)[5]. Evidence suggests that all types of abuse and neglect are significantly related to higher levels of substance use and attempted suicide/ suicidal thoughts[6]. Also homelessness is more likely eventuate in adolescents[7]. In addition to feeling pain as exposure to abuse and neglect are at increased risk of inflicting pain and developing aggressive behaviors in adolescence[8]. Mental health problems, such as depression[9], anxiety and post-traumatic stress disorders, have consistently been linked with abuse and neglect, particularly for adolescents[10].

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Methodology

A descriptive design study in which assessment approach is applied to achieve the objectives of the study and was carried out to assess the levels of abuse and neglect, and indicate the possible effects of abuse and neglect on adolescents in Kirkuk city. The period of the study was from the December 15th 2018 to April 15th 2019. The data are analyzed through the use of Statistical Package for Social Science (IBM-SSPS version 24).

Results and Discussion

The analysis of socio-demographic characteristics of adolescents in (figure 1 and 2) shows that more than half

of adolescents are male (62%) with age group 12-15years old (65%), whose average mean of age is 12.5 year. The highest percentages of adolescents are living with their parent (53%). Table 1 show socio-demographic characteristics of their parent concerning this study; the finding reveal the high cases of their father are working (77%), and (53%)of their mother are employed. College was the highly frequented educational level among their parent(27% father's educational level) (28% mother's educational level).Approximately (48%) of their family with insufficient monthly income. Regarding residence variable, more of adolescents are seem to be resident in urban area(51%). Also families of adolescents are composed of 4 – 6 members as seen with percentage of 47%, in which 66% of these families are nuclear. Table 2 shows the level of abuse among adolescents; the finding in this table reveal that adolescents are suffering from abuse with moderate level in which the total score (100%), and it's subtype are showing moderate level of abuse (96% of them are suffering from physical abuse, 82% sexual abuse, and 100% psychological abuse). Table 3 reveals that adolescents are suffering from neglect with moderate level (68%). Table 4 indicates that high significant correlation between level of abuse/neglect and level of mental health. Regarding participants' gender, more than half of adolescents are male were within the age group 12-15 years old whose average mean of age is (12.5 years). The statistics relevant to abuse and neglect demonstrate that individuals with age 12-years experience more abuse and neglect than other age groups, followed by those who are within the age group of (16-19) years old (35%). Also this relevant to that the gender is a critical determinant of health, it is influences power and control men and women have over the determinants of their mental health, including their socioeconomic position, roles, rank and social status, access to resources and treatment in society. As such, gender is important in defining susceptibility and exposure to number of mental health risks as result of abuse and negect[11]. And more than half of adolescents are living with their parent (53%). This finding could be explained as that the parent represent the largest source of abuse and neglect, because in the home where the greatest harm is possible in a close relationship, an abuser has ready constant access to the victim because of relationship between the victim(child) and abuser (parent). Regarding to father's occupation more than three-quarters are working, and more than half of mother' are employing. With respect to the parent's level of educationmore than a quarter have college. This finding could be explained as that they prefer job for them; the educational level has a role in this case[12]. Approximately, half of adolescents parent were associated with insufficient monthly income. This finding could be explained as inability of parent to meet their children's social and emotional needs, there is evidence also that high family income improves parental care and thus benefits child mental health and wellbeing. Approximately half of adolescents (51%), are resident in urban area, it related to that the geographic distribution of the Kirkuk city were seemed urban. Approximately, half of adolescents families (47%) consisted of 4-6 members, that is came with their families are nuclear family type (66%). The finding in (table 2), concerning adolescents' level of abuse study participants having a moderate level (100%) of abuse, in which 96% of them are suffering from physical abuse, 82% sexual abuse, and 100% of them are suffering from psychological abuse. This could be explained as that the variance in the status of parental socialization could be linked to the severity of abuse[6,10]. Concerning neglect level, study shows a moderate level (68%) of neglect, this could be explained that neglect is inherent pattern in all forms of it more harmful to children and adolescents. Analysis of current study indicated that there was significant association between level of abuse and neglect and the level of mental health. This could be explained as the less harassed the adolescents, the better mental health. And the higher of abuse/neglect in the adolescents, the more increase in their pathological symptoms and the more decrease in their mental health.

Table (1): Distribution of Adolescents according to their Family Socio-demographic Characteristics

List	Characteristics		f	%
1	Father's occupation:	Working	77	77
		Not working	23	23
		Total	100	100
2	Mother's occupation:	Employed	53	53
		Housewife	47	47
		Total	100	100
3	Father's educational level:	Unable to read & write	7	7
		Primary school	10	10
		Intermediate school	18	18
		Secondary school	17	17
		Institute	20	20
		College	27	27
		Graduate	1	1
		Total	100	100

List	Characteristics		f	%
4	Mother's educational level:	Unable to read & write	3	3
		Primary school	4	4
		Intermediate school	24	24
		Secondary school	18	18
		Institute	23	23
		College	28	28
		Graduate	0	0
		Total	**100**	**100**
5	Monthly income:	Sufficient	21	21
		Barely sufficient	31	31
		Insufficient	48	48
		Total	100	100
6	Residence:	Urban	51	51
		Rural	49	49
		Total	**100**	**100**

Table (2): Overall Assessment of the Level of Abuse among Adolescents (N=100)

Abuse		F	%	M	SD
Physical	Low	2	2	2.00	0.201
	Moderate	96	96		
	High	2	2		
Sexual	Low	14	14	1.90	0.414
	Moderate	82	82		
	High	4	4		
Psychological	Low	0	0	2.00	0.000
	Moderate	100	100		
	High	0	0		
Total	Low	0	0	2.00	0.000

Table (3): Overall Assessment of the Level of Neglect among Adolescents (N=100)

Neglect		f	%	M	SD
Neglect	Low	32	32	1.68	0.469
	Moderate	68	68		
	High	0	0		

Table (4): Correlation among Abuse and Neglect with regard to Mental Health among Adolescents (N=100)

Mental Health Abuse and Neglect	Pearson Correlation	P-value (2-tailed)	Significance
Abuse	0.305	0.002	H.S
Neglect	- 0.130	0.196	H.S

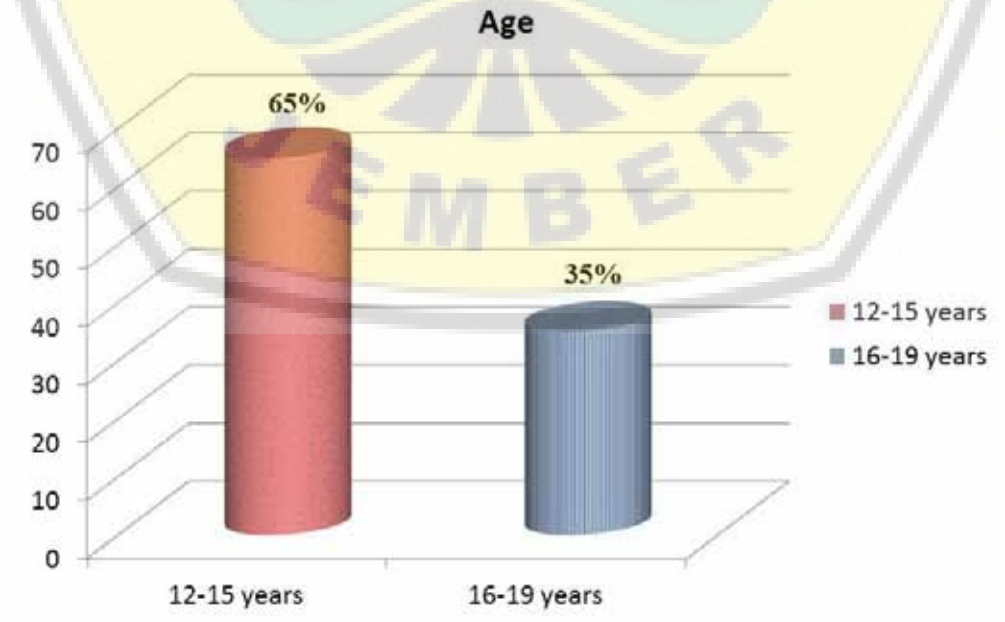

Figure (1): Distribution of Adolescents according to their Age (N=100)

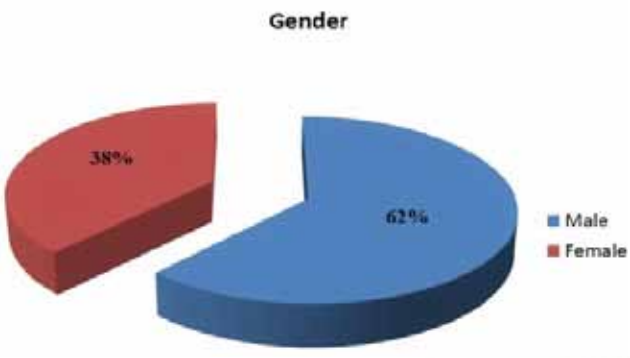

Figure (2): Distribution of Adolescents according to their Gender (N=100)

Conclusion

Abuse and neglect is a result of a process with origins of years, or sometimes even generations before the event. The process is different for every individual. Effects vary depending on circumstances of the abuse or neglect, personal characteristics of adolescents, and adolescents' environment. Effects may be mild or severe; disappear after a short period or last a lifetime; and affect adolescents physically, psychologically, behaviorally, orcombination of all three ways. Adverse experiences have strong long-term associations with health risk behaviors, health status, and diseases. More than half of adolescents are male with average mean of age is 12.5 years. The high cases are suffering from psychological abuse followed by physical abuse then sexual and neglect. Significant relationship between abuse and neglect with mental and physical health outcomes.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Psych. Nursing, Collage of Nursing, University of Baghdad, Kirkuk City, Iraq and all experiments were carried out in accordance with approved guidelines.

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Effects of Different Human Urine Samples in Stimulatulating Growth of Leishmaniaspp

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Abstract

The aim of this study was to establish novel culture media for some Leishmaniaspp parasites with a potential of obtaining hight amounts of promastigotes with long-term viability, with the presence of different human urine Samples in stimulatulating growth of *some Leishmania* Promastigotes from three different species of *leishmania major L. donovano* and *L. tropica* inoculated into culture media. Fresh urine was obtained from different individuals One group constituted of healthy filtered urine infants and diabetic patients and Two sets of biphasic medium (NNN) were prepared for the cultivation of the parasite. The first set consisted of a solid phase and no human blood part,while the second set contains human blood part. All media then modified by the addition of 2ml of urine after thawing of Lock's solution to the liquid phase. 20 ml of the solid phase media is poured into the tube then 7 ml of the liquid phase medium was over laid at the top. The presents study revealed biphasic medium (NNN) with adding of diabetic human urine, showed the higher growth rate of *leishmania major L. donovano* and *L. tropica.* Promastigote than growth enriched with urine of infants.

Keywords: *Human urine Samples, Leishmania spp.*

Introduction

Gnus *leishmania* causes various disease in humans and other mammals including cutaneous, mucocutaneous and visceral leishmaniasis, the parasite undergoes a digenic life cycle, a nonmotile intra-phagocytic amastigote stage and motile flagellated promastigote stage in the midgut of its vector, the sandfly[1]. Leishmaniapromastigotes were first grown biphasic blood agar (NNN). Later, the media were enriched with some additives such as brain, heart infusion, Promastigote developed when parasite are cultured in cell-free medium[2]. In vitro cultivation of Leishmaina is an important tool to gain enough amounts of the parasites for diagnosis purposes, parasite developed in culture provide means for studying host parasite relationships and for the determination of biologic and immunologic characteristics of the parasite [3]. Most culture media used for cultivation of Leishmania contain either fetal calf serum an expensive ingredient in these media and reliable supplies in various parts research, are very difficult to obtain). It has been found that blood lysate is quite difficult to sterilize [4] . The commercially available media are sometimes difficult to prepare due to the involvement of many steps, and they must be sterilized by passing through membrane filters. Most of the steps in the preparation of these media need to be done in biological safety cabinets and strict aseptic precautions must be followed. However, not all of these facilities are available in many of the developing countries where Leishmaniasisis,it has been reported that exogenous source of heme in the form of hemin chloride, blood or serum is an obligatory requirement for growth of promastigotes and transformation of one form of the parasite to the other in vitro [5] Serum-enriched tissue culture media have been successfully used to cultivate several Leishmania species. Attempts to replace serum by bovine serum albumin or mixture of purine bases,

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vitamins, and bovine albumin fraction IV (Berens RL and Marr JJ, 1978) were also made for cultivating L. donovanipromatigote.[6] More recently, human urine was used as main factor in preparation of leishmania growth media [6] A completely chemically defined culture medium free of serum, macromolecules, proteins and peptides that supports the growth and maintenance of promastigote form of various Leishmania species was reported[8]. An autoclavable liquid medium that has no FCS or blood lysate was also reported.[9]

The present work explore the possibility of using human urine as a substitution for FCS in the culture media for Leishmania parasite.

Materials and Method

Promastigotes from three different species of leishmania parasites were used in this study obtained in Medical Research Center (MRC) at Al Nahrain University, Baghdad, Iraq, MHOM/IQ/2003/MRC 20 for *L. donovano;* MHOM/IQ/2003/MRC 22 for L. major and MHOM/IQ/2003/MRC 21 for *L. tropica*. A total number of 1x10 promastigotes from each parasite strains were inoculated into culture media.

Urine collection and sampling: Fresh urine was obtained from different individuals included in this One group constituted of healthy filtered urine infants under one year of age (all breast fed) males and females. The second group were positive diabetic patients mean age 50.7 ± 7.2 years, that were tested by the Iraqi National Center, they were all adults males and females.

Urine samples from both groups were collected in clean and sterilized containers. Immediately after collection, all samples from each group pooled, filtered with Millipore vacuum filtering system and stored at -20 Cº for later use.

Preparation of the culture media: Two sets of media were prepared for the cultivation of the parasite. Each constituted of biphasic medium (NNN) that prepared in Medical Research Center according to method by Al-Mulla Hummadi, 2004[10]. The first set consisted of a solid phase and no human blood part,while the second set contains human blood part. All media then modified by the addition of 2ml of urine after thawing of Lock's solution to the liquid phase. They were placed in a slant position, 20 ml of the solid phase media is poured into the tube then 7 ml of the liquid phase medium was over laid at the top (5 ml of liquid phase medium + 2ml of urine or Lock's solution).

As a result 6 types of media are prepared as follows:

The first set:

Media 1: 7 ml of solid phase without human blood +2 ml infant urine

Media 2: 7 ml solid phase without human blood + 2ml diabetic urine

Media 3: 7 ml solid phase without human blood + 2ml Lock's solution

The Second Set:

Media 4: 7 ml solid phase with human blood +2ml infant urine

Media 5: 7 ml solid phase: with human blood +2ml diabetic urine

Media 6: 7ml solid phase: with2ml. Lock's solution

During the process of solid phase and liquid phase preparations, PH was adjusted to 7.4 and the prepared media were incubated at 37 ºC for 24 hours to insure proper sterilization before used in the actual experiment.

Cultivation of parasite: Under sterilization hood, 1ml of the stock culture (1x10 promastigotes/ml) from each strain was drown by automatic pipette and injected into the culture tubes that has the biphasic media. The tubes were screwed closed and incubated in orbital incubator at 26ºC for 7 days. Cultures were examined daily throughout the experimental period for the growth of parasites. MacMaster was used to count number of live promastigotes from each culture media.

Results and Discusion

Table (1): Showed cultivation of Leishmania majorin different type of media without blood included in this study

Media without blood	(No. of promositgte within 7 days) ×10^6 cell/ml						
Days	1	2	3	4	5	6	7
Agar+ urine (Infants)	1 1 0.9	0.8 1 1.1	0.7 1 1.3	1 - -	1 0.9 0.7	0.6 0.8 0.75	0.8 - -
Agar+ urine (Diabatic)	1	1	1	1	1	0.8	0.8
Agar+ lock's	1	1	0.7	0.6	0.6	0.6	0.5

Table 1 showed NNN media with blood high number (1× 10^6) in media agar with urine of diabetic patients of *Leishmania major* at day 1,2,3,4cultivation of parasite

Table (2) Showed cultivation of Leishmania majorin different type of media with blood included in this study

Media with blood	(No. of promositgte within 7 days) ×10^6 cell/ml						
Days	1	2	3	4	5	6	7
Agar+ urine (Infants)	1	2	3.8	4	4	5	4.5
Agar+ urine (Diabatic)	2	4	5	7	7	8	6
Agar+ lock's	1.9	2	2.8	-	3	3	3.5

Table 2 showed NNN media with blood showed high number of promastigote (7,8,6× 10^6) in media agar with urine of diabetic patients respectively of *Leishmania major* at day 4,5,6,7cultivation of parasite

Table (3) Showed cultivation of Leishmaniatropica in different type of media without blood included in this study

Media Without blood	(No. of promositgte within 7 days) ×10^6 cell/ml						
Days	1	2	3	4	5	6	7
Agar+ urine (Infants)	1	1	1	1	1	1	1
Agar+ urine (Diabatic)	1	1	1	2	2	2	1
Agar+ lock's	1	1	1	1	1	1	1

Table 3 showed NNN media without blood showed high number of promastigote (2× 10^6) of *Leishmania**tropica*** in media agar with urine of diabetic patients at day 4,5,6 cultivation of parasite

Table (4) Showed cultivation of Leishmaniatropica in different type of media with blood included in this study

Media With blood	(No. of promositgte within 7 days) ×10^6 cell/ml						
Days	1	2	3	4	5	6	7
Agar+ urine (Infants)	1.1	-	1.7	2	2	2.5	1
Agar+ urine (Diabatic)	1.3	-	2	3	6	5	4
Agar+ lock's	1	-	1	1.5	1	1	1

Table 4 showed NNN media with blood showed high number of promastigote (3,6,5× 10^6) of *Leishmania**tropica*** in media agar with urine of diabetic patients at day (4,5,6***)*** cultivation of parasite.

Table (5) Showed cultivation of Leishmaniadonovani in different type of media withoutblood included in this study

Media without blood	**(No. of promositgte within 7 days) ×10^6 cell/ml**						
Days	1	2	3	4	5	6	7
Agar+ urine (Infants)	1	1	1	1	1	2	2
Agar+ urine (Diabatic)	1	1	1	1	2	2	2
Agar+ lock's	1	1	1	0.9	0.9	0.9	0.8

Table 5 showed NNNmedia without blood showed high number ofpromastigote 2× 10^6 of *Leishmaniadonovani* in media agar with urine of diabetic patients at day (6***,7)*** cultivation of parasite.

Table (6) Showed cultivation of Leishmaniadonovani in different type of media without blood included in this study .

Media with blood	**(No. of promositgte within 7 days) ×10^6 cell/ml**						
Days	1	2	3	4	5	6	7
Agar+ urine (Infants)	1	1.9	3	3.8	4	3	3
Agar+ urine (Diabatic)	1.5	2	3.5	4	4	3.5	3
Agar+ lock's	1	1	1.7	3	3.2	3.2	2

Table 6 showed NNN media with blood showed high number of promastigote (3.5×10^6)of *Leishmaniadonovani*i in media with urine of diabetic patients at day (3***,6)*** cultivation of parasite .Parasite cultivation techniques constitute a substantial segment of present day study of parasites, especially of protozoa [11]. Success in establishing *in vitro* and *in vivo* culture not only allows their physiology, behavior and metabolism to be studied dynamically, but also allows the nature of the antigenic molecules in the excretory and secretory products to be vigorously pursued and analyzed Long-term maintenance of active and dividing parasite is the main target in developing new culture media [3].In the cultivation promastigotes of *Leishmania major L.tropica and L.donovani*, the routine commercially culture media like RPMI-1640 and M199 and NNNmedia that enriched by Fetal Calf Serum which is expensive, and not manufactured in many countries, specially in poor tropical countries, that leishmaniasis is one of the major health problems of them [12,13] In the present study, it was observed that healthy human urine stimulated the growth of Leishmaniapromastigotes in vitro, and this indicated that healthy human urine can replace the FCS for supplementing culture media for Leishmania, this may related to many factors found in urine responsible for this enhancement [14] The presents study revealed biphasic medium (NNN) with adding of diabetic human urine, showed the higher growth rate of parasites growth, the results was in agreement with [12] who established that parasite cultivation may be used to study the biochemistry, physiology, and metabolism of the parasites, determine their nutritional requirements, understand their ultra-structural organization, elucidate their patho-physiology, life-cycle and host-parasite relationship, as well as assess functional antibodies and cell-mediated protective systems against the parasites[15] .our finding also showed that suitable replacements for FCS, by human blood, are suitable for cultivation of promastigotes of Leishmania major L.tropica and L.donovani this was in agreement with [16] who documented that all modified media they contained blood and additives as important factors for parasite replication, which complicate biologic and immunologic studies. Important progress has been made with the use of serum-enriched liquid monophasic media and many substances were reported as additives to improve the culturing property of media .In vitro cultivation of Leishmania parasites plays an important role in vaccine and drug development studies and also in diagnosis and treatment of leishmaniasis, Therefore, other growth factors have been trialed as substitutes for FCS. Some studies showed the stimulatory effect of human urine as an alternative to FCS.

Conclusion

Our stud concluded that using of a novel, inexpensive and easy-to-prepare culture media for Leishmania spp. with a potential suitable for producing high amounts of promastigotes with long-term viability, and consisting of ingredients available parasitology laboratories with no requirement for Fetal calf serum.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of medical & Health Technology, Iraq and all experiments were carried out in accordance with approved guidelines.

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Epidemiological Evidence that Helminthes Infestation is Associated with Less Risk of Idiopathic Inflammatory Bowel Disease

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Abstract

The UC and Crohn's disease are chronic, idiopathic, inflammatory diseases of the GIT that share common symptoms such as diarrhea, abdominal pain, fever, and weight loss. Ulcerative colitis involves all or part of the colon, whereas, Crohn's disease commonly involves the terminal ileum and proximal colon. The two major forms of IBD share many clinical and epidemiological characteristics, suggesting that underlying causation may be similar. Yet, UC & Crohn's disease are distinct syndromes with divergent treatment and prognosis. The present study provided significant epidemiological evidence that infestation with round worm (helminthes) provided protection against acquisition of inflammatory bowel disease. The combined infestation with multiple intestinal helminthes has a better protective role than single parasite in protection against inflammatory bowel disease. The best method for diagnosis of helminthes infestation in terms of sensitivity and specificity was conventional PCR.

Keywords: *Crohn's disease, ulcerative colitis, IL1B and IL10,IBD.*

Introduction

Inflammatory Bowel Disease (IBD) comprises those conditions which tend to be chronic or relapsing immune activation and inflammation within gastrointestinal tract (GIT). Ulcerative Colitis (UC) and Crohn's disease are the two major forms of this disease with unidentified etiopathology[1]. The incidence of IBD has been rising not only in Western countries, but also in Asia, including Korea[2]. Thanks to the inventions of vaccines and anti-microbial agents that dramatically reduced the rate of infectious disorders. The big picture in the developed world can be summarized by two main trends. The first tread is that infectious disorders such as mumps, rubella, T.B, pneumonia, meningitis, etc., have reached very low incidence rates in these developed countries; the second trend however; on the other hand is that a number of disorders such type 1 diabetes mellitus, hay fever, celiac disease, asthma, Crohn's disease and ulcerative colitis have witnessed marked increase in incidence rate particularly when compared with their incidence rates in developing countries [3]. Epidemiologic studies have shown that the prevalence rates of idiopathic inflammatory bowel disease, Crohn's disease and ulcerative colitis, are higher in developed countries such as USA and Western Europe than in underdeveloped and developing countries. On the other hand, the prevalence rate of parasitic infestation with round worms, helminthes, is significantly lower in developed countries in comparison with developing countries. Based on these epidemiologic data, a number of authors has suggested a link between high incidence rate of Crohn's disease and ulcerative colitis and low incidence rate of helminthes infestation in developed countries and has hypothesized that under exposure to

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children in their early lives to helminthes infestation resulted in maldevelopment of their immune system with subsequent predisposition to autoimmunity that may manifest itself in the form of either Crohn's disease of ulcerative colitis[3,4]. However; because of the lack of clear consensus about this suggestion and because of the high prevalence of helminthes infestation in our community in Iraq, the present study was planned and conducted to investigate the possible association among the immune system function, the prevalence of helminth infestation and the prevalence and pathogenesis of idiopathic inflammatory bowel diseases.

Methodology

After sterilizing the area with alcohol (70%), aspiration blood sample (5ml) was collected from cubital fossa vein from GIT patients and control groups. Collected sample was transferred immediately in to two tubes as follows:

A. Two milliliter of blood in 5 ml tube (EDTA tube) used for PCR technique to detect NOD/CARD15 gene polymorphism

Two groups were included in this study;

A. Patients Group: A total of fifty patients from Al-Diwaniyah province (males and females) with inflammatory bowel disease; 31 patients with Ulcerative Colitis and 19with Crohn's Diseases patients, who have been diagnosed by specialist physicians in Al-Diwaniyah Teaching Hospital for Gastrointestinal Tract and Hepatic diseases unit, depending on clinical features, biopsy for histopathology, and endoscopy. All were regularly attending the consultant clinic for treatment and follow-up during the period from January 2018 to august 2018.

B. Control Group: A total number of thirty individuals, who were apparently healthy, were involved as a control group. They matched the patients group regarding sex, and age and had no history of/or clinical features of IBD, no obvious abnormalities, none of them had an acute or chronic diseases.

Study Protocol and Sampling Members of the two groups were subjected all were subjected to the following assays:

1. GSE.

Stool examination for parasites

1. Saline wet mount: It is used to detect worms, bile stained eggs, larvae, protozoan trophozoites and cysts. In addition, it can reveal the presence of RBCs and WBCs.
2. Iodine wet mount: It is used to stain the glycogen and nuclei of the cysts. A cyst is appreciated better in an iodine preparation, but the motility of the trophozoite is inhibited in the iodine preparation.

Procedure:

- Place a drop of saline on the left half of the slide and one drop of iodine on the right half.
- With an applicator stick, pick up a small portion of the specimen (equivalent to the size of a match head) and mix it with a saline drop.
- Similarly, pick up a similar amount and mix with a drop of iodine.
- Put the cover slip separately on both and examine under the microscope.
- The ova, cysts, trophozoites and adult worms can be identified as per their characteristic features.

2. Screening the bellow:

- EDTA tube for blood extraction and then RFLP PCR.
- Tube for stool extraction and PCR.

Results and Discussion

The mean age of patients with IBD was 36.68 years and the range was 12 – 63 years, whereas the mean age of control subject was 37.22 years and he range was 12 – 63 years. Indeed, there was no significant difference in mean age between patients and control subjects (P = 0.828), table 1. According to gender, patients included 38 males (76%) and 12 females (24%) while control subjects included 33 males (66%) and 17 females (34%); the difference in the distribution of patients and control subjects was statistically insignificant (P = 0.978), table 4.2. Moreover, there was no statistical significance difference in the distribution of patients with IBD and control subjects with respect to residency (P = 0.829), as shown in table 3. Alcoholism was seen neither in control

group nor in patients group, table 4; however, smoking was observed in 14% of patients (7 out of 50) and in 12% of control subjects (6 out of 50); the difference in distribution of patients and control subjects according to smoking was statistically insignificant (P = 0.766), as shown in table 4. Positive family history was seen in 8 patients out of 50 (16%) and in 6 out of 50 control subjects (12%); there was no statistical significant difference in the distribution of patients with IBD and control subjects with respect to family history of idiopathic inflammatory bowel disease, as shown in table 5.

Table 1: Distribution of patients with IBD and control subjects according to age

Age (Years)	IBD *n* = 50	Control *n* = 50	P
Mean ± SD	36.68 ±12.24	37.22 ±12.56	0.828 † NS
Range	12 – 63	12 - 63	
<20 years, *n* (%)	4 (8%)	4 (8%)	0.978 ¥ NS
20-40 years, *n* (%)	28 (56%)	27 (54%)	
> 40 years, *n* (%)	18 (36%)	19 (38%)	

IBD: inflammatory bowel diseases; *n*: number of cases; SD: standard deviation; †: independent samples t-test; ¥: Chi-square test; NS: not significant at $P \leq 0.05$

Table 2: Distribution of patients and control subjects according to gender

Gender	IBD *n* = 50		Control *n* = 50		χ^2	P
	n	%	n	%		
Male	38	76	33	66	1.214	0.271¥ NS
Female	12	24	17	34		

IBD: inflammatory bowel diseases; *n*: number of cases; ¥: Chi-square test; NS: not significant at $P \leq 0.05$

Table 3: Distribution of patients and control subjects according to residency

Region	IBD *n* = 50		Control *n* = 50		χ^2	P
	n	%	N	%		
Urban	34	68	35	70	0.047	0.829 ¥ NS
Rural	16	32	15	30		

IBD: inflammatory bowel diseases; *n*: number of cases; ¥: Chi-square test; NS: not significant at $P \leq 0.05$

Table 4: Distribution of patients and control subjects according to smoking and alcoholism

Bad habits	IBD *n* = 50		Control *n* = 50		χ^2	P
	n	%	N	%		
Smoking	7	14	6	12	0.088	0.766 ¥ NS
Alcoholism	0	0	0	0	---	---

IBD: inflammatory bowel diseases; *n*: number of cases; ¥: Chi-square test; NS: not significant at $P \leq 0.05$

Table 5: Distribution of patients and control subjects according to family history

Family history	IBD *n* = 50		Control *n* = 50		χ^2	P
	n	%	n	%		
Positive	8	16	6	12	0.332	0.564 ¥ NS
Negative	42	84	44	88		

IBD: inflammatory bowel diseases; *n*: number of cases; ¥: Chi-square test; NS: not significant at $P \leq 0.05$

Association between parasitic infestation and inflammatory bowel disease: The distribution of patients with inflammatory bowel disease and control subjects according to presence and type of parasitic infestation is demonstrated in table 9. First of all, the helminthes (round worms) that were detected in the current study included *Ascaris lumbricoides, Enterobius vermicularis,* and *Strongyloides stercoralis. Ascaris lumbricoides* was seen in 12% and 26% of patients and control subjects, respectively, that is it is more common in control subjects than in patients with IBD; however, the difference did not reach statistical significance (P = 0.074); in terms of risk the odds ratio was 0.43 which means that patient with *Ascaris lumbricoides* are less liable to get IBD by a fraction of 0.57 and the preventive fraction was 0.30. *Enterobius vermicularis* was seen in 34% and 50% of patients and control subjects, respectively, that is it is more common in control subjects than in patients with IBD; however, the difference did not reach statistical significance (P = 0.105); in terms of risk the odds ratio was 0.52 which means that patient with *Enterobius vermicularis* are less liable to get IBD by a fraction of 0.48 and the preventive fraction was 0.28.*Strongyloides stercoralis* was seen in 28% and 38% of patients and control subjects, respectively, that is it is more common in control subjects than in patients with IBD; however, the difference did not reach statistical significance (P = 0.288); in terms of risk the odds ratio was 0.63 which means that patient with *Strongyloides stercoralis* are less liable to get IBD by a fraction of 0.37 and the preventive fraction was 0.20, table 9.Total parasite burden was seen in 52% and 62% of patients and control subjects, respectively, that is it is more common in control subjects than in patients with IBD; moreover, the difference was statistically significance (P = 0.039); in terms of risk the odds ratio was 0.42 which means that patient with round worm infestation are less liable to get IBD by a fraction of 0.58 and the preventive fraction was 0.37, table 6.

Table 6: Association between parasitic infestation and inflammatory bowel disease

	IBD n = 50		Control n = 50		*P*¥	OR	95% CI		PF
Parasite	**n**	**%**	**n**	**%**			**Lower**	**Upper**	
Total parasite	26	52	36	62	0.039 S	0.42	0.18	0.97	0.37
Ascaris lumbricoides	6	12	13	26	0.074 NS	0.43	0.15	1.26	0.30
Enterobius vermicularis	17	34	25	50	0.105 NS	0.52	0.23	1.15	0.28
Strongyloides stercoralis	14	28	19	38	0.288 NS	0.63	0.27	1.47	0.20

IBS: inflammatory bowel diseases; *n*: number of cases; ¥: Chi-square test; NS: not significant at $P \leq 0.05$; OR: odds ratio; CI: confidence intervals; PF: preventive fraction

The present study showed that the mean age of patients with IBD (ulcerative colitis and Crohn's disease) was 36.68 years and the range was from 12 to 63 years. This finding agrees to the findings of several other studies which described a mean age ranging from 35 to 37 (Prelipcean *et al*., 2014); this study also agree with Velonias *et al.* (2017), who found that the mean age of majority of patients with ulcerative colitis and Crohn's disease was 36 years. In the current study, majority of cases were male patients and female patients constituted a minority, 75% versus 24%. This finding agrees with Baars *et al*., (2012), who found the majority of patients with inflammatory bowel disease were males (64%); also agrees with the finding of Yang *et al*., (2014) who found that male patients constituted 66.7% out of all patients with Crohn's disease. On the other hand, some authors described no sex predilection for inflammatory disease. Collectively, the results of the present study, in addition to previous studies indicated the lack of clear consensus on sex predilection of inflammatory disease; this may explain the absence of factors related to either gender in the predisposition to inflammatory bowel

disease, namely hormonal influences. The current study showed no significant association between smoking and inflammatory bowel disease since rates of smoking were 14% versus 12% in IBD patients and control group respectively. In the present study the prevalence rate of positive family history was 16%; however, there was no significant association between the IBD and family history of IBD. In agreement with the present study, it was found the rate of positive family history in patients with IBD approaches 13%. Some authors found no significant association between family history of IBD and occurrence of inflammatory bowel disease [7,8], in agreement with the findings of the current study. However, some studies found significant association between inflammatory disease and positive family history [10-13].These findings suggested a protective role for helminthes against development of inflammatory bowel disease. The authors of the current study were able to find that multiple parasitic infestations were significantly protective against both ulcerative colitis and Crohn's disease with an estimated odds ratio of 0.42 (95% confidence interval of 0.18-097). Similar observations have been recorded by a number of cross sectional studies. In a case control study from South Africa, childhood exposure to helminthes was protective against both CD and UC development (adjusted OR of 0.2 [95% CI 0.1–0.4] for CD and adjusted OR of 0.2 [95% CI 0.1–0.6] for UC).

Conclusion

The present study provided significant epidemiological evidence that infestation with round worm (helminthes) provided protection against acquisition of inflammatory bowel disease. The combined infestation with multiple intestinal helminthes has a better protective role than single parasite in protection against inflammatory bowel disease. The best method for diagnosis of helminthes infestation in terms of sensitivity and specificity was conventional PCR.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the college of medicine. University of Qadissya, Iraq and all experiments were carried out in accordance with approved guidelines.

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Febrile Seizures in Children Aged 6 Months up to 5 Years in Al-Diwahiyah Province, Mid-Euphrates Region of Iraq: A Cross Sectional Study

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Abstract

The present cross sectional study was carried out in Al-Diwaniyah province, Mid-Euphrates region of Iraq aiming at highlighting the prevalence rate and risk factors associated with febrile seizures in children. The present cross sectional study was carried out at Afak General Hospital in Al-Diwaniyah province, Mid-Euphrates region of Iraq. The beginning with this study started on December the 1st 2015 and continued till June the 30th 2018. At the end of the study 100 children aged 5 months to 5 years were included. The a peak incidence between 18 months to 24 months in 28 (28%) and less incidence after 4 years of age in 4(4%) only. There was a slight difference on the basis of gender among, patients with male: female ratio 1.3:1. The most common type of febrile seizure was simple with seizures duration less than 15 minutes in 87 (87%), while complex type with seizures duration more than 15 minutes was encountered in 13 (13%) without out gender predilection, (P> 0. 05). The characteristic seizures activity were generalized tonic– clonic in 98(98%) and only 2 (2%) present with focal or partial seizures, without out gender predilection (P> 0.05). Single febrile seizures during the first 24 hours presented in 93 (93%) while multiple seizures occurs in 7 (7%) only, without out significant gender predilection (P> 0.05).

Keywords: *Febrile seizures, Al-Diwahiyah Province, Mid-Euphrates region, Iraq.*

Introduction

When seizure happens in children between 6 months to 5 years of age in association with body temperature more than 38 ºC it is called febrile seizure, provided that an organic cause is lacking such as head trauma, intracranial mass, hypoglycemia, electrolyte imbalance and drug discontinuation and the lack of previous history of afebrile seizure[1-3]. Because of high rate of incidence in young children and high rate of recurrence, febrile seizures are important clinical problems in daily pediatric practice. It has been estimated that 2-5% of children are affected by febrile seizures and that the second episode has been reported in up to 30% of children previously affected [4,5]. The etiology of febrile seizure is considered in the context of multifactorial causation so that genetic predisposition in interaction with environmental factors affects the developing central nervous system in growing children. Therefore, it is suggested that the neuronal hyperexcitability accompanying neuronal maturation in growing children predisposes them to febrile seizures [4,6,7]. Evidence for genetic predisposition has emerged from family history and twin concordance rate. It has been shown that positive family history is seen in about one third of children with febrile seizure and that the concordance rate among twins has ranged from 14 – 69% [8,9]. Several genes located on chromosomes 1,2,3 and 5 have been linked to higher risk of febrile seizure and a number of inheritance modes have been suggested; however, multifactorial inheritance have widely accepted [10-13].It has been suggested that the magnitude of temperature rise rather than the speed by which this level of temperature is accomplishes is the

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principal risk factor and the higher the temperature level is, the greater the risk is [14-16]. Febrile seizures are most often encountered following viral infections; however, immunization has been also associated with increased risk[17-20]. Premature infants and those born to women addicted to nicotine and alcohol are also at increased risk [21,22]. Clinically the febrile seizure is either simple or complex. The more common simple febrile seizure is generalized and associated with tonic–clonic movements of the limbs and rolling back of the eyeballs and it lasts less than 5 minutes and associated with loss of consciousness at time of seizure [8,22]. Complex is usually focal, lasts for more than 15 minutes, in contrary to simple type recurs during the same day and may be associated with Todd's paralysis.

Methodology

The present cross sectional study was carried out at Afak General Hospital in Al-Diwaniyah province, Mid-Euphrates region of Iraq. The beginning with this study started on December the 1st2015 and continued till June the 30th 2018. At the end of the study 100 children aged 5 months to 5 years were included. Those children were diagnosed by pediatric specialist to have febrile seizures following history taking, clinical examination and the conductance of necessary investigations. Dmographic characteristics such as age, gender, residency and place of seizure occurrence were obtained in addition to duration and onset of febrile illness and duration and onset and duration of seizure attack. Axillary temperature at time of presentation was obtained for all enrolled children. History of previous attack, the recurrence during the present 24 hours, type of seizure (generalized versus focal), family history, vaccination history, developmental history and underlying causes for the febrile seizures were also recorded. All admitted patients were followed up daily during the period of hospital stay. The study was approved by institutional ethical approval committee and verbal consent was taken from parents and care giver of all participant children. The data were then transferred into and (SPSS version 23) spread sheet for purpose of statistical analysis. Data were presented as mean, standard deviation, range, number and percentage. Chi-square test was carried out to study association between categorical variables while independent samples t-test was performed to assess difference in mean between two groups. The level of significance was considered at $P \leq 0.05$.

Results

This study has showed that the ages of patients has ranged between 5 months and 60 months, with a mean of (32.7 months); 65 (65%) occurs among children between 12 months to 30 months of ages, with a peak incidence between 18 months to 24 months in 28(28%) and less incidence after 4 years of age in 4(4%) only, table 1. There was a slight difference on the basis of gender among, patients with male: female ratio 1.3:1, as shown in table 1. The most common type of febrile seizure was simple with seizures duration less than 1 5 minutes in 87 (87%), while complex type with seizures duration more than 15 minutes was encountered in 13 (13%) without out gender predilection, (P> 0. 05). The characteristic seizures activity were generalized tonic–clonic in 98(98%) and only 2 (2%) present with focal or partial seizures, without out gender predilection (P> 0.05).Single febrile seizures during the first 24 hours presented in 93 (93%)while multiple seizures occurs in 7 (7%) only, without out significant gender predilection (P> 0.05), table 2. It has been found that 88(88%) children were from urban area and that 12 (12%) from rural area. The most common place of occurrence of febrile seizures has been athome in 85(85%) and seizures has stopped in the majority when reaching hospital. Positive family history of febrile seizures has been described in 33 (33%)with no sex difference among them. Most attacks of febrile seizures have been for the first tinge in 76 (76%)while 24(24%) patients have experienced recurrent attacks, 18 (18%) second attacks and 6 (6%) third attacks, table (3).Ten (41%) patients with recurrent febrile seizures had positive family history. The study has shown that the duration of febrile illness before the onset of seizures has been less than 24 hours in 53 (53%) patients and more than 24hours in 47(47%). The temperature at time of' hospital admission has been more than 38.5 ºCin 74(74%) and less than 38.5 ºC in 26 (26%), table 4. Lumber puncture has beenjustified in 18 (18%) patients, 3 (young age < 12 months), 2 (focal seizures), 7 (prolong and multiple seizures), 2 (possibility of meningitis) and 4 (unrecognized causes of fever); however, only 12 children have been subjected to lumbar puncture as parents of 6 children have refused to do so. The most frequent underlying causes of febrile seizures in this study have been related to upper respiratory tract infections in 75 (75%) patients, while other causes including pneumonia, gastroenteritis, urinary tract infections and post immunization have been recorded in 21 (2l%). On the other hand unrecognized causes have the rule in 4 patients (4%), table 5.

Table 1: Distribution of children according to age and gender

Age (Months)	Males		Females		Total	
	n	%	n	%	n	%
5-<12	5	5%	3	3%	8	8%
12-<18	9	9%	8	8%	17	17%
18-<24	15	15%	13	13%	28	28%
24-<30	12	12%	8	8%	20	20%
30-<36	8	8%	5	5%	13	13%
36-<48	5	5%	5	5%	10	10%
48-<60	3	3%	1	1%	4	4%
Total	57	57%	43	43%	100	100%

Table 2: Clinical characteristics of seizures according to gender

Clinical characteristics		Male s		Females		Total		P-Value
		n	%	n	%	n	%	
Seizures duration	<15 min	50	50%	37	37%	87	87%	> 0.05 NS
	>15 min	7	7%	6	6%	13	13%	
Seizures activity	Generalized tonic clonic	56	56%	42	42%	98	98%	> 0.05 NS
	Focal of partial	1	%	1	1%	2	2%	
Seizures frequency/ 24 hours	Single Seizures	52	52%	40	40%	92	92%	> 0.05 NS
	Multiple Seizures	5	5%	3	3%	8	8%	

Table 3: Patients residence, place of Seizures, family history and recurrent attacks

Characteristics		n	%
Patients residence	Urban area	88	88%
	Rural area	12	12%
Place of occurrence of Seizures	Home	85	85%
	Hospital	12	12%
	Car	3	3%
Positive family history (33%)	Male	17	17%
	Female	16	16%
Febrile seizures attacks	First attacks	76	76%
	Second attacks	18	18%
	Third attacks	6	6%

Table 4: Distribution of febrile illness duration before seizures and temperature at hospital in 100 patients

Characteristic		n	%
Febrile illness duration (hours)	< 24 hours	53	53%
	> 24 hours	47	47%
Temperature at hospital (axillary corrected)	< 38.5C	26	26%
	> 38.5C	74	74%

Table 5: Underlying causes for febrile seizures in 100 patients

Underlying causes	n	%
Upper respiratory	75	75%
Pneumonia	10	10%
Gastroenteritis	6	6%
Urinary tract infections	3	3%
Post immunization	2	2%
Unrecognized cause for fever	4	4%

Discusion

Febrile seizures are the most common type of seizures in Childhood. This study shows that 65 (65%) patients were found among age group 12-30 months, with a peak incidence between 18 – 24 months and less incidence after 4 years of age in 4 (4%) only. Farwell reported in his study in 1991 that (64%) of' patients were found among age group 1-2 years. Berg et al. in their study in 1992 reported that 50% of patients founds among age group 1-2 years[27]. The results of this study were similar to that reported by these studies and this prove the fact that febrile seizures had specific age limited and convulsive threshold not static throughout childhood, and this age specificity may be related to brains sensitivity to fever; the incidence decreasing with advancing age which may be related to mature brain growth and less sensitivity to fever. This study shows slight sex difference among patients with male: female ratio of 1.3:1. Farwell reported in his study those febrile seizures slightly more common in boys. Some large studies showed that febrile seizures had no significant difference on the basis of gender. The results of this study were similar to other studies of gender difference basis, whether there is biological susceptibility or whether boys simply contract more fever, which may need further studies to be shown[25]. This study shows that the most frequent type of febrile seizures was simple (i.e. seizures duration < 15 minutes) in 87 (87%) patients, while complex type (i.e. seizures duration> 15 minutes in 13 (13%) only (P value > 0.05 not significant). Farwell in his study reported that the most common type of febrile seizures is simple with frequency (93%). The present study has shown that 88 (88%) patients were from urban area and 12 (12%)from rural area this probably due to short and self-limiting Seizures or may be due to delay seeking medical advice and traditional believes of suggestion in rural areas. This study shows that (85%) of seizures were occurred at home and the majority stopped when reaching hospital and this may be related tobenign and self-limiting behaviors of febrile seizures. Positive family history of febrile seizures were found in 33 (33%)patients, with no sex difference among them and this finding slightlymore than to that reported by Farwell and berg *et al*. studies (29%, 25%)respectively. This study shows that (76%) of febrile seizures occurs for the first time and (24%) experienced recurrent attacks. Berg et al. reported in their study that one-third of children who will febrile seizures will have recurrent episodes. Ten (41%) patients with recurrent seizures had positive family history and this may indicate the significant role of family history on the possibility of occurrence of febrile seizures. In this study 53 (53%) patients had febrile illness duration less than 24 hours before the onset of seizures. The temperature at time of hospital admission was more than in 38.5Cº in 74 (74%) patients. In most children, primary causative factor of febrile seizures seem to be the height and rapidity of temperature elevation usually exceed 101.8º F (38.8ºC) and the seizures usually occurs during the temperature riserather than after a prolong elevation[27,29]. This study shows that lumbar puncture were indicated in 18 (18%)patients and were done in 12 patients and 6 parents refuse it, because some parents think that lumbar puncture may cause paralysis and somethink it is not necessary as febrile seizures occurs before and it is self-limited associated with fever only.

Conclusion

In conclusion, the vast majority of febrile seizures are simple, brief, benign self-limiting attacks, occurs most frequently among children with age group 12 to 30 months and less frequently after 4 years of age with slight male predilection, family history was a major risk factor.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Pediatric specialist/Al-Diwaniyah Maternity and Child Hospital/Al-Diwaniyah Province/ Iraq and all experiments were carried out in accordance with approved guidelines.

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Microbial Control Agent (Beauveriabassiana) in Biological Control of Tetranychusurticae Koch (Tetranychidae:Acari)

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Abstract

Present study objective was to evaluate the effect of the pathogenic agent of insects (Beauveriabassiana) in control on nymphs and adults stage of tetranychusurticae in cucumber . Two local isolates of this fungus were used and symbolized as (beauveria 60, beauveria 65) with concentrations ($1x10^6$, $1x10^7$,$1x10^8$) spore\ ml. The results showed superiority (Beauveria 60) rather than (Beauveria 65) in the incidence of high mortality rates. Where the spore suspension of both isolates gave high mortality rates which differ significantly from the comparison treatment (control). Where the spore suspension of both isolated (B 60 and B65) achieved in field with concentration ($1x10^8$) spore\ml. The highest mortality rate reached (39,02, 35.68) respectively. The (Beauveria 60) filtrate in concentration of 100% has achieved high mortality rates in nymphs and adults of tetranychusurticaeamount to (52.17, 54,10) respectively, While the (Beauveria 65) filtrate it has achieved a mortality rate reached(55.50,50.60) in nymphs and adults of tetranychusurticae respectively . This assure importance of use Beauveriabassiana in biocontrol of plant pests.

Keywords: *Tetranychusurticae, Beauveriabassiana, cucumber, biological control.*

Introduction

The tetranychusurticae belongs to the tetranychidae family and the Acari order It is a serious economic pest which affects many plants and causes major economic losses. Where moving individual of the pest absorb the vegetable juices of the leaves and buds as well as the accumulation of dust on the woven network, which leads to disruption of the photosynthesis process and lack of composite of new leaves and flowers and dry and infected parts and death also this pest will be able to produce toxic compounds.[1] Where the ferocity of this pest returns to high reproduction rates when appropriate conditions are available [2] A number of method have been used to control this pest. Chemical pesticides have been used, including sulfur, in all its forms, such as sulfur and sulfur, which can be wetted.[3] also pesticide polo, netron, vertimec was used and good results were given.[4] However, the excessive and improper use of these pesticides resulted in many negative and harmful effects in the ecosystem such as the disappearance of certain natural enemies such as predators, parasites, Resistant to the pesticide act in addition to the environment pollution.[4-6] And because the subject of environmental pollution has become important in all societies until 1990, Paying the competent research centers to think of alternative method of chemical control, so increased interest in the biological control of as Safe and pioneering method in this field and to find ways to control such pests and these method are microbial control such as viruses and bacteria Fungi, primates and nematodes or the use of toxins produced from these organisms in certain structures either in spray, dust, wet liquid, concentrated liquid, soluble powder or granules[7-8] of these organisms, which is one of the earliest entomopathogenic fungi used as a pesticide and was known as an effective control agent against pests and causes disease white museardine and spread to a wide range of families around the world compared to other deuteromycetes fungi and infect most of the insects orders[10] use of entomopathogenic fungi

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(beauveriabassiana) to decrease the population of the pest, where it appears to have an lethal and strong role on active stages of the pest.[11]

Materials and Method

Laboratory Tetranychusurticae Breeding: The cucumber were planted in plastic containers under laboratory conditions. The plants were polluted with infected cucumber leaves to obtain a permanent colony of the pest and used in subsequent experiments.

Population Density Study of Pest: The study was conducted in the Kut province/Iraq, where the cucumber plant (local category) was planted in the form of tablets, the area of one tablet is (3x0.5m) and the distance between tablet and another is (0.5m) and the distance between plant and another is (30cm). Agriculture was established in March. After the emergence of the infection was taken samples of infected plant and the fact take 10 leaves and three replicates according to the number of live individual of pest per one square inch during the season of production of the crop (May, June, July)

Laboratory Experiments: Evaluation of the effectiveness of some elements of biological resistance factor against adults and nymphs of the pest

A. **Preparation of spore suspension:** The spore suspension was prepare by taking disk was diameter(0.5cm) and placing in (9.5 ml) of distilled water and shake for 5 minute for remove the spore from conidiophores and prepare the concentrations ($1x10^6$, $1x10^7$, $1x10^8$) spore \ ml with help (haemocytometer) [12]

B. **Study effect spore suspension of two isolates of beauveria in nymphs and adults of pest in lab:** Brought leaves of cucumber plants and placed 10 individuals on each of the nymphs and adults separately. The leaves were placed in plastic plates with a diameter (9 cm). A piece of wet cotton was placed in it to ensure continuous moisture. The leaves were treated with the spore suspension for both isolates. Comparative treatment was sprayed with distilled water and the remaining living individuals were recorded after (24,48,72) hours of spraying. Temperature and relative moisture have been fixed(13)

The fungi were then isolated from the treated insects, which showed the pathological symptoms to prove that the fungus was the cause of the death of the insect to ensure the pathogenicity of these fungi. These isolates were selected for experiments following Because of its high morbidity to insect and their not effect in cucumber.

The percentage of mortality was calculated and corrected and converted to angles according to Equation of orell and Schneider (14).

Mortality % = (Death ratio in treatment – Death ratio in control / Death ratio in control 100–) × 100

Study effect spore suspension of two isolates of beauveria in tetranychusurticae in field

The concentrations were used($1x10^6$, $1x10^7$, $1x10^8$) spore\ml from two isolates(beauveria 60, beauveria 65) For the purpose of control of tetranychusurticae in field, And calculated the numbers of the mite in One square inch A day before spraying, Then sprayed at a rate of three replicates per concentration, While the comparison treatment was spray with distilled water only.Then the living individual were calculated after(24, 48 and 72, and after one week and two weeks of spraying), the percentage of the mortality was calculated and corrected and converted to angles by equation of orell and Schneider (6)As in the previous paragraph

Study effect spore suspension of two isolates of beauveriain nymphs and adults of pest in lab

A. **Preparation two isolates filtrates**

1. Prepare the liquid food medium(Potato Dextrose Broth)(P.D.B), then distribute in a glass flask size 250 ml at a rate of 150 ml/flask, The bottles containing the liquid medium in autoclave were sterilized under 121 ° C and air pressure 15pound \ $inch^2$ for 30 min, And then left to cool and then added to the antibiotic(Chloramphenicol) at a rate of 250 mg/liter and then inoculate each flask with several disks diameter(0.5)cm of the colonies of two isolates and seven days old and then incubated the flask in the incubator under the temperature of 25 + 2 for 28 days, and shake the flasks every 2-3 days For the purpose of distribution of fungal growth then filtration using filter paper type Whatman No.1 by Air discharge device.(15)
2. 10 cucumber leaves were brought and put it on 10 nymph and 10 adult both separately and three replicates for each treatment in 9 cm diameter

plastic dishes. A piece of cotton and wet were placed underneath to obtain continuous moisture. Use filtrates with a concentration (25,50,75,100) % with rate 1 mL\replicate. The comparison treatment was sprayed with distilled water only and the percentage of mortality was calculated after (24, 48, 72) hours of spraying. The values were corrected and convert to angle was made by equation orell and Schneider(14) as in the previous paragraph

Statistical Analysis: All experiments were carried out according to Completely Randomized Design (C.R.D.) as single-factor experiments, and data were analyzed by variance analysis, the averages were compared by the least significant difference (R.L.S.D) and at a Probable value (0.01) in lab experiments and 0.05 in field experiments (16)

Results and Discusion

Effect of spore suspension of two isolates in tetranychusurticae in field: It was observed through the study that the spore suspension of two isolates (beauveria 60, beauveria 65) Has given high rates of mortality for pest which differ significantly from the comparison treatment, the beauveia 60 Superiority beauveia 65 in mortality rate,where high mortality rate reach 39.02% in $1x10^8$ spore\ml concentration .Which differed significantly from the rest of the concentrations that reached the rate of mortality in which 33.96,25.74% for $1x10^7$,$1x10^6$ spore\ml Respectively .While the beauveria 65 mortality rate reach 35.68% in the same concentration And a significant difference from $1x10^7$,$1x10^6$ spore\ml,where mortality rate reach in which 30,94,23.64% Respectively Table (1).

This study coincided with Samson and others(1988) Who referred to that beauveriabassiana has ability to infect Aphis craccivora insect And infection rates are increasing with increased concentration due to increased number of spores, He also noted Al-Jaber and shuweir (1999) that B. bassiana Has affected in Rhynchophorusferrugineus, Where the fungi achieved a percentage of mortality reached 40,55% for both male and female respectively, also Increased concentration led to an increase in the rate of mortality when used spore suspension with $1x10^8$ spore\ml the mortality rate reached 50 and 55% for male and female respectively. The effectiveness of the fungus in the pest may be due to its production of some extracellular enzymes and this is explain by Ito and others(2007) that B.bassiana produce enzyme extracellular in the liquid medium. Effect of B.bassiana in Aphis craccivora And gave a rate of mortality ranged from (58-91%) seven days after the treatment.

Table (1) Effect of spore suspension for both isolates of beauveriabassiana (B60, B65) in tetranychusurticae in field

Average fungi	Average concentrations	Average percentage of mortality (day)					rate of living individual Pre - spraying	Fungi concentration spore\ml	Fungi
		14	7	3	2	1			
32.90	25.74	52.5	33.3	18.9	12.1	11.9	111	1x106	B 60
	33.96	57.1	46	32.8	18.4	15.5	140	1x107	
	39.02	58	44.2	33.9	32.3	26.7	126	1x108	
30.08		55.86	41.16	28.53	20.93	18.03	Average time period		
	23.64	40	30.6	21.9	14.7	11.3	147.3	1x106	B 65
	30.94	40.5	34.7	30.7	26.4	22.4	134	1x107	
	35.68	42.2	37.4	37.3	33.4	28.1	105.4	1x108	
		40.90	34.23	29.96	24.83	20.51	Average time period		
	10.34	17	15.3	10	7.4	2	104.4	Control	
		48.38	37.69	29.24	22.88	19.27	Average time period		

Table (2) Effect of beauveria 60 filtrate in tetranychus nymphs in lab

Filtrate Concentration	% nymph mortality (day)			Average concentrations
	1	2	3	
25	6.7	19.9	29.6	18.73
50	23.4	43.9	48.1	38.47
75	33.4	45.2	55.5	44.70
100	33.4	49.1	74	52.17
Control	0.0	1.1	3.3	1.47
Average time period	19.38	31.84	42.10	

R.L.S.D$_{0.01}$ for concentration =6.17 for time= 5.34 for overlap =10.68

Table (3) Effect of beauveria 60 filtrate in tetranychus adults in lab

Filtrate Concentration	Adults mortality (day)%			Average concentrations
	1	2	3	
25	10	20	34.5	21.50
50	10	30	51.5	30.50
75	16.7	30	55.1	33.94
100	40	53.4	68.9	54.10
Control	0.0	0.0	10	3.33
Average time period	15.34	26.68	44.00	

R.L.S.D 0.01 for concentration =7.27 for time= 6.30 for overlap =12.59

Table (4) Effect of beauveria 65 filtrate in tetranychus nymphs in lab

Filtrate Concentration	% nymph mortality (day)			Average concentrations
	1	2	3	
25	6.7	18.7	29.6	18.33
50	20	31.2	37	29.40
75	33.4	42.9	55.4	43.90
100	43.3	56.6	66.6	55.50
Control	0.0	0.0	3.3	1.10
Average time period	20.68	29.88	38.38	

R.L.S.D 0.01 for concentration =9.26 for time= 8.02 for overlap =16.04

Table (5) Effect of beauveria 65 filtrate in tetranychus adults in lab

Filtrate Concentration	Adults mortality (day)%			Average concentrations
	1	2	3	
25	3.3	13.5	24.1	13.63
50	16.7	23.7	31	23.80
75	20	36	48.2	34.73
100	36.7	49.6	65.5	50.60
Control	0.0	0.0	10	3.33
Average time period	15.34	24.56	35.76	

R.L.S.D 0.01 for concentration =12.16 for time= 10.53 for overlap =21.06

Effect of beauveria(60) filtrate in nymphs and adults of tetranychusurticae in lab: The results shown in the tables (2,3) were explained that beauveria 60 filtrate has effect in nymphs and adults of pest,where the concentration 100% has been given high mortality rate amount to (52.17 and 54.10%) in nymphs and adults Respectively. This concentration differed significantly from the rest of the concentrations in the nymphs, which reached the rate of mortality 44.70 and 38.47 and 18.37% for concentrations 75,50,25% Respectively.As well as in the adults It is significantly higher than the rest of the concentrations 75,50,25% In which the rate of mortality was 33.94 and 30,50 and 21,50% Respectively, The period of time was three days of treatment with the highest rates of mortality reached to 42,10 and 44,00% in nymphs and adults Respectively.

Effect of beauveria(65) filtrate in nymphs and adults of tetranychusurticae in lab: It is observed through the study that beauveria 65 filtrate has influence in nymphs of the tetranychusurticae and the concentration 100% has high effect where the mortality rate reached 55.50%A significant difference was obtained from the rest of the concentrations used, in Which mortality rates reached 43.90 and 29.40 and 18.33% for concentration 75 and 50 and 25% Respectively (table 4) It was also found from the same table that the period of time three days was more influential than others with a rate of mortality 38.38%, And differed significantly from the rest of the time periods, noting that the three time periods differed significantly between them .

Conclusion

The (Beauveria 60) filtrate in concentration of 100% has achieved high mortality rates in nymphs and adults of tetranychusurticaeamount to(52.17, 54,10) respectively, While the (Beauveria 65) filtrate it has achieved a mortality rate reached (55.50,50.60) in nymphs and adults of tetranychusurticae respectively . This assure importance of use Beauveriabassiana in biocontrol of plant pests.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Collage of Education for pure Sciences, Iraq and all experiments were carried out in accordance with approved guidelines.

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Phonological Awareness of Students with Speech Disorders

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Abstract

The current research aims to identify the phonological awareness of students with speech disorders registered in the Directorate of Education DhiQar/Al-Rifai district for the academic year (2018 - 2019). The basic research sample was deliberately selected(60) students and students with speech disorders after being diagnosed by researchers on the diagnosis of speech disorders, and the researchers adopted the descriptive approach to the current research steps The researchers adopted the phonological awareness scale prepared by Nubian (2010) by studying the literature, studies and measurements related to the subject of their research, and the measure of (60) divided by six dimensions and each after a set of paragraphs amounted to (10) paragraphs for each dimension and Extraction of psychometric properties from (sincerity and persistence) was applied to the basic sample, And after the data were unloaded for the purpose of extracting the results were statistically processed using a number of statistical method including the TEST test for one sample. The results showed that the mean was less than the theoretical average of the phonological awareness scale. The calculated value is less than the tabular value. Pronunciation did not have a phonological awareness.

Keywords: *Phonological awareness, students, speech disorders.*

Introduction

Phonological awareness plays a large role in the life of the child in various social, personal, psychological and educational aspects, based on his life, including his education, his various activities, his job and various transactions. So that the average child can keep abreast of developments in various fields.[1] But some of these children with speech disorders may have a problem learning this phonological awareness correctly, which is the rest of their ordinary peers, which is evident through the difficulty of learning what is given to them texts and sentences or even words, which causes them to refrain from learning the phonological awareness of all They are the result of their inability to know that the words they hear are composed of individual sounds consisting of the word[2]. These sounds are called phonemes or phonological awareness, as well as their inability to analyze and synthesize the sounds that make up the word.[3] Since phonological awareness is one of the fundamental aspects of the detection of learning difficulties in language skills (listening, speaking, reading, writing), the first difficulty in this failure may be due to difficulties in the level of phonological awareness among pupils with speech disorders.Hence, the current research problem is the identification of phonological awareness among pupils with speech disorders[4].

The manifestations of the difficulties of phonological awareness in language skills are as follows:

1. The storage of verbal language in memory, where people with learning difficulties use meanings or semantic coding, which is related to the meanings of words, while students who do not suffer from those difficulties use sound or phonological or phonological coding.
2. Use verbal information in working memory as people with learning difficulties are less accurate and efficient in using verbal information that helps them to remember

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3. Retrieval of information from long-term memory, where learning disabilities draw information at a slower and less accurate level, as well as that the extraction is less in its details organized than the performance of peers who do not suffer from such difficulties.
4. Using learning strategies, where people with learning difficulties use strategies similar to those used by peers who do not have learning difficulties, although their use is less efficient than using their peers to those

Strategies: The acquisition of language skills and communication skills is critical to the overall integrated growth of the student and because the child with speech disorders is unable to interact properly with others and seeks to move away from society and sit in the same closed and does not want to move and activity usually,

All types of behavior, including speech disorders, are the result of the environment and the social conditions surrounding the child, and these disorders are a kind of abnormal behavior that occurs as a result of the experiences experienced by the child. Based on this, The child is due to the surrounding environmental conditions and is also due to social factors and improper grooming both at home and school [5] The brain is the physical machine of thinking and the ability to create the ability of human perception and expression as well as understanding meanings and respond to instructions, and the human is not only a notebook, and hence the discovery of the scale of electrical brain to some understanding of how the brain works, and that neurons are the basis of learning and memory, It is the brain that is a member of learning and thinking. Therefore, the brain is the floor of desire, the place of learning, memory, knowledge of objects, people, images and colors. It is the center of consciousness of the body[6]. It is the voice of the human self and its environment. It describes, distinguishes, compares, reflects and dreams The work and shape of the brain, if every new experience and experience passes through the individual really changes from the electrical chemical structure of the brain, and that the receiving of the brain is exciting of any kind. The process of communication between the neurons is activated, and the more exciting the stimulus That the ability of the brain to form ideas and identify and deal with it make it effective in dealing with the surrounding, which has the ability to speed recognition and interaction with Khdair

Theoretical Importance:

1. Pay attention and attention to the class of students with speech disorders in terms of helping to develop solutions that reduce the negative effects.
2. Research may be useful to curriculum developers and practitioners to ensure that some method are used to suit this category.
3. We hope that this research will open new horizons for researchers in the future to conduct further studies and scientific research to serve this segment of students with speech disorders and achieve the desired goal

Applied Importance:

1. Helps provide diagnostic tests for people with speech disorders, leading to understanding of their abilities and helping them to develop them to the maximum extent possible.
2. It may help to establish specialized centers that help students with speech disorders develop their phonological awareness

The two objectives of the research: The current research aims to identify:

1. The neurological awareness of pupils with speech disorders?
2. Are there significant statistical differences in the degree of phonological awareness among pupils with dyslexia with regard to sex variable (male/ female)?

Fourth: Research limits: The current research is limited to the following limits:

1. Human boundaries: students with speech disorders.
2. Spatial boundaries: primary government schools affiliated to the Directorate of Education DhiQar - district of Rifai.
3. Time Limits: The academic year (2018-2019).
4. Cognitive boundaries: phonological awareness - speech disorders

Research Terms:

*** Phonological awareness: defined by:**

1. "The ability to understand that the word from one passage like a leg can be cut into first, middle, and last voices. It also requires an understanding that the

individual sections of phonemonic sound can merge together to form words", 2010: 13).

2. Allam (2009): "The ability of the child to know that the words he hears consist of individual sounds consisting of the word and these sounds are called phonemes

Speech disorders: defined by:

1. Al-Zaher (2010): "The problem with issuing the votes correctly and may be in the static votes or in the moving votes or both" (Al-Zaher, 91: 2010).
2. Al-Ghazali (2010): "The inability to pronounce the language sounds correctly due to problems in the consistency of muscle or defect in the exits of the voices of letters or poverty in the efficiency of sound or organic disorder" (Ghazali, 51: 2011)

The research community and its sample: The research community includes students with speech disorders in the schools and government centers of the Directorate General of Education DhiQar/district of Rifai for the academic year (2018 - 2019). In the study sample, the researchers chose students with speech disorders in the public schools in DhiQar, which the researcher presented to them the phonological awareness scale. They were selected in a random manner and numbered 60 students

Research Research: To achieve the objectives of the research and after the study of the yard on the scales and previous studies related to this subject, the researchers adopted the scale of the phonological awareness prepared by Nubian (2010) in Egypt being the closest to the subject of their research

- The paragraphs of the scale and its dimensions and instructions: Be the denominator of six dimensions and each dimension (10) paragraphs to become the total number of paragraphs of the scale (60) paragraph, while the instructions of the scale is consistent with the evidence that guides the respondent to how to answer, so researchers were careful to prepare instructions to be clear, And easy to understand, and suitable for the level of the examinee and the instructions are intended to explain the idea of the scale in the simplest picture to facilitate the process of application
- Validating the scale: The researchers used two types of honesty are the apparent honesty and honesty of the building. These two types were confirmed by the paragraphs of the scale on a group of arbitrators of 10 arbitrators who are specialized in education, psychology and special education. The results showed that honesty Al-Dhahiri had obtained a percentage of agreement (80%) by the arbitrators and specialists and did not delete any paragraph. As for the validity of the construction, the results showed that all the paragraphs of the scale are statistically significant, so the vertebrae are true for what they measure
- Stability of the measurements: The researchers used a method or so-called equation (Alpha Cronbach), which is often used in the calculation of the stability of psychological standards, which depend on the variation of the degrees of individuals on the paragraphs of the scale, and uses the coefficient of Vkronyach because it provides us with a good estimate in the attitudes, if it depends on the stability (0.86) is a high stability coefficient and is an internally consistent measure because this equation reflects the consistency of the paragraphs internally. It is an indicator of the stability of the scale. The phonological awareness is good and acceptable

Application Exploration: This application includes the following:

A. The phonological awareness measure was applied to students with speech disorders. The number of students was 30 students. The purpose of this study was to know the clarity of the instructions, the extent of understanding and clarity of the vertebrae, and the calculation of the time scale required for the scale. By the survey sample and the average time was (28) minutes.

B. The second survey application (statistical analysis): The scale was applied to a sample of students consisting of (100) students and students and the purpose of the analysis of the paragraphs statistically by distinguishing the paragraph, the important qualities and must be provided in the paragraphs of the scale is the characteristic of discrimination and the possibility of paragraphs in the disclosure (0,65-0.28). Thus, all the test paragraphs have a good and appropriate discriminating factor and no deletion of any paragraph

Eighth: Results: The researchers applied the scale to the basic sample of (60) students and students with speech disorders. The results showed that the calculated T value of (1.72) was less than the (1.96) (0,05) and

the degree of freedom (59), which is not statistically significant, and the results showed that there are statistically significant differences in the phonological awareness of the sex variable (male and female) and for females

The researchers explained the first outcome and the second result that students with speech disorders in general suffer from a weakness in the auditory awareness, and may be due to the reasons for the Bailujie relating to the pronunciation device or for environmental reasons due to the nature of the formation and method of education and support provided to children, both family and school Has affected the phonological awareness, while the differences of statistical significance that showed that females are more aware of males in the phonological awareness, it may be due to the roles and games performed by females that require them to use the language compared to the roles and games that require males Use of language, and the results are consistent with previous studies in this area.

Conclusion

The results showed that the mean was less than the theoretical average of the phonological awareness scale. The calculated value is less than the tabular value. Pronunciation did not have a phonological awareness.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babel - Faculty of Basic Education, Iraq and all experiments were carried out in accordance with approved guidelines.

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Prevalence of Whooping Cough among Children Under Five Years During the Last 5 Years Ago in Hilla City

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Abstract

Whooping cough is a highly infectious disease that affects the respiratory tract. The disease can be distinguished, when most people, acute intermittent surface cough, which followed a high-pitched voice inspirations looks like “cock”. The study aims at identify prevalence of whooping cough among those who under five years descriptive analytic design was used for the purpose of the study is conducted at Babylon Teaching Hospital for Maternity and Pediatric. Non probability a “convenience” sample was were collected retrospectively from medical records as a statistic for each year of the (2014 to 2018). Data were analyzed through the used descriptive statistic as frequencies and percentage the study results in corresponding with study objective were the July, December, and May as the most months of infections recorder by the hospitals. As well as, the majority of (31.2%) among five years were recorded for 2018 as the highest recorded casualties. The study concludes that there is a very large disparity between the years of prevalence that the more time progresses the increased prevalence depending on health services.

Keywords: *Prevalence, Whooping Cough, Under Five Years.*

Introduction

Although it is similar to normal colds it is possible that the condition develops and becomes a problem that control of whooping cough source of public health concern all over the world, where it is estimated that more than 10 million cases and about 400,000 deaths linked to whooping cough occur annually, with 90% of the burden in infants from developing countries[1][2]. Whooping cough affects all age groups and can occur in individuals who have been previously vaccinated or infected [3]. The introduction of mass vaccination of children in the middle of the century dropped 20 of a whooping cough dramatically. However, under the whooping cough endemic because the vaccines available to prevent the disease but less infection and transmission degree[4]. The infection continues to kill young children and even in countries that have strong immunization programs, doctors miss the diagnosis[2]. Over the past two decades, there was a return of whooping cough in the fortified gatherings disease well all over the world, due largely to the rapid loss of protective immunity and adapt to the pathogen. This was associated with the emission shift to older age groups, which raised concerns about the transfer of families to vulnerable infants and the need to strengthen vaccination strategies [5].Whooping cough is a type of microbes discovered by the scientist and researcher Burdt in 1906 and are found in the secretions of nasal and fecal secretions and respiratory tracts such as sputum and the spit produced after the outbreak of cough, where it is usually filled with these microbes effective and that the regular sterilizers and even ordinary water with soap have the ability to eliminate these microbes, These microbes within the body are very effective with

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the severity of resistance, especially in the pathological period preceding the occurrence of cough attacks of the disease[6]. The duration of the infection is one week after the onset of infection up to three weeks after the onset of symptoms on the patient and the infection is transmitted either directly through the fly spray from the patient or indirectly using the tools of the patient contaminated with the microbial[7].Symptoms appear two or three weeks after the patient has been picked up in the form of an undifferentiated and mild cough for about two weeks. Suddenly, the cough begins with an increase in intensity and frequency. It comes in the form of strong spells ending with a characteristic, The child may refuse to feed and feed, which may affect his or her health. These seizures will continue for two weeks, and the cough will decrease. For two weeks before the patient healed[8]. Oxford University said the study of 172 children showed that Pertusis was very common in young children, but the study of 172 children between the ages of 5 and 16 who visited their doctor for at least 14 days of coughing showed that it was desirable That doctors consider the diagnosis of Pertusis, even in children who have received full vaccination. Children receive anti-cirrhosis shortly after giving birth and before entering school, and the vaccine currently used does not provide immunity throughout life. In 2004, 237 children between the ages of 4 and under were diagnosed, up from 289 in 2005[9].

Methodology

The Study Aims: To identify prevalence of whooping cough among those who under five years.

Study Design: A descriptive analytic design was used for the purpose of the study is conducted at Babylon Teaching Hospital for Maternity and Pediatric.

Study Sample: Non probability a "convenience" sample was were collected retrospectively from medical records as a statistic for each year of the (2014 to 2018).

Data Analysis: In order to determine whether the objectives of the study have met or not, that data of the present study has been analyzed through application of the descriptive statistic analysis approach that includes as the following formula:

$$\left(\frac{Number\ of\ Cases\ in\ month}{Total\ Numbe\ of\ Children\ in\ year}\right)\ 100$$

Results and Discusion

Table (1): Prevalence of Whooping Cough among Children under Five Years during 2014

Month	No.	%
January	10	7.4
February	14	10.3
March	21	15.4
April	14	10.3
May	5	3.7
June	9	6.6
July	22	16.2
August	12	8.8
September	21	15.4
October	5	3.7
November	0	0.0
December	3	2.2
Total	136	100

Results in 2014 depicts that the most of infection recorded in July, it records (16.2%) out total number.

Table (2): Prevalence of Whooping Cough among Children under Five Years during 2015

Month	No.	%
January	12	13.3
February	12	13.3
March	7	7.8
April	8	8.9
May	12	13.3
June	3	3.3
July	4	4.4
August	3	3.3
September	4	4.4
October	2	2.2
November	2	2.2
December	21	23.3
Total	90	100

In 2015 the infection recorded as a majority in December, it recorded (23.3%) out total number.

Table (3): Prevalence of Whooping Cough among Children under Five Years during 2016

Month	No.	%
January	9	9.4
February	2	2.1
March	14	14.5
April	8	8.3
May	20	20.8
June	11	11.5
July	9	9.4
August	11	11.5
September	7	7.3
October	2	2.1
November	0	0.0
December	3	3.1
Total	**96**	**100**

In 2016 the infection recorded as a majority in May, it recorded (20.8%) out total number.

Table (4): Prevalence of Whooping Cough among Children under Five Years during 2017

Month	No.	%
January	16	7.2
February	6	2.7
March	9	4.1
April	19	8.6
May	43	19.5
June	37	16.7
July	40	18.1
August	22	10
September	12	5.4
October	4	1.8
November	4	1.8
December	9	4.1
Total	**221**	**100**

In 2017 the infection recorded as a majority in May, it recorded (19.5%) out total number.

Table (5): Prevalence of Whooping Cough among Children under Five Years during 2018

Month	No.	%
January	22	8.5
February	13	5.1
March	42	16.3
April	39	15.2
May	47	18.3
June	29	11.3
July	33	12.8
August	10	3.9
September	8	3.1
October	3	0.8
November	1	0.4
December	11	4.3
Total	**257**	**100**

In 2018 the infection recorded as a majority in May, it recorded (18.3%) out total number.

Where it recorded the highest percent in 2018 and the lowest rate in 2015 and also note the variance from 2015 to 2018 as shown in figure below:

Globally, it is estimated that there are 24.1 million case Pertusis and 160 700 deaths from Pertusis in children less than 5 years in 2014, with periodic epidemics every two to five years. Whooping cough is transmitted from infected individuals to vulnerable to infection through portable spray air[10].

Clinical studies have shown that cases of Pertusis or also known whooping cough may be persistent or intermittent. In present study, findings reveals that the (32.1%) out total years were registered by 2018. Where to increase infections with the progress of years and this is due to the health institutions of the country is facing economic crises affecting the health aspects.

Studies has been shown between 2001 and 2005, evidence of recent Pertusis infection was reported in UK were (37%) preschool age children presenting with persistent cough in primary care[11].

A prospective cohort study has been included in their study the school age children presenting with persistent cough in United Kingdom deals with preschool Pertusis booster vaccination. Findings 56 (20%, 95%) confidence interval (16% to 25%) children had evidence of recent Pertusis infection, including 39 (18%, 13% to 24%) of 215 children who had been fully vaccinated. The risk of Pertusis was more than three times higher (21/53;40%, 26% to 54%) in children who had received the preschool Pertusis booster vaccination seven years or more previously than in those who had received it less than seven years previously (20/171;12%, 7% to 17%). The risk of Pertusis was similar between children who received five and three component preschool Pertusis booster vaccines (risk ratio for five component vaccine 1.14,0.64 to 2.03). Four of six children in whom cough frequency was measured coughed more than 400 times in 24 hours[12].

In urban Uganda, has been investigated the prevalence of whooping cough among children with persistent cough. The results indicate a high prevalence of whooping cough among children with persistent cough in a health facility was marked in children> 59 months old rate[13].

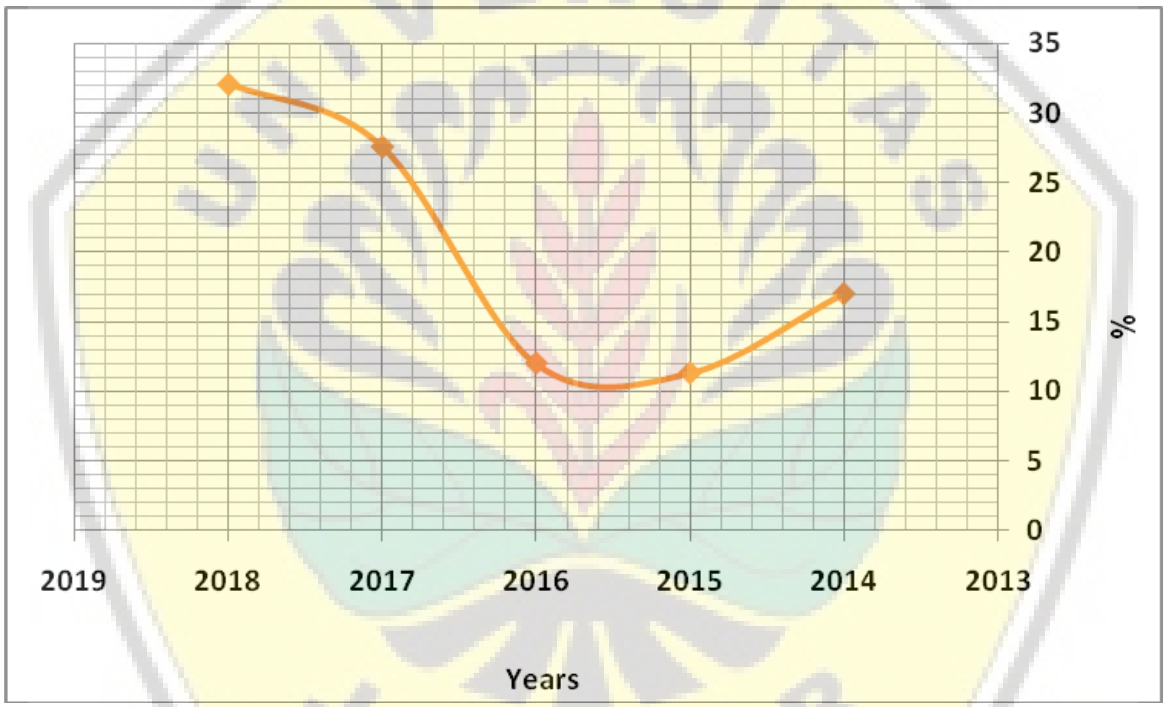

Figure (1): Prevalence Rate of Whooping Cough in Hilla City

Conclusion

The study concludes that there is a very large disparity between the years of prevalence that the more time progresses the increased prevalence depending on health services.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Kut Technical Institute/Middle Technical University- Iraq and all experiments were carried out in accordance with approved guidelines.

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Selected Oral Variables in Children of Inbreeding Parents and Children of Not Inbreeding Parents in Babylon Government/Iraq

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Abstract

Consanguineous marriage is a relationship between biologically related individuals. Genetic factors have role in gene environment interactions take the center stage. The evidence of oral disease (dental caries, enamel anomalies and teeth wear) is based on the study of inherited diseases, genetic syndromes, familial studies etc.Aim of study: This study was conducted to assess the impact of consanguineous marriage on the occurrence and prevalence of dental caries, enamel anomalies and teeth wear in children of inbreeding parents with children of not inbreeding parents among primary schools in Al-Qasem city/Babylon government, in Iraq Three hundred ninety eight (398) student, 6-12 years old, from 4 primary school, 199 child that their parents of inbreeding marriage (study group), and other 199 child their parents not inbreeding marriage (control group), were included in this study. Dental caries and enamel anomalies were diagnosed and recorded according to World Health Organization criteria (WHO, 1987)(1) (WHO, 1997)(2) respectively in addition, teeth wear was assessed according to criteria of Smith and Knight Index, 1984. A higher percentage of caries experience and enamel defect were recorded in children of inbreeding parents than children of not inbreeding parents.

Keywords: *Consanguineous marriage, oral health.*

Introduction

Consanguineous marriages have generally been accepted as having important detrimental effects on offspring. There is a lot of genetic research about consanguineous marriage and its detrimental effects on offspring.(4 & 5) Although consanguineous marriages are common in the world, the relationship with oral health status has been thoroughly still investigated. There are many studies found that genetic basis of occlusal trait and dental anomalies through analysis result of inbreeding study in subdivided isolated community, also see the role of heredity, exacerbated through inbreeding, in the etiology of tooth wear(6 & 7).

Dental caries is a localized, progressive, irreversible, microbial disease of mineralized tissues of the teeth, characterized by demineralization of inorganic portions, and destruction of organic substances of the tooth. It is a multifactorial etiology related to the interactions overtime between tooth substance, certain microorganisms, and dietary carbohydrates producing dental plaque (8). Most of the oral diseases are complex in nature, resulting from infectious microbial agents coupled with hereditary and environmental factors, with application of newer genetic techniques, an increased understanding of genetic risk factor relationships between dental caries and individual phenotypic expression is coming into light(9). Dental caries was affected by nutrition as seen in study by (10 & 11).

Tooth enamel is formed during only a certain period of the tooth development and is irreplaceable. Ameloblasts, which are secretory cells that produce dentalenamel, are particularly sensitive to changes in their environment during the long process of enamel production. Dysfunction of ameloblasts may occur resulting inchanges in the appearance of the enamel in the dentition.(12).

Materials and Method

Subjects: Three hundred ninety eight (398) students, 6-12 years old, were collected from 4 primary school, they were divided into 199 child that their parents of inbreeding marriage (study group), and other 199 child their parents not inbreeding marriage (control group),in Al-Qasem city/Babylon government, in Iraq

This study was done during the period from December 2018 to February 2019. A pre-study ethical approval was assigned, also the children's parent consent form which taken before start the study.

Inclusion Criteria: Students with

- No history of medication, (anti- inflammatory or antimicrobial therapy) within previous 3 months.
- No history of orthodontic treatment.
- No history of any systemic disease.

Diagnostic criteria included the sex, age and history of family if inbreeding parents or not.

Oral examinations was performed on chairs, under good illumination by using dental mirror, probe and dental tweezers Dental caries experience, were diagnosed and recorded according to the criteria of WHO, (1987).[1] Clinical examination was conducted using plane mouth mirror and dental explorer. A systematic approach of the dental caries was performed, starting from the upper right second molar proceeding in an orderly manner from tooth to the adjacent tooth reached upper left second molar, then going to the lower left second molar passing to the lower right molar (WHO, 1987).[1]

The developmental defects of enamel index was used WHO, (1997)[2]. Enamel abnormalities were classified in to one of three types on the basis of their appearance. They vary in their extent, position on the tooth surface and distribution within the dentition. Ten index teeth were examined on the buccal surface only, if any index tooth is missing, the area was excluded. These teeth include: 11, 12, 13, 14, 21, 22, 23, 24, 36, 46 for permanent teeth and 51, 52, 53, 54, 61, 62, 63, 64, 75, 85for primary teeth was examined according to The Criteria of Enamel Anomalies

Results

Dental Caries: Table (1) illustrates the distribution of caries free and with caries with among children of inbreeding parents and children of not inbreeding parents. For total sample found that a high percentage of children with caries in study group than control group. The same table illustrates that, children in study groups has a low percentage of caries free compared with children among control group.

Table (1): Distribution of dental caries and caries free among children of study and control groups.

Groups	Caries Free No. (%)	Dental Caries No. (%)
In breeding	3 (23.08)	196 (50.91)
Not breeding	10 (76.92)	189 (49.09)
Total	13 (3.3)	385 (96.7)

Table (2) illustrates that mean and standard deviation of caries experience of the permanent dentition by age among study and control groups.

Table (2): Caries experience of the permanent teeth among children of study and control groups.

Age (Y)		Groups						P value
		In breeding			Not breeding			
		N	Mean	±SE	N	Mean	±SE	
<=10	DS	114	3.50	.28	136	1.43	.16	.000
	MS	124	.40	.18	137	.20	.08	.325
	FS	123	.06	.02	137	.00	.00	.019
	DMFS	118	3.86	.33	137	1.63	.18	.000
10.1+	DS	65	5.89	.57	59	2.95	.47	.000
	MS	68	.32	.21	59	.36	.17	.903
	FS	68	.07	.04	59	.12	.05	.492
	DMFS	66	6.21	.65	59	3.25	.49	.000
Total	DS	179	4.37	.28	195	1.89	.19	.000
	MS	192	.38	.14	196	.25	.08	.431
	FS	191	.06	.02	196	.04	.02	.308
	DMFS	184	4.71	.32	196	2.12	.20	.000

Caries experience was found higher mean value in inbreeding group than not inbreeding. Difference was statistically highly significant existed between groups.

Decayed surface was recorded a largest fraction of DMFS value compared to MS and FS among both groups with highly significant difference. Regarding MS and FS fractions, statistically, no significant difference was found between study and control groups.

Enamel Defect: Table (3) illustrates the percentage of children with enamel defect in study and control groups. The result showed that a slightly the same values were recorded between both groups with no significant difference. According to the gender, the result showed that male had higher percentage of enamel defect than female**.** Regarding to the age, among children of total sample, the result showed that age (10-12) years old had higher percentage of enamel defect than (6–10) years.

Table (3): Distribution of enamel defect among children of study and control groups.

Age (Y)	Gender		Groups				P Value
			In Breeding		No Breeding		
			N	%	N	%	
<=10	Male	Yes	41	58.57	29	41.43	.049
		No	22	40.74	32	59.26	
	Female	Yes	33	44.59	41	55.41	.750
		No	34	47.22	38	52.78	
	Total	Yes	74	51.39	70	48.61	.255
		No	56	44.44	70	55.56	
10.1+	Male	Yes	16	34.78	30	65.22	.000
		No	19	79.17	5	20.83	
	Female	Yes	20	60.61	13	39.39	.724
		No	14	56.00	11	44.00	
	Total	Yes	36	45.57	43	54.43	.016
		No	33	67.35	16	32.65	
Total	Male	Yes	57	49.14	59	50.86	0.640
		No	41	52.56	37	47.44	
	Female	Yes	53	49.53	54	50.47	0.995
		No	48	49.48	49	50.52	
	Total	Yes	110	49.33	113	50.67	0.762
		No	89	50.86	86	49.14	

Table (4) distribution of enamel defect scores (number and percentage) among students by age, gender among inbreeding and not inbreeding status. Score 1 and score 3 slightly higher in children of not inbreeding parents than children of inbreeding parents. While score 2 is slightly higher in children of inbreeding parents than children of not inbreeding parents. Statistically, no significant difference was recorded between children of both groups.

Table (4): Distribution of enamel defect scores In study and control groups

Age	Score	Inbreeding						Not Breeding					
		Gender						Gender					
		M		F		T		M		F		T	
		N	%	N	%	N	%	N	%	N	%	N	%
<=10	1	33	52.3	32	47.7	65	50.0	29	47.5	38	48.1	67	47.8
	2	12	19.0	4	5.9	16	12.3	7	11.4	11	13.9	18	12.8
	3	6	9.5	2	2.9	8	6.1	5	8.2	3	3.8	8	5.7
10.1	1**	15	42.8	16	47.0	31	44.9	30	85.7	12	50.0	42	71.1
	2	5	14.2	10	29.4	15	21.7	6	17.1	5	20.8	11	18.6
	3	0	.00	1	2.9	1	1.4	3	8.5	0	.00	3	5.0
Total		48	44.8	48	48.9	96	46.8	59	55.1	50	51.0	109	53.1
		17	56.6	14	46.6	31	51.6	13	43.3	16	53.3	29	48.3
		6	42.8	3	50.0	9	45.0	8	57.1	3	50.0	11	55.0

Teeth Wear: Table (5) illustrates the distribution of the children (study and control groups) according to the mean of teeth wear index by age groups. The results revealed that mean of teeth wear higher in control group than study group. According to the age, the result showed the children in age 6–10 years old have higher teeth wear mean value than children in age 10–12. Regarding to gender, the results showed that tooth wear in general was higher among females than males.

Table (5): Distribution of teeth wear among children of study and control groups.

Age (Y)	Gender	In Breeding		No Breeding		P Value
		Mean	±SE	Mean	±SE	
<=10	Male	1.64	.27	3.81	.44	.000
	Female	.75	.16	4.51	.45	.000
	Total	1.14	.15	4.17	.32	.000
10.1+	Male	.83	.22	2.03	.37	.008
	Female	1.58	.45	4.03	.94	.044
	Total	1.14	.23	3.01	.51	.002
Total		1.14	.127	3.77	.275	.000

Table (6) showed distribution of teeth wear for primary and permanent teeth according to age, gender in children of study and control groups.

According to the age, the result showed that children in age 6–10 years old have higher teeth wear mean value than children in age 10–12, with statistically highly significant. Concerning gender, the results showed that tooth wear in general was higher among females than males.

Table (6): Distribution of teeth wear for primary and permanent teeth among children of study and control groups.

Age (Y)	Gender	TW	Groups				P value
			In Breeding		No Breeding		
			Mean	±SE	Mean	±SE	
<=10	Male	Perm.	.90	.21	3.56	. 42	.000
		Pri.	.85	.25	.60	.31	.531
	Female	Perm.	. 67	.16	3.10	.36	.000
		Pri.	.11	.06	1.75	. 52	.003
	Total	Perm.	.77	.13	3.32	.27	.000
		Pri.	.44	.12	1.17	.31	.026
10.1+	Male	Perm.	.79	.23	2.03	.37	.007
		Pri.	.08	.08	.00	.00	.365
	Female	Perm.	1.33	.42	4.03	.94	.025
		Pri.	.30	.30	.00	.00	.489
	Total	Perm.	1.02	.22	3.01	.51	.001
		Pri.	.18	.14	.00	.00	.209
Total		Perm.	.84	.11	3.21	.25	.000
		Pri.	.37	.10	.94	.25	.033

Dental Caries: Generally, there were controversy between studies who searched about caries experience as it was well known that the caries is multifactorial disease and can change from a population to another one, from an individual to another one and even from a group of teeth to another one [14].

In the present study, the percentage of caries experience in the siblings of the consanguineous group is (50.91) which higher than non-consanguineous group's (49.09) in Al_Qasem city. The results of the present study of permanent teeth revealed that the siblings of the consanguineous group had mean of DMFs was (4.71), and the Decay surface fraction was (4.37) which represent the highest proportion of this fraction in the DMFs, followed by MS (.38) and then FS fraction (.06) which represents the lowest one, the siblings of the non-consanguineous group had mean of DMFs was (2.12), and the Decay surface fraction was (1.89) which represent the highest proportion in the DMFS, followed by MS (.25) and then FS fraction (.04) which represents the lowest one. This higher caries in study group than control group could be due to genetic factor in inbreeding marriage [16]. The current study was agree with a study done by Elfaki (2015) that was carried out among 120 school age students and their families in Najran – Saudi Arabia (Consanguineous marriage is very common among the inhabitants of Najran), Elfaki found significant association between hereditary factor and the occurrence of dental caries among school children. The study concluded that dental caries experience of children is strongly influenced by hereditary factor and consanguineous marriage could be the source of the genetic factor that behind the high prevalence rate of dental caries [17].

Enamel Anomalies: Percentage of enamel anomalies was 49.33% in the siblings of the inbreeding group and 50.67% in the siblings of the not inbreeding group so that there is no significant difference between two groups. The percentage of enamel defect was found to be higher among 6–10 years children than 10–12 years children in both study and control groups. The percentage of enamel defect was found in the present study to be higher among boys than girls for both age groups. This finding is in agreement with Slayton et al (2001)[20]. Mestrinho et al (2007) [21], Murad (2007) [22], Masumo et al (2013) [23] and Robles et al (2013)

[24], while it was disagree with Gatta (2005) [25] and Jabber (2008) [26]. Definitive reason for this finding is not documented but suggested to be because of greater intra uterine nutritional demands in boys than in girls, since boy's weight more, have more muscle mass, and are developmentally delayed both in the uterus and at birth.[27 & 28]

Conclusion

The impact of consanguineous marriage was recorded on dental caries and enamel anomalies in children of inbreeding parents than children of not inbreeding parents.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Pedodontics and Preventive Dentistry, College of Dentistry, University of Babylonand all experiments were carried out in accordance with approved guidelines.

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The Impact of Mind Maps Strategy in Teaching and its Effects on the Mental and Emotional Aspects of the Student's Fifth Preparatory Students

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Abstract

The present study aims at identifying the effect of mind maps strategy on developing the performance of the student fifth preparatory school students . In order to achieve the goal, the researcher put the zero hypothesis, It is hypothesized that there is no statistically significant difference at the level of significance (0.05) among the average of the students of the experimental group, the average score of the students of the control group which will study according to the conventional method, and to verify the application of her experience in the first half of the academic year (2018-2019). The sample consists of (57) students of the fifth grade in Al-Nijoom secondary school for boys, they are distributed randomly, (29) students in the form of the experimental group and (28) students of the control group. The two groups are equalized in the following variables: age, IQ, linguistic ability test and parents education. The researcher has prepared a test to recognize the student's ability and constructed the diagrams of the mind maps of their material, The experiment lasted over 8 weeks, and at the end of the experiment the post test was applied After the results analysis

Keywords: *Investigating, Mind Maps Strategy, EFL students.*

Introduction

Based on the assumption that the more teachers know about brain science, the better prepared they will be to make instructional decisions[1]. Mind map is a powerful tool for assisting any form of learning grammar. Mind map is a creative way to represent ideas or information through a diagram, so it is effective in improving students' achievement of English . The term "mind map" was first used by Buzan, who describes it as an instruction strategy where the learner places supra- ordinate concept on paper as subsequently links subordinate concepts as appropriate". Buzan says that the idea of "mind map" comes from the note books[1]2 of Leonardo da Vinci. Buzan tries to support the exclusive use of mind mapping over other forms of note making. Buzan develops mind map by using colors and pictures to help students and every one take notes effectively. Svantesson (1989) says that "mind map goes under a variety of names, they are known as concept maps, semantic mapping, [3]knowledge mapping, think links, graphic organization or cognitive map". Mind map has been used for centuries, for learning, brainstorming, memory, visual thinking & problem solving by educators, engineers, psychologists & people in general. Subject matters and thinking skills are interrelated as the former is the context which stimulates the learners' thinking[4]. Some of the earliest examples of mind maps were developed by Porphyry of Tyros, a noted thinker of the 3rd century as he graphically visualized the concept categories of Aristotle. Roman Liu II also used these structures. Mirabella (2012) says that mind map was first popularized by the British psychology author Tony Buzan 1974 when BBC TV ran a series hosted by Buzan called "Use Your Head". The purpose of this study is

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to simplify teaching and learning English language and make it more influential and to investigate the impact of using a mind map strategy on achieving English language among fifth grade of secondary school in Babel[4]. Now a days the word has become a small village, especially with the appearance of the satellites, technology, information and internet, The demand of learning English has increased and it became a necessary need for individuals who tend to follow up the vast changes in this world. However, learning English grammar is not an easy job for the majority of our students, especially within our schools limited possibilities[5]. A lot of barriers such as crowded classes, difficult curriculum and traditional evaluation instruments force teachers to modify or even change their techniques to overcome these barriers towards the targeted objectives. Though the students' low achievement level in English language in general requires a serious research for alternative techniques that may improve our students' level[6]. So, the inability of EFL secondary students to organize their ideas and thoughts is sometime due to lack of knowledge about different techniques in this respect which can be applied during the pre-learning process[7].

Mind Maps: Brain Tool Extraordinary: Why does a mind map such a powerful brain-friendly tool? Mind maps engage in bothsides of the brain because they use image, color, and imagination (realms of the right brain) in combination with the way the branches grow outwards to form another level of sub branches that encourage you to create more ideas out of each thought you add to your mind map. words, number, and logic (realms of the left brain [8]. In Brain Rules the American neurobiologist, John Medina (2008:186) suggests that humans are visual creatures and can assimilate and store visual information far more effectively than, say, acoustic information . states that the more visual the information is the more easily it's absorbed and retained. The reason for this is evolutionary, in our distant past we received much of our essential information in the form of moving images and so our brains are particularly good at recognising, storing and recalling visual information[9].

Steps to making a mind map:

1. Start in the centre of a blank page turned sideways.
2. Use images or pictures for your central idea
3. Use colors throughout
4. Connect your main branches to the central image and connect your second- and third-level branches to the first and second levels, etc.
5. Make your branches curved rather than straight-lined.
6. Use one key word per line.
7. Use images throughout

The brain as a radiant thinking association machine

Receiving, holding, analyzing, outputting, and controlling – are explained as follows:

The amazing machine, the brain, has five major functions:

1. **Receiving:** Anything taken in by any of ones' senses.
2. **Holding:** One's memory, including retention (the ability to store information) and recall (the ability to access that stored information).
3. **Analyzing:** Pattern-recognition and information-processing
4. **Outputting:** Any form of communication or creative act, including thinking.
5. **Controlling:** Referring to all mental and physical functions.

Buzan and Buzan show that these five categories all reinforce each other . For example, it's easier to receive data if you are interested and motivated, and if the receiving process is compatible with brain function. Having received the information efficiently, you will find it easier to hold and analyze it. Conversely, efficient holding and analysis will increase your ability to receive information.

Similarly, analysis requires an ability to hold (retain and associate)that which has been received. The quality of the analysis will obviously be affected by the ability to receive and hold the information.

These three functions (receiving, holding, and analyzing) converge into the fourth- the outputting or expression by Mind mapping, speech, gesture, etc. of that which has been received, held, and analyzed.

The fifth category, controlling, refers to the brain's general monitoring of all your mental and physical functions, including general health, attitude and environmental conditions. This category is particularly

important because a healthy mind and a healthy body are essential if the other four functions of receiving, holding, analyzing and outputting are to operate at their full potential. Although the definition of thinking skills often includes habits of mind or thinking behavior, which translates trends and assumptions of good thinkers. (Hafudh, 2019:3).

Research Method

Research method include a presentation of the procedures used to achieve the objectives of the study, starting from selecting the population and samples, neutralizing the variables of both samples, designing the instruments and tools of the study, conducting the experiment and analyzing the results.

Experimental Research Design: The experimental design contains one independent variable (mind maps strategy) and a dependent variable (the test scores).Thus, the experimental design was adopted on two equivalent groups one experimental and the other is controlled.

Population and Sampling: The population of the presented study is represented by the fifth-grade preparatory school students in the province of Hilla for the accademic year (2018-2019). Al Nijoom preparatory school for boys located at the core of the province was chosen to represent both samples the control group and the experimental one, and we randomly selected class (B, 30 students) to represent the experimental set that received mind maps strategy based instruction and class (A, 31 students) to represent the control set which received conventional way of teaching.

Samples Equivalence: The researcher has conducted a statistical equivalence between the experimental and control groups in some variables that could influence the results of the experiment. Although the researcher chose the two groups randomly, the students of the research sample form similar social and economic status and study in one school. We were acute to make equality by making the equivalence between these variables (the age measured by months, first course scores, and parent's academic achievement). The statistical results demonstrate that the two sets are equivalent in all the aforementioned variables.

The researcher equalizes the two groups of the research in their variables the age in the parents qualification marks of the history and

Extraneous Variables Equivalence: Although the researcher verified the equivalence of the two sets of research in some variables that are believed to affect the course of the experiment, we also tried to avoid the effect of some extraneous variables in the course of the experiment. Some of these variables and how to control them are as follows: Accidents associated with the experiment. There were no accidents during the administration of the experiment. No students left the school or got transported to another one. The sample was chosen intentionally and the two sets were equalized accordingly. The maturity factor: Since the duration of the experiment was unified between the two research groups as well as the age of students in the two groups all the growth that occurred will be unified between all the students because they are on the same level, so this factor did not have an impact on the research. the impact of experimental procedures, the researcher worked to reduce the impact of experimental procedures that can affect the dependent variable during the course of the experiment) such as level of students and what they need to develop and work on (Brown. 2003). The achievement test was constructed by following these steps:

- The purpose of the test: the desire of constructing the test is to measure students' achievement in the English languageby depending on the behavioral objectives specified by the teachers' guide.
- Determining test items: the test items are determined by the researcher to 5 questions that contain 25 items and prepared a scoring scheme for the test.
- The test is designed by depending on the revised Bloom's Taxonomy of educational objectives.
- Test scoring: the scoring of the test is done by giving one mark to each right answer and a zero to each wrong one. The highest score is set to be (50) and the lowest to be (0).
- Test validity: the test is validated by jury members of language teaching specialists which gave some recommendations and modifications that the researcher took into consideration and adjusted his test accordingly. The test was also validated by testing it on a pilot study.

Pilot study testing: the researcher has chosen the students of one school that is located near the main school on which the experiment was conducted. The school was Ibin sina preparatory school for boys of (50) student from this school. The test items were statistically

analyzed and found that the item difficulty ranged from (0.75-0.30) by which the test items are considered valid in difficulty. The item discrimination ranged from (0.72-0.31) which is accepted also.

Conducting the test: The students of both groups are reported before a week of the exam .the researcher supervised both of the exams at the same time.

Results and Discusion

The T-test formula is applied to indicate pupil score in pre-test and post-test and if there is any significant difference between the two groups score or not. To achieve the research aims, a null hypothesis is formulated.

The results showed that the null hypothesis is rejected because there is a statistically significant difference at the level of (0.05) as clarified in the tables below:

Table (1) The Students' Scores in Pre-test for the two Groups

Group	N	Mean	SD	DF	t-value		Level of significance
					Computed	Tabulated	
E G	30	22.57	3.839	59	1.380	2	0.05
C G	31	21.19	3.928				

With regard to the control group, the mean scores of the pre-test is (21.19), while that of the pre-test of experimental group is (22.57). The results show that the computed t-value in the pretest is (1.380) whereas the tabulated t-value was (2). This means that there is a little difference between them.

Table (2) The Students' Scores in the Post-test for the two Groups

Group	N	Mean	SD	DF	t-value		Level of significance
					Computed	Tabulated	
E G	30	47,50	7,075	59	4.275	2	0.05
C G	31	40,10	6,446				

In the experimental group, the mean score of the post-test is (47,50), while that of the control group is (40,10). The results show that the computed t-value in the posttest was (4.275) whereas the tabulated t- value was (2) and the level of significance (0.05). This denoted that the pre-test and post-test are significantly different at (0.05) level of significant and under 59 degrees of freedom. Namely, the post-test of the experimental group is much better than the pre-test by applying the T-test formula to compare the mean scores of the experimental group and control group in the post-test. This means that the strategy determined and used by the researcher is more effective and fruitful than the traditional strategies followed in teaching English

Conclusion

The use of Mind Maps strategy is effective on the enhancement of overall quality of Iraqi EFL learners' comprehension in English language. Mind mapping is a cognitive strategy that helps to improve students' abilities in learning English such as in conceptualizing, note taking and summarizing the crucial information for better understanding and memorization. Mind maps strategy helps students associate ideas, think creatively, and make connections that one might not otherwise make in the conventional approach. It also helps the students improve their innovative and creative thinking as reflected in their classroom discussions and learning. Mind maps strategy is appropriate for students

to maximize their ability in exploring ideas and using their imagination while learning English. The subjects in the experimental group of the present study have dealt positively with the new strategy (mind maps), showing high interest and motivation.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Basic Education/ University of Babylon, Iraq and all experiments were carried out in accordance with approved guidelines.

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The Impact of Strategy to Draw Your Ideas in the Collection and Development of Creative Thinking among Students

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Abstract

The present research aims to identify "the impact of strategy to draw your ideas in the achievement of students in the first grade intermediate in social subjects". To achieve the objective of the research, the researcher put the following zero hypothesis: There is no significant difference at the level of (0,05) between the average score of students of the experimental group studying the history of ancient civilizations using the strategy of "draw your ideas" and the average score of students of the control group who study In the traditional way, and to verify the hypothesis of research, the researcher chose a experimental design with partial control, and represents the current research community students in the first grade intermediate in the middle and secondary schools for boys in the Hashemite district of the Directorate General of Education in the province of Babylon for (2018- 2019). In the random sampling method, the researcher chose from his secondary research society a sample of the current research. In the same way he chose (c) to represent the experimental group with 35 students and B to represent the control group (68 students).

Keywords: *Impact of strategy, Creative thinking.*

Introduction

The researcher conducted a statistical equivalence between the students of the research groups (experimental and control) in the variables that may affect the results of the experiment[1] and these variables are: Students' chronological age calculated in months, academic attainment of Parents, mothers' academic achievement, average test scores for the previous year for social subjects taught in the sixth grade for the academic year (2018 - 2019), previous historical information test[2], Dylan's IQ test). The researcher formulated 100 behavioral goals distributed at the levels of knowledge, understanding, and application of the Bloom field of the three chapters defined in the experiment (Chapter 1, Chapter 2, Chapter 3). Of the objectives and tests for the two sets of research plans for the teaching of the subjects of the course to be taught during the experimental test plan for the experimental group and control according to the strategy (draw ideas) as well as the traditional method,. After the experiment was implemented, the researcher applied research tools to the two research groups. The researcher obtained data for the two research groups. The data were statistically treated by t-test for two independent samples[3]. The results showed that the experimental group's students exceeded the control group according to the drawing strategy Your thoughts. It is an educational strategy developed by Harst, Short and Burke in 1988. It comes after reading the content if it is a story or a scientific content[4], and by focusing on the ideas contained in the content as well as the concepts, linking the student ideas in the teaching as well as deepening the thinking for the absorption of During drawing, a strategy must be taught to students before. It is a strategy that must be taught to students before their application and requires a mental perception such as becoming a film in the student's mind or an integrated and coherent picture as well[5].

Creative Thinking: Creativity in its general sense expresses the ability to conceive, create, create, and evangelize an authentic work of an expressive, composition, productive or behavioral character, and its aesthetic, moral or utilitarian value. Gelford refers to creativity through attributes of ability that develop logically and clearly to creativity As well as the

originality, the ability to sense problems, and the ability to redefine and formulate in a capacity of virtual creative thinking.[6] Increasing the number of cells involved in the process of thinking, and the increasing and varied communication between them, and this is reflected on the external behavior of the learner, and it is more positive and interactive, and participate in the initiative of opinion and ideas and enthusiastic and vigilant [7] The researcher believes that active learning should be the role of the learner is the focus of the educational process and its effectiveness and positive activity in the process of education to be a learner is more steadfast in the They are educated and when the value of education has a meaning when the learne [8]. The researcher believes that employing a strategy with real and interrelated steps in teaching leads to raising the level of education, raising their levels and learning achievement and enlightening their ideas in a modern way in the study. These strategies are a strategy to draw your ideas from the modern method of teaching the activist**.** The academic achievement is not only a product of the educational process, it is also a measure in which the level of academic learners is determined[9]. Academic achievement is one of the concepts that give great attention to the educational system, educational institutions and many classroom tests bearing the title of achievement.

Steps to work with a strategy to draw your ideas: The teacher training to use this method and represent the mental perception of the read or heard from the teacher in front of students and enable them to practice in the learning processes can be applied steps to employ the text or listen to it carefully and focus on the ideas, concepts and events And attitudes and facts[10], and the teacher in this step to remind students to think about what is read in the read or audio and try to represent mentally in their ideas and visual image, mental perception of the content read or heard after reading or listening as the teacher asks students to visualize ideas and concepts received and make mental images They can express them in tangible forms or drawings expressing their perceptions in a way that gives the students an opportunity to imagine, which can be five minutes[12] or less according to the size of the audio or the reading. The drawing of the mental images after their conception. Each student paints what constitutes in his mind a perception of the contents of the content Or the shape with or lines is important to be understood and has implications and meanings can be understood from the drawing or shape notes with the possibility of using some words and short sentences written as indicators indicate the intent or content Share drawings and discuss and raise questions about them and answer questions The process can be discussed by group members first and then among all students[13]. It is preferable that the lesson or activity be dealt with in a way that is not homogenous, so that each learner will be informed about the way his or her partner thinks and exchanges experiences. After considering the drawings, a number of them can be chosen to hang in a special place or board somewhere in the classroom so that they will not be a reason to distract the students in subsequent lessons and can be replaced by others in the next lesson. The teacher can ask each student to keep With drawings in a booklet so that it is easy to return to when needed.

Creative Thinking. Creative ideas vary among cultural backgrounds, The creative thinking of children is different from creative thinking in adults, and they are similar in the same way. Creative thinking is a complex and original thinking, as is the case of creativity. It requires a set of tendencies and preparations in the individual and uses the higher levels of thinking, thinking strategies used in problem solving, decision making, and conceptualization .ohnal Some of the important terms that should be clarified:Ibrahim (2009) that: “the ability of the subject of the study to achieve a positive result, but if this outcome has not been achieved, the factor may be a direct cause of the consequences of negative.”Attia, (2018) as: “It is one of the modern method of active education involves the implementation of the thinking of learners in transforming the content of the lesson and its ideas and concepts to the mental perceptions of what is in the minds of learners after they The understanding of the content of learning purpose is not mastering the art of painting and the quality of the form, but the representation of concepts and ideas in the imaginary images are converted to visual images reflect the mental images that formed the learner “Allam, 2002 as: “the degree of acquisition achieved by an individual or the level of success achieved or reached in a particular subject or field of education or training.

Experimental design of the research: It includes the independent variable (drawing your ideas) and (the usual method), and the variable is dependent (mental perception), so the researcher used experimental design and the equivalence of the two sets of research, one experimental and the other control

Table 1. Number of students in the experimental group and control in the search

Collection	Number
Experimental	35
Control	33

The current research community: consists of the first grade students, all of them in the secondary and intermediate schools in the governorate of Babil for the academic year (2018-2019). The sample of the study is (middle school for boys) (33) students who will study their students according to the usual method.

Equal search groups : The researcher conducted a statistical equivalence between the students of the experimental and control groups in some variables that affect the results of the experiment. For the difference of the study society between the control and experimental groups, the researcher sought to achieve equivalence with the following variables (the age of time calculated by months, the collection test) To make the equivalence in the variables mentioned for the two groups of research and showed the results according to the following table (2).

Table 2. Variables (the age of time calculated by months, the collection test) To make the equivalence in the variables mentioned for the two groups

Variable	Group	Sample size	Standard Mean Sample	Standard deviation	Freedom Value	Value T		Level Significance
						Calculated	Tabular	
Age Calculated At month	Experimental	35	152.66	87.5	66	318.0	000.2	Statistical marker
	Control	33	12.153	16.6				
Test Previous l information	Experimentals	35	94.63	04.11		220.9	000.2	
	Control	33	38.64	38.10				
Dunlase Pilot	Experimental	35	71.26	8.6		507.0	000.2	
	Control	33	85 5.25	27.7				

Adjust search variables: The researcher investigated the equivalence of the two sets of research for some variables that are believed to affect the course of the experiment. He tried to avoid the effect of some variables that affect the operation of the experiment and the variables and how to control them. Accidents that accompany the experiment: The research experience did not experience any accident or emergency The sample was randomly selected and the equivalence of the two research groups was determined. The maturity factor: Due to the duration of the experiment in being uniform among the members of my group as well as their age, What happens to individuals Is the same for the two groups of research, so this factor has no effect in the experiment, the impact of experimental procedures, the researcher worked to limit the impact of those actions that affect the dependent variable during the course of the experiment).

Search Tools:

The scientific material (content): The scientific material that the researcher is teaching to the students of the two research groups during the period of conducting the experiment was determined for the first semester of the academic year. 2018-2019). The researcher prepared (17) a study plan for the experimental group, which is taught according to the strategy (draw your thoughts) and the same for the control method taught according to the usual method..

The power of distinguishing the paragraph: The researcher considers the qualities to be provided and the task in the test paragraphs is the distinguishing feature and means the possibility of detecting the individual differences of the students and the test items are valid as the coefficient of discrimination is 0.20 and above, and the value of the discrimination coefficient of the paragraph

in the test of achievement between (0.33-0.70), thus the paragraphs in the collection test are considered to have an appropriate and good discrimination coefficient.

The effectiveness of the wrong alternatives: So the researcher to extract the wrong alternatives and each of the paragraphs of the test (30) paragraph using the equation of the effectiveness of the wrong alternatives.

*** Method of finding the stability of the test - the method of half-fragmentation**: This method is one of the most used method, because it avoids the other defects of some method and to obtain two images of the test,

Kuder-Richardson (20): The researcher extracted the coefficient of stability and found that it is equal to (0.82), and this is a coefficient of stability acceptable, as indicated by the researchers and workers in the field of psychological and educational measurement and thus kept all paragraphs of the test and the test is ready to be applied Finalize the search sample.

Application of the research tool: The control and experimental research groups were notified a week before the date of the test and were applied after the completion of the teaching of the material identified for the two research groups at the same time. The researcher supervised the application of the test.

Statistical Method: The researcher used the t-test equation for two independent samples to make the equivalence between the control and experimental groups, and the correlation of Pearson and the equation to correct the coefficient of correlation between the test segments (degrees of individual and individual verbs) and Pearson correlation coefficient. And the coefficient of ease and difficulty paragraph and the power of excellence and effectiveness of the wrong alternatives and the box Kay (2 - x2 - quire - his).

Results and Discusion

The researcher prepared a final test after the completion of the teaching material for both groups which the researcher taught them. The results showed that the experimental group was superior to the control group according to the following table:

The mean and the deviation and the two values (favoritism and tabularity) and the variance and degree of freedom between the mean of the two groups in the achievement test

Table 3. Shows that the experimental group studying social subjects is superior to using the strategy of "drawing your ideas"

Group	Group Number	Standard Mean Sample	Standard deviation	Variation	Freedom Value	Value T		Level of Significance at (05, 0)
						Calculated	Tabular	
Experimental	35	49.27	41.5	27.29	66	248.3	000.2	Statistical Function
Control	33	55.22	06.7	84.49				

The above table shows that the experimental group studying social subjects is superior to using the strategy of "drawing your ideas" on the control group who study the same subject in the normal way. Thus, the null hypothesis is rejected and the alternative hypothesis is accepted.

Conclusion

In the light of the current research results, the researcher can find the following: Teaching a strategy I draw your ideas make the teacher in the preparation of good teaching plans on the basis of knowledge, education, application and evaluation. The strategy of drawing up your ideas contributes to guiding the science of education correctly with the goals set and organizing the educational classroom environment. I draw your ideas in the teaching of social history of ancient civilizations in line with the requirements of modern education. Teaching in accordance with the strategy of drawing your ideas leads to the installation of information in the minds of students through the multiple stages that pass through the students to the desired results. Teaching

according to the strategy and through the interaction of the researcher with students found that the adoption of this strategy enables students to be able to link their previous information with new information.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Babylon University College of Basic Education and all experiments were carried out in accordance with approved guidelines.

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The Impact of Thinking Skills on the Achievement of Applied Fifth Grade Students in Chemistry

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Abstract

The objective of the research was to identify the effect of thinking skills on the achievement of fifth grade students in the field of chemistry. To verify the objective, the researcher presented the zero hypothesis which states: There is no statistically significant difference at the significance level (0.05) The average number of students in the control group who will study according to the usual method in the achievement test is chemistry. In order to achieve the researcher's experience in the second half of the academic year (2018-2019), the sample consisted of (76) Application The two groups were rewarded in the following variables: age, intelligence test scores, semesters for chemistry, and in light of the relative importance of content and behavioral purposes, a test was constructed The experiment was carried out by a number of multiple choice types. The researcher achieved the test characteristics of the test. The experiment continued with the second course. At the end of the experiment, the experimental test was applied to the two groups. Who studied according to the thinking skills of the control group who studied the normal way in the collection variable

Keywords: *Product Skills, Achievement, Applied Fifth Grade Students, Chemistry.*

Introduction

Chemistry is one of the pillars of the natural sciences and is the basis of many other sciences, which are interested in studying, analyzing, interpreting and investing in natural phenomena, which have become more important for their effective[1] contribution to the technological development that the world is witnessing in a wide range in the fields of multiple life. Despite the importance of chemistry[2], The actual reality of teaching is still stagnant because teachers use traditional teaching method based on memorization, teaching and neglect of modern teaching method and method that help them to develop productive thinking skills in different and different forms among students of Applied V Most aspects and levels of thinking [3] and represents the thinking product part of the cognitive construction of individuals, and as life is represented by several positions exposed to the individual and paid to face them with the experiences of knowledge, skill, social or subjective, it produces [4]. The basic principle of productive thinking consists of two types of higher thinking skills: creative thinking and critical thinking. In the beginning, creative thinking is thought to generate better options and solutions, and then thinking In a manner To assess these options and solutions and choose the most suitable and best ones [5] Thinking is one of the highest mental and mental processes. It is one of the highest mental processes, a mental activity that is not directly observable, but is inferred from its effect. It is a cognitive process that is an essential element in the mental-cognitive construction that man possesses and is characterized by his social nature and his systemic work, The influence with the elements of the building, which consists of any influences and affects the rest of the other cognitive processes such as perception, perception[6], memory, etc., and affect and affect the aspects of emotional, emotional and social character ... etc. The thinking of the other cognitive processes as the most sophisticated and most complex Da and admire her on access to the depth of things and phenomena and attitudes and take them, enabling it to process information, production and re-new knowledge and information production, objectively accurate and comprehensive, concise [7]. Productive thinking: A pattern of patterns that allows the student's mind to be unleashed into the production and generation of uncommon and unguarded thoughts, a mental process

in which sensory cognition interacts with the story with external and internal motives or both. It is a systematic tool that combines creative thinking and critical thinking to solve scientific and life problems. As thoroughly as possible.

Methodology

In this study, the researcher used the partial experimental design of two equal groups, one experimental and the other a control for the purpose of the study, where the strategy was applied. The test was applied to both the tribal and remote study groups.

The society of the study: The current research community represents the students of the fifth grade applied in all schools (secondary and preparatory) the governmental day of the Directorate General of Education Karbala province (Kaza) for the academic year (2018-2019), where the number of people of the fifth grade applied in two divisions, As for the sample of the research, the researcher chose (Fawwat secondary school) in the province of Karbala deliberately to conduct its research, and Jeddah it consists of three people for the fifth grade applied (A, B, C), selected by the researcher (A) method of random drawing (draw method) (38) students and where they will study their students According to (product thinking skills). In the same way, the researcher randomly selected a (B) to represent the control group and the number of female students (38) who will study according to the experimental

Search group parity: The researcher conducted a statistical equivalence between the experimental and control groups in some variables that affect the results of the experiment. Although the researcher chose the two groups in the random drawing method, although the sample students from the social and economic environment are very similar and taught in one school,

Adjusting extraneous variables: Study Approach : In this study, the researcher used a partial experimental design of two equal groups, one experimental and the other a control for the purpose of the study, where the strategy was applied. The test was applied to both the tribal and post.

Study Society: The current research community represents the fifth grade students in all schools (secondary and preparatory) of the governmental day of the Directorate General of Education Karbala province (Kaza) for the academic year (2018-2019), where the number of people of the fifth grade applied in two divisions, The researcher chose (Fawwat secondary) in the province of Karbala deliberately to conduct her research, and Jeddah that it consists of three people for the fifth grade Applied (A, B, C), selected by the researcher (A) method of random drawing (the method of drawing) to represent the experimental group and the number of female students (38) is a student and will teach her students according to their thinking skills Product). In the same way, the researcher randomly selected a (B) to represent the control group and the number of female students (38) who will study according to the experimental.

Study Tool: The steps of the collection test are as follows

Determination of the purpose of the achievement test: The objective of the achievement test is to measure the achievement of the students of the fifth grade applied (information, skills and experiences) in chemistry for the four chapters (chemical movements, acids, bases and salts, chemistry of polymers, aromatic hydrocarbons) Formulated from the scientific material.

Determination of the objective of the achievement test: After the purpose of the test has been determined, the objectives of the test are determined to determine the extent of the achievement.

Determination of the test paragraphs: After the researcher reviewed a number of previous studies that targeted a sample of fifth grade students applied and polled the opinions of experts, the researcher identified the paragraphs of the test with (40) paragraph of the multiple choice.

Test Instructions: After verifying paragraphs' powers, instructions were prepared on how to choose one alternative, answer all test paragraphs, answer time, write the triple name, grade, division and answer to the question sheet with an explanatory example of the answer.

Correcting the test answers: After the test paragraphs were drafted and the test type was selected, a standard was developed to correct the answers. They set one score for each correct test paragraph and 0 for the wrong answer and the left paragraph that the student did not answer. Selection) and therefore the final high score of the achievement test (40) degree and the minimum grade (zero).

The validity of the test: After verifying the truthfulness and authenticity of the content, the results showed that the apparent honesty obtained 85% by the arbitrators and specialists. As for the validity of the content, the results showed that all the clauses of the test are statistically significant, In measuring the comprehension and comprehension of students of the fifth grade applied in chemistry.

The pilot application for the achievement test: It includes the following:

The first test: was carried out on a group of fifth grade students in the non-research sample. The number of female students was 30. The purpose of this test was to know the clarity of the test instructions and instructions, the comprehension of the test paragraphs for the students and the calculation of the time required for the test. The researcher recorded the exit time for each student. In calculating the arithmetic mean of time, it was found that the time needed to answer all the test paragraphs was (43) minutes.

The second test application: The test was applied to a sample of (100) students in the fifth grade applied without the research sample. The purpose of the test is to analyze the statistical achievement test paragraphs, namely paragraph difficulty.

Statistical analysis of the test scores: the test scores were analyzed as follows

The difficulty of the paragraph: The statistical analysis of the test paragraphs found that the coefficient of difficulty of paragraphs ranged from (0.37-0.70) and thus all the test scores are good and difficult.

The distinguishing features of the items are 0.22 and above. The value of the coefficient of distinction between the test scores is between (1) 0.33-0.52). Thus, the test scores are considered to have a good and appropriate discrimination coefficient.

Effectiveness of the wrong alternatives: The researcher ‘s wages were statistically analyzed (27% higher and 27% lower) to find the effectiveness of the wrong alternatives ranging from -0.04 to -0.26. As a result.

The stability of the test: The stability coefficient of the test depends on the relationship between each paragraph or between all paragraphs of the test, and this is evidenced by the stability of degrees and consistency of paragraphs, and can calculate the stability of the test using the legal relationship between the test units, and the specifications of the good test to be stable and accurate and to be The test paragraphs have a clear meaning that must be both true and consistent. Stability indicates that the test scores are identical when they are returned again, that is, it indicates the balance and stability of the students’ grades in the test.

Method of finding the stability of the test:

- **Half way split:** This method is one of the most widely used method, because it avoids the defects of some other method and in order to obtain two equal images of the test researcher by dividing the test paragraphs into individual and marital paragraphs and selecting the answers of the sample of the survey sample (100) Pearson correlation between the scores of individual and conjugal sections was obtained by the coefficient of stability (0.79). Since the half-stability coefficient of the test does not measure the total homogeneity of the test (because it is only half stability), the correction was done using the Spearman-Brown coefficient, Lg (0.88) is a good stability coefficient from the point of view of specialists.
- **Ceyord-Richardson-20 equation:** The stability coefficient was calculated using the Kord-Richardson equation 2020.R) if the stability coefficient (0.81) is a good stability coefficient.

Application of the Search Tool: the experimental and control groups were informed of the date of application of the test, one week prior to its completion, and was applied after the completion of the teaching of the specific material for the two research groups at one time and supervised by the researcher on the application of the test.

Statistical Method: the researcher used the t - test equation for two independent samples to make the equivalence between the experimental and control groups in the following variables: (the age of time calculated in months, the achievement of students in half the year in chemistry, the intelligence test (Danlys).

Results and Discusion

For the purpose of verifying the hypothesis, which states that there is no statistically significant difference at the level of significance (0.05) between the average score of the experimental group students who will

be taught with the thinking skills of the product and the average grade of the control group who studied according to the normal method of chemistry. The arithmetic mean and the standard deviation of the scores of the two test groups were calculated and the T value of two independent samples was calculatedthe calculated T value (0.974) is greater than the T-table value (2.0000) at the degree of freedom (74) and the significance level (0.05). Therefore, the null hypothesis is rejected. Thus, the students of the group who were taught according to the productive thinking skills May exceed the students of the control group who were taught according to the usual method used in the teaching of chemistry in the achievement test.Explanation of the results related to the first question: The results showed a statistically significant difference between the average score of the experimental group of students who studied chemistry with the skills of thinking product, and the average score of students of the control group who studied chemistry in the usual way in the collection variable for the benefit of the students of the experimental group[9]. This may be due to: To help the thinking skills produced in changing the attitude of students towards the material from the negative attitude to the positive attitude through the skills that drive students to learn themselves. The skills of thinking product provides the opportunity for positive interaction between the school and students[10], by increasing the discussions and active participation among students in the classroom by answering questions and interest in the scientific material and the application of information that they reach within and outside the classroom, which in turn helps to enhance their expertise and develop their abilities and increases Confidence in themselves because they are questions about their learning and raise their level of achievement in the article.Interpretation of the results related to the second question: Teaching the skills of thinking product has had a clear effect in increasing the achievement of students in the fifth grade applied in chemistry better than the usual method of teaching.

Conclusion

The skills of productive thinking contributed to raising the level of achievement of the fifth students applied in chemistry and increase their ability to understand information and knowledge and raise their academic level.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon, College of Basic Education, Babylon, Iraq and all experiments were carried out in accordance with approved guidelines.

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The Rate of Bacterial Contamination in the Operating Theatres of Al-Sadeer Hospital in Al-Najaf Province in Iraq

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Abstract

This study was conducted for the period from the first of October (2018) to the end of March (2019) to determine the rate and types of bacterial contamination in surgery theater in Al-Sadeer hospital in Al- Najaf Province. A total of 1709 bacteriological swabs were collected aseptically from different sites of surgical theater of Al-Sadeer hospital in Al- Najaf city. Swabs were streaked as soon as possible on blood agar and maCconky agar plates and incubated overnight. identification of bacterial species was based on standard bacteriological criteria. the inhibitory effect of 5%, 10% and 15% concentration of three commercially available disinfectants; Ioden, Minudes and incidine special spray solution. Solution were explored by agar diffusion method. Data were statistically analyzed. The result revealed that the overall bacterial contamination rate in surgical theater of Al-Sadeer hospital was 3.5%. Wall and floor had significantly higher contamination rate compared to disinfection solution and sterilized gauze (9.4% Vs 0%). *Escherichia coli* was the most predominant contaminant in surgical theater. The monthly distribution of positive cultures showed no clear pattern in different months and the result showed the month of March (2019) had significantly higher contamination, rate compared to November (2018) (5.7% Vs 2.08%).

Keywords: *Operating theatre, Surgical theater sites, disinfection solutions, Al-Sadeer hospital.*

Introduction

The operating theatre is the heart of any surgical hospital and contamination of this important site in hospital is considered one of the most life-threatening sources of nosocomial infection for patients, particularly in heart surgery, transurethral resection of prostate, transplant surgery, cystoscopy as well as bladder tumors[1]. Several reservoirs have been described as being accountable for the hospital contamination, particularly the operating theatre, including unfiltered air, ventilation systems and antiseptic solutions, drainage of the wounds, transportation of patients and collection bags, surgical team, extent of indoor traffic, theater gown, foot wares, gloves and hands, use of inadequately sterilized equipment, contaminated environment and grossly contaminated surfaces[2,3]. Depending on the numbers of pathogens involved, the influence of these above sources on the degree of microbial contamination differs. For instance, *Staphylococcus aureus* and the coagulase negative *staphylococci* are the major pathogens associated with infection of implantable biomedical devices[4]. The clinical implication of microbial contamination in operating theatre is dependent in both the caring surgical team and the patient itself Chacko et al., (2003). Studies have found about, 10% of all infections can have serious consequences in terms of increased patient morbidity, mortality, and length of hospital stay and overall costs(Reddy,2012, Haque et al., 2018). Nevertheless, it can be stopped through suitable application of infection control practices. Reduction of airborne bacteria in the operating theatre by around 13-fold, for instance, would decrease the wound contamination by approximately 50%[6,7]. Decrease of microbial contamination depends

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primarily on developed cleaning and correct disinfection of operating theatre[9,10]. Numerous patients are worried about the risk of postoperative infections, Therefore, our study aimed to evaluate the incidence of bacterial contamination of operating theatres in one of the busiest hospitals in Al Najaf, Iraq, Al Sadeer Hospital, and to identify the contaminating agents and their distribution within different theatres.

Material and Method

Study Design and Setting: A cross sectional study had been conducted in operating theatres at Al-Sadeer hospital in Al-Najaf province, which is one of the southern province in Iraq for the period from 1st of October 2018 to the end of March 2019.

Sampling: A total of 1709 swabs were collected from different site of surgical theater including Walls & floors, Ventilation outlets, Sterilized gauze, Disinfection solution, Anesthesia trolley, Client bed, Sucker, and Surgery instruments. Cultural Media: Swabs were cultured as soon as possible on cultural media; Blood agar, MacConkey agar, being prepared according to the manufacturing companies, and incubated at 37°C for (24-48) hours.Culture examination and bacterial diagnosis: Isolation and identification of bacterial isolates were based on colonial morphology and biochemical criteria. Gram's stained film examination according to stander method Brooks et al., (1998).

Results and Discusion

A total of 1709 swabs were collected from different sites of surgical theater. 60 bacterial positives were recovered with an isolation rate of 3.5%. The highest isolation rate was from theater's walls and floors (9.4%) for each, followed by client bed (5.7%) and ventilation outlets (5.4). on the contrast, no bacterial isolation was recovered from sterilized gauze and Disinfection solution. The difference in the isolation rate among these sits was statistically significant ($p>0.05$) Table (1).

Table (1): Bacterial isolation rate from different sites of surgical theater.

Surgical Theater Sites	No. Examined	Bacterial Positive	
		No.	(%)
Walls & floors	212	20	9.4
Ventilation outlets	203	11	5.4
Sterilized gauze	203	0	0
Disinfection solution	200	0	0
Anesthesia trolley	206	5	2.4
Client bed	212	12	5.7
Sucker	270	9	3.3
Surgery instrument	203	3	1.5
Total	**1709**	**60**	**3.5**

In Table (2) identification of bacterial isolates revealed that, *Escherichia coli* was the most common isolate (58.3%), followed by *Staphylococcus aureus* (20%). However, *Klebsellia spp*. recorded in this study a very low rate (3.3%).

Table (2) Bacterial isolated as a proportion of the total number of positive cultures.

Bacterial isolates	No.	%	Type
Escherichia coli	35	58.3	Gram negative
Staphylococcus aureus	12	20	Gram positive
Pseudomonas spp.	11	18.3	Gram negative
Klebsellia spp.	2	3.3	Gram negative
Total	**60**	**100**	

To demonstrate the possible source of contamination, the distribution of bacterial isolates according to operating theatre were examined. The results showed that, most *Escherichia coli*isolates were from walls & floors(n=14) and most *Staphylococcus aureus* isolates were from walls & floors and Client bed. In addition, the most *Pseudomonas spp.* isolates were from sucker (n=5) while only two isolates from *Klebsellia spp*. were from client bed. These was from total type of bacterial isolation, Figure (1).

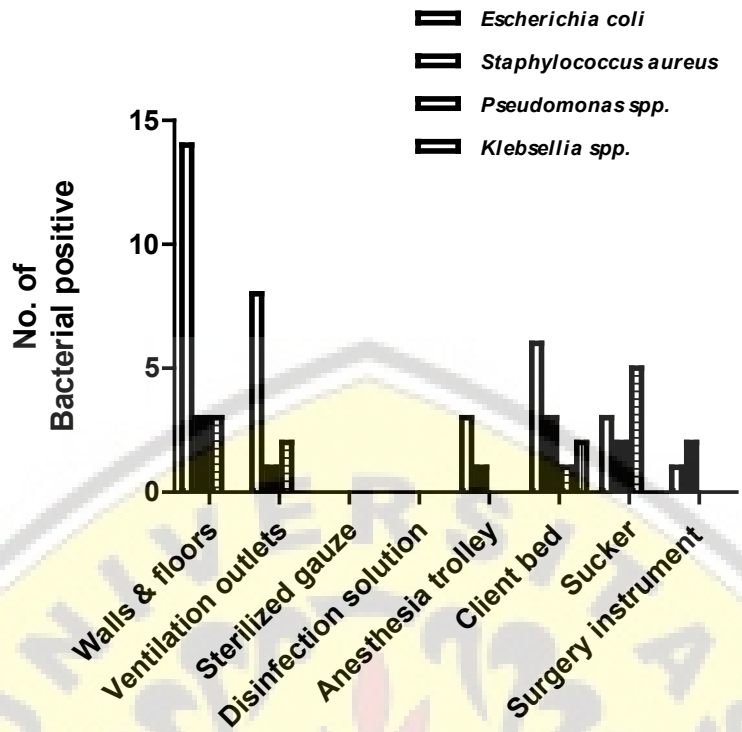

Figure (1) Number and type of isolates identified from the different operating theaters

The monthly distribution of positive cultures showed no clear pattern in different months. In general, there was a highest isolation rate was from March month (5.7%) followed by February month (4.1%), October and December months (3.1 and 3% respectively), while the low rate of bacterial isolates was in November month (2.08%). The difference in the isolation rate among these months was statistically significant P> 0.05. Table (3).

Table (3) Incidence of positive cultures from total number of samples obtained per month.

Month	No. examined	Bacterial positive	
		No.	(%)
October (2018)	128	4	3.1
November (2018)	288	6	2.08
December (2018)	300	9	3
January (2019)	386	11	2.84
February (2019)	311	13	4.1
March (2019)	296	17	5.7
Total	1709	60	3.5

One isolate from different bacteria were employed to test the inhibitory effect of the three disinfectants (Ioden, Minudes and incidine special spray solution) in three concentrations 5%, 10%, 15%).Table (4) showed that no growth of bacteria was observed in 15% concentration of Ioden solution. While only *Escherichia coli* and *Klebsiella spp.* were no growth in 10%. *Escherichia coli*, *Pseudomonas spp*. and *Klebsiella spp*. were no growth

in 15% concentration of minudes solution. All bacteria were no growth in 15% concentration of in incidine special spray solution, while in 10% concentration *Escherichia coli*, *Pseudomonas spp*. and *Klebsiella spp*. were no growth.

Table (4) Effect of disinfection solution on growth of bacteria.

Type of bacteria	Iodine Solution			Minudes Solution			Incidine special spray solution		
	5%	10%	15%	5%	10%	15%	5%	10%	15%
Staphylococcus aureus	+	+	-	+	+	+	+	+	-
Escherichia coli	+	-	-	+	+	-	+	-	-
Pseudomonas spp.	+	+	-	+	-	-	+	-	-
Klebsiella spp.	+	-	-	+	-	-	+	-	-

Hospital acquired infection and evolving bacterial resistance have become major public health concerns in Iraqi hospitals. Therefore, the present study was designed to evaluate the incidence of bacterial contamination of operating theatres in one of the busiest hospitals in Al Najaf, Iraq, Al Sadeer Hospital, and to identify the contaminating agents and their distribution within different theatres.

Throughout the study period, a total of 1709 swabs were collected from different sites of surgical theater. The results showed the overall isolation rate of bacterial positive from different sites of surgical theater was 3.5% However, these results are not surprising. In a study conducted in Al- Imam Ali Hospital in Baghdad to address bacterial contamination in the surgical theaters, the contamination rate was found to be 3.7% in 2001 and increased to be 4.0% in 2002 (Ensayef et al., 2009).

On the other hand, the highest isolation rate of bacterial from theater's walls & floors, Client bed and Ventilation outlets compared to other sites seem logical. A possible explanation for this might be that these sites exposed to contamination more than the other sites in theater, as well as, theater's staffs are usually enforced to clean the reachable sites with available antiseptics shortly before allowing the laboratory personnel to collect swabs.

Another important finding was that *Escherichia coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* are the commonest microorganisms reported bacterial contaminating the operating theatres of the percentages were 58.3, 20 and 18.3 respectively. This result is in keeping with current study, which found *Escherichia coli*, *Pseudomonas aeruginosa* and *Staphylococcus aureus* are the commonest microorganisms reported by sixteen Iraqi health directorates during the first 6 months of 2018. Only few health directorates have recorded fungal contaminations, and none have reported anaerobic microorganisms. Therefore, greater efforts are needed to ensure our programmers of infection control should be extended to target these microorganisms. Whether these microorganisms are originated from the patients (endogenous risk factors) or from procedure-related (external risk factors) such as staff, instruments and consumers. In this study, it is interesting to note that there was not clear pattern in the incidence in different months during the period of study. This result also has presented in Ensayef et al., 2009 studywhich conducted in Al Imam Ali Hospital in Baghdad-Iraq. This may indicate that sterilization method are not efficient in our operating theaters and are putting patients at risk of postoperative infections. The inhibitory efficiency of disinfectants on bacterial contaminants depend of the mechanism of action of their active ingredient and the concentration employed. Consequently, the highest inhibitory effect of Ioden, minudes, incidine special spray solution in concentration of 15% in the present study probably related to its powerful surfactant effects on bacterial contaminants in this concentration. Therefore, selection of these disinfectants should be based on this a high concentration.

Conclusion

In conclusion, this study has shown that there was no clear pattern in the incidence in different months during the period of study. The most common contaminant species found in the different operating theatres (*Escherichia coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa*) had some relation to the kind of operation. This may indicate that sterilization method are not efficient in our operating theatres and that will be putting patients at risk of postoperative infections. Therefore, efforts should be made to ensure strict infection control practices in the operating theatre of Al-Sadeer hospital in Al- Najaf city. Moreover, selection of effective disinfectant should be based on it is active ingredient and concentration.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Nursing, University of Kufa, Iraq and all experiments were carried out in accordance with approved guidelines.

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Vaginal pH as a Marker for Bacterial Pathogens and Menopausal Status

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Abstract

The study had two objectives : (1) to confirm the elevations of vaginal PH expected in patients with bacterial pathogens in premenopausal women and (2) to examine the relationship of serum FSH and estradiol levels to vaginal PH in postmenopause patients without bacterial pathogens. Vaginal PH was determined by universal indicator PH paper in 182 patients seen in Al-Zahara`a Hospital in Najaf city for routine speculum examination. None of the patients were pregnant. Measurements were made of serum levels of follicle – stimulating hormone and estradiol for 81 patients and vaginal culture were taken for all 182 patients. Vaginal PH was correlated with vaginal cultures and serum follicle – stimulating hormone and estradiol levels by use of statistical analysis. Vaginal PH was elevated in all premenopausal patients with documented bacterial pathogens. Serum estradiol levels showed an inverse and serum follicle – stimulating hormone levels a direct statistical correlation with vaginal PH in postmenopausal patients.

Keywords: *Vaginal pH, bacterial pathogens, menopausal status.*

Introduction

In an area of increasingly managed care physicians are continually urged to curb the use of expensive, "high–tech" diagnostic tools[1]. In response, we must develop new " low – tech " diagnostic tools that are also cost effective. This article describes preliminary studies of acost – effective " low – tech " diagnostic tool. Despite the important implications for women's health and reproduction, little is known about the mechanisms that control and regulate vaginal pH. The prevailing lactobacillus – Doderlein theory postulates that the acidic vaginal luminal pH is produced by cohabituating Doderlein lactobacilli that produce Hydrogen peroxide and secret proton, in to their immediate environment.[1] Anew hypothesis for the regulation of vaginal ph proposes that the luminal vaginal pH is determined by active proton secretion by vaginal epithelial cells through the coordinated action of Ion transport mechanisms located in the apical cell membrane . The active net proton secretion occurs constitutively throughout a woman's life but the degree of acidification is estrogen dependant, mostly through the involvement of estrogen receptors[2]. The vaginal pH, as applied to two conditions, vaginitis and menopause. Vaginitis is the most prevalent disorder for which women seek medical assistance [3,4] . In the presence of vaginitis, an elevated vaginal pH > 4.5 may characterize various conditions such as : Bacterial vaginosis, Trichomoans vaginalis, group B streptococcus, or other pathogenic organisms . The diagnosis of trichomonal vaginalis and yeast or candidal infections is fairly straightforward, the diagnosis of bacterial infections of the vagina has undergone an erratic course . However, in the absence of vaginitis, an elevated vaginal pH may reflected low circulating estrogen levels (i.e, oestradiol < 40 pg/ml) or in adequate response of atrophic vaginal epithelium to oestrogen replacement therapy[(5)] . The most widely reported such disorder is bacterial vaginosis[3,4]. The use of vaginal pH, amine whiff testing, wet mount, and Gram's stain examination of the vaginal discharge[(6)] in some combination are among at least seven diagnostic sets of criteria that have been used for diagnosis (Nugent's, spiegel's and Amsel's Diagnostic criteria's) [7]. However, an elevated vaginal pH (5.0 to 6.5) in a normally estrogenized patient is almost always associated with bacterial vaginosis[(3,4,8,9)] these indirect measures reflect an attempt at cost containment and speeding diagnosis by eliminating culture which other wise would be the

gold standard for the diagnosis of vaginitis or vaginosis . Although anaerobic organisms are considered the most prevalent in bacterial vaginosis, the presence of Gardnerella vaginalis is not currently considered to be pathognomonic for this disorder because G.vaginalis has been reported to be present in high percentages in the vaginas of asymptomatic individuals [10]. Although hydrogen peroxide – producing lactobacilli are reduced in number, G.vaginalis secmingly antecedes the Increased numbers of anaerobic organisms in the development of bacterial vaginosis[11].

Methodology

The present study was carried out on 182 patients, 101 pre menopause and 81 post menopause women who were selected randomly from women attending the Gynecology out patient clinic of Al-Zahra'a hospital in Al Najaf city . History was taken from all the patients, including : name, age, parity, gynecological history involving the past menstrual history (onset of menarchae, regularity, duration and frequency of the period), contraception, vaginal discharge and dysparonea, past medical, family and social history. Pelvic examination also was been done to all the patients by inspection and steril non – lubricating speculum bright light .Exclusion criteria from the study were: pregnancy, vaginal medications, and hormonal replacement therapy . An informed consent was obtained from each omen prior to their enrollment in the study . Vaginal pH . Was measured with universal Indicator pH strip after insertion of a non lubricated sterial vaginal speculum, the strip was applied directly to the lateral vaginal wall at the outer third of the vagina until it become wet . colour change of the strip was immediately compared with colorimetric scale and the measurement recorded . Care was taken to avoid cervical mucouse and blood, known to affect vaginal pH . Blood samples were obtained by venipuncture within 1 hour of vaginal pH test and assayed for serum FSH and estradiol levels were determined by Eliza technique and reported in milli international units per milliliters (mlU/ml) and pictogram per milliliter (pg/ml), respectively. The typical level of FSH in post menopausal women is > 20 mlU/ml[(14)]. Women were considered to be menopausal if oestradiol value was < 40 pg/ml[(19)].

Statistical Analysis: Predictive value table were generated by standard techniques [(20)] . two issues are involved in the assessment of any diagnostic test : Disease present or absent and diagnostic test result positive or negative (table 1) . TP, True positive; FN, False negative; FP, false positive; TN, true negative. Positive predictive value =TP/(TP+FP); false –positive rate = (100% - positive predictive value); Negative predictive value = TN/(FN+TN); False – negative rate = (100% - Negative predictive value); Efficiency = (TP+TN)//All.It is customary to define certain rates as applied to data categorized in this manner . The predictive value of apositive or negative test result is defined as the number of true – positive or true – negative tests divided by all positive or negative tests, respectively . False – negative rates are calculated by subtracting the respective predictive value of positive or negative test result from 100% . The sensitivity of a test is defined as the number of true – positive test result divided by all who had the disease . The specificity of a test is defined as the number of true negative test results divided by all who did not have the disease . The efficiency of a test result is defined as the sum of all true – positive and true – negative result divided by all who had the test .

Result

We have four age group of premenopausal women correlated to their vaginal pH their bacterial pathogen. The mean pH of three subgroups growth of aerobic bacterial organisms was significaulty higher than that obtained in patients with either normal flora or yeast infection . There was no significant difference in vaginal pH among the three sub group with bacterial pathogens, and there was no significant difference between the pH in patients with yeast infection and those with normal flora . All 80 patients with positive culture results were asymptomatic apart from thirteen patients were symptomatic . The symptomatic patients retained after appropriate antibiotic treatment and all had a normal vaginal pH after therapy . When examined in the predictive value formate (table 3), an elevated pH > 4.5 was 95% sensitive 100% specific, and 95% efficient for the presence of aerobic pathogen (excluding yeast) in pre menopausal women. In assessing the status of the vaginal ecosystem the hydrogen Ion concentration (pH) of the vagina is perhaps the most significant predictor of its status and that " three simple procedures can be performed in the office to characterize the vaginal ecosystem : pH determination, whiff test and microscopic examination of Gram stained vaginal discharge[(6)] . There are three of the following four criteria needed for the diagnosis of bacterial vaginosis : pH > 4.5, Clue cells, positive potassium hydroxide, and homogenus discharge [(3,6)] . Platz. Christensen et al. have stated : " the occurrence of clue cells and an increased pH of

the vaginal fluid were utilized as indications of BV[21] . The clinical consequences of an elevated vaginal pH have been recently amplified, Hillier et al. reported that bacterial vaginosis is associated with preterm delivery of low – birth – weight in fants, independent of other recognized risk factors . Women with avaginal pH > 4.5 and a Gram stain score > 7 on a scale of 0 to 10 were considered to have bacterial vaginosis[5,7] . Ernest et al.[22] reported that among 115 women at high risk for a low birth weight infant those with a mean vaginal pH > 4.5 had a three fold increased risk of premature rupture of the membranes compared with those with a mean pH ≤ 4.5 . These articles, along with a study by krohn et al.[9] . and the current American collage of obstetricians and Gynecologists technical bulletin[3] on vaginitis, all stress the pivotal importance of the vaginal pH level for the diagnosis of bacterial vaginosis . This study supports the fact that recovering potentially pathogenic bacteria from the vagina result in an elevated vaginal pH (5.0 to 6.5)[3,4,8,9,22] . In menopausal women two factor may influence vaginal pH, menopausal status and the presence of potentially pathogenic organisms [23]. Cultures were obtained to adjust for estradiol status and culture results . There fore it is not surprising that the false – positive rate were high . However, the false – negative rates were 0%, demonstrating that vaginal pH is still useful . this is supported with caillouette et al. study [5] . The observation that the presence of G.vaginalis precedes the development of bacterial vaginosis warrants consideration of it's treatment even in asymptomatic individuals . If G.vaginalis were eradicated, perhaps the numbers of Individuals who have bacterial vaginosis and it's associated disorders could be reduced . For this reason alone vaginal pH should become a routine test during most speculum examinations [5] . patients during serum estradiol transition or menopause and patient who have become noncompliant as a result of side effects of Hormonal replacement therapy could do self testing for vaginal pH . This could become as a routine as self – testing of urine and blood for diabetes, breast self examinations, or self testing of blood pressure for hyper tension . The goal is to achieve patient cooperation and compliance, resulting in a vaginal pH of 4.5, with relief of menopausal symptoms and side effects . In normal fertile women, lactobacilli maintain the normally acidic vaginal pH that protect the vagina against colonization by potential uropathogens through several mechanisms . First, the maintenance of a low pH is of direct importance as reported by Stamey et al. [24] . Who observed that colonization of the vaginal introitus with E-coli is rarely noted at a vaginal pH below 4.5 . Second, some strains of lactobacilli produce hydrogen peroxide that prevent vaginal colonization with uropathogens [25] . Finally, fragments of lactobacillus cell walls prevent the attachment of E-coli to epithelial cells, perhaps by blocking potential sites of attachment [26] . Hence, exclusion of vaginitis is essential for the vaginal pH to reflect the state of the menopausal vagina . In the current study, both vaginal pH and serum FSH showed similar sensitivity (p = 0.516) in predicting oestradiol levels < 40 pg/ml .

Table (1). Predictive value table

	Test result positive	Test result negative	Total	
Disease positive	TP	FN	TP+FN	Sensitivity = TP/(TP+FN)
Disease negative	FP	TN	FP+TN	Specificity = TN/(FP+TN)
Total	TP+FP	FN+TN	All	

Table (2) Correlation of age group of premenopause with vaginal pH and bacterial pathogen

Age Groups Years	No.	Vaginal PH No (%)		Bact. Patho. Growth
		≤4.5	>4.5	No(%)
15-20	21	7(33.3)	14(66.7)	15(71.43)
21-30	31	11(35.48)	20(64.15)	24(77.42)
31-40	39	4(10.26)	35(89.74)	32(82.05)
41-45	10	3(30)	7(70)	9(90)

Table (3): PH as predictor for positive β-hemolytic streptococci, Klebselia or mixed aerobic organisms in premenopausal women.

	Test + ph > 4.5)	Test – (ph ≤ 45)	Total	
Disease +	76	4	80	Sensitivity 95%
Disease -	0	14	14	Specificity 100%
Total	76	18	49	

Table (4). Correlation of age groups of postmenopause with vag. pand bacterial path.

Age groups	No.	Vaginal PH No. (%)		Bact. Patho. Growth
		≤ 4.5	> 4.5	
Less than 50 yrs	21	3(14.29)	18(85.7)	10
51-60 yrs	38	2(5.26)	36(94.7)	3
More than 60	22	0(0)	22(100)	1

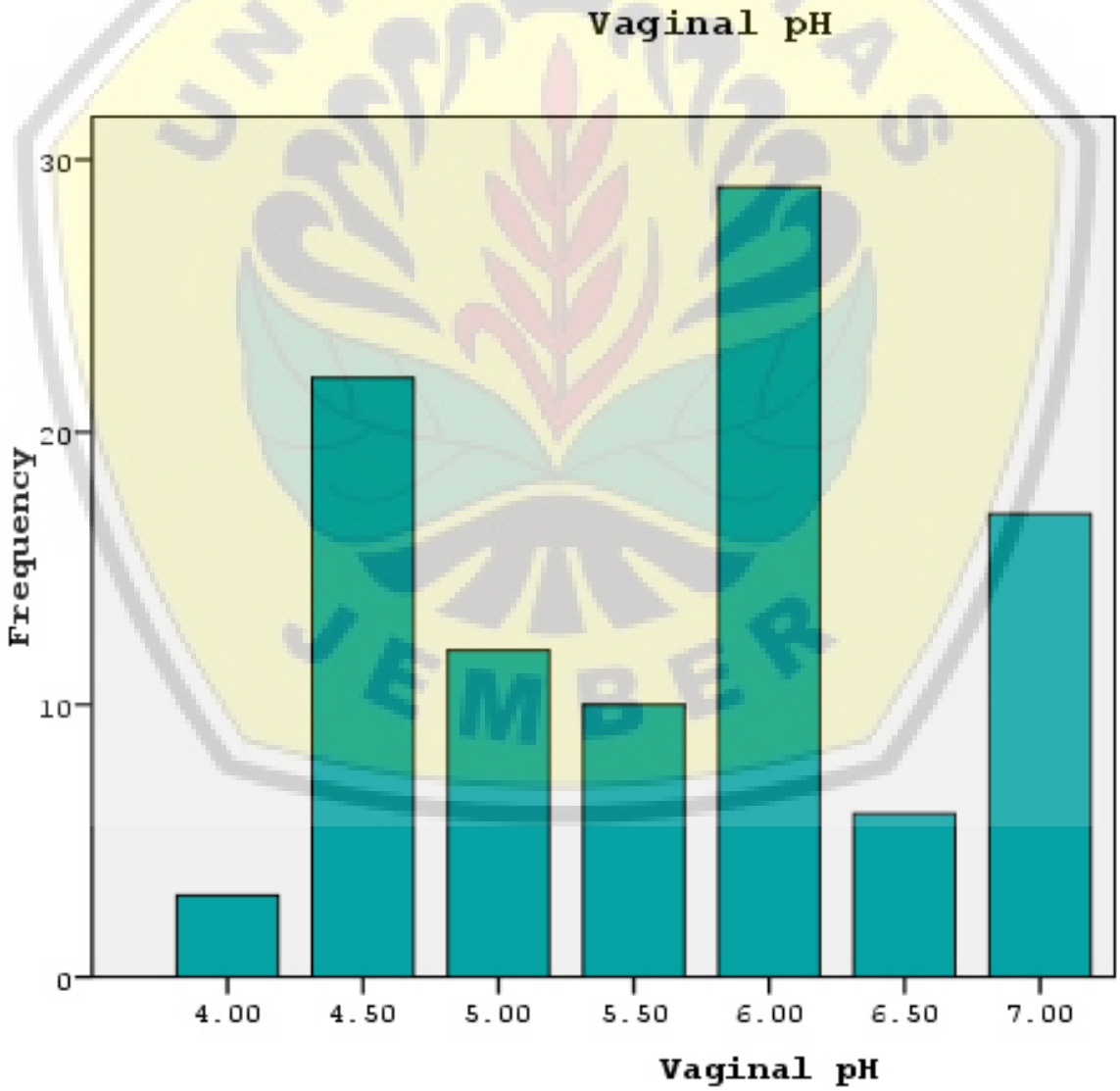

Figure (1) Frequency of Vaginal pH of premenopausal women

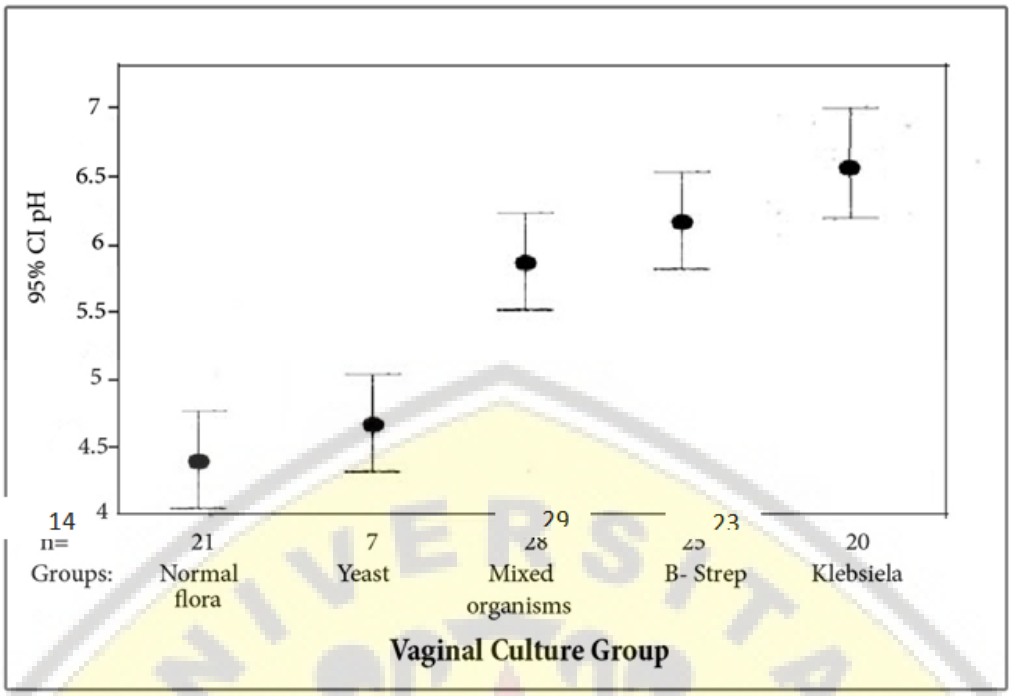

Figure (2) One hundred one premenopausal patient who had vaginal PH determinations and vaginal cultures to confirm relationship of vaginal PH to bacterial pathogens.

Conclusion

Measurement of vaginal pH is simple, low cost effective, and inexpensive for screening purpose . A vaginal pH of 4.5 is consistent with a pre menopausal serum estradiol level and the absence of bacterial pathogens . An elevated vaginal pH in the 5.0 – 6.5 range suggest a diagnosis of either bacterial pathogen or decreased serum estradiol . In patients with an elevated pH in pre menopausal period vaginal culture should establish the diagnosis . In the absence of bacterial pathogens ., a vaginal pH of 6.0 to 7.5 is strongly suggestive of menopause .

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Al-Diwaniyah Health Office, Ministry of Health, Diwaniyah, Iraqand all experiments were carried out in accordance with approved guidelines.

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Comparison between the Effect of Normal and Nanoparticles of ZnO Against Different Types of Bacteria Isolated from Patients with Acne

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Abstract

This study aims to clarify the antimicrobial behavior of ZnO nanoparticles contrary to Gram-positive and Gram-negative bacteria isolated from patients with acne . The effects of concentration of normal and nanoparticles of ZnO were detected by using microbiological experiments like well agar diffusion method . These tests were performed following standard method; and the concentration studied of normal particles were 5, 10, 15, 20 mg/ml,while the concentration of nanoparticles were 3.12, 6.25, 12.5, 25, 50 mg/ml. Out of 72 patientssuffered from skin infection; 60 only give positive results for bacterial growth, whose ages range between (18- 23) years old . And the swabs were collected and transformed for microbiology lab at 20 min approximately. The bacteria isolated,distributed to (16) for each of *Staphylococcus epidermidis* and *Staphlococcus aureus*, (10) for each of *Propionibacterium acnes* and *Pseudomonas aeroginosa,* And *Acinetobacter baumanii* and *Proteus mirabilis* have (4) isolates for each one. The results revealed that, the antibacterial action of ZnO nanoparticles, have more effectiveness than normal particles at all except for *S. epidermidis* which show susceptibility and inhibition zone with the lower concentration of ZnO NaPs .

Keywords: *ZnO nanoparticles, Acne, Antibacterial agents*

Introduction

Acne is a chronic disease may be due to inflammatory infection of the pilosebaceous elements of the tissues, and follicles of hair in the skin, containing an oil gland, that is caused, improvement of sebum production due to androgen-induction, transformed keratinization, infectious agents, and bacterial settlement of hair follicles on various sites in the body like, face, chest, back, and neck [1]. In teenagers, acne affects that lead to facial scarring may reaches nearest 20% and, acne may continue to the adulthood, with injurious sequelae on less consideration[2]. The clinical signs of acne consist of seborrhea, inflammatory abrasions, non-inflammatory lesions and scarring with several levels [3]. Although the significant roles in the severity of illness,due to history of the family and initial colonization with bacterial types, and precisely which prompts acne and how treatment regimen affects, the progression of the disease remain unclear . Diet as well as have been involved, but its role not confirmed certainly yet[4]. The availability and diffusion of the oxygen is the challenge within the follicle unit to the cells beneath; that lead to provide a perfect anaerobic environment for *Proprionibacterium acnes* growing and obliging their metabolism; Furthermore, the supplements and nutrients as a fatty acids because of the sebum overproduction; induce the bacteria to reproduce rapidly in the pilosebaceous constituent [5]. By receptors, specifically the Toll like receptor 2 and 4, White blood cells can recognize the lipoproteins of these foreign pathogens and that lead to induction keratinocytes to produce interleukin 6 and 8, and enhance erythematous inflammation; as well as white blood cells create an erythematous pustule as a

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results of influence of inflammatory mediators and their affect against the pathogenic agents; and after a period of time, the immune response the lesions are healing and the skin as possible as return to normal[6].

Materials and Method

72 swabs were collected from patients with acne, from the students of university for a period of two months . The patient's age ranged from (19 - 24 years). only 60 patients show positive results for bacterial infection . The specimens are generally collected from patients with acne by sterile swab. Those specimens were collected under decontaminated conditions to prevent any possible contaminated situation . The swabs are taken from acne after sterilization the skin by alcohol. Tubes containing normal saline are used transfer the specimen and maintain it moisture, until taken to laboratory or immediately transfered to the laboratory during 30 minutes after placed in its cover. Blood agar, nutrient agar, chocolate agar and MacConkey's agar used to inoculation in aerobic and anaerobic conditions, and incubated for 24hrs. at 37°C. The concentration studied of normal particles were (5, 10, 15, 20 mg/ml), while the concentration of nanoparticles were (3.12, 6.25, 12.5, 25, 50 mg/ml) . By cork poorer we make pore in agar plates and put the solution of the normal and nanoparticles of ZnO products in it, incubation time usually longed for an overnight at 37ºC. The inhibition zones were measured using a caliper. Chemical route has been used to synthesis of (ZnO NaPs). Mercaptoethanol used as molecules for surface capping to maintain the stability of the particle size Analysis by x-ray photoelectron spectroscopy and infra- red spectroscopy to confirm presence of ZnO particle with capping molecules. Nanoparticles of ZnO ranged from 2 to 7 nm . The logical utilize mercabtoacetamide as appropriate reagents in the assurance of some metal particles is well-established. Because of the nearness of nitrogen, Sulfur and oxygen molecules at appropriate positions, N-alkyl-2-mercaptoacetamides are accounted for to carry on as monofunctional bidentate ligands and furthermore indicate linkage isomerism in their complexes. In the vast majority of the metal buildings, these ligands are accounted for to carry on as N,S reinforced or O, S-fortified ligands. Notwithstanding, some edifices have additionally been accounted for in which these ligands are reinforced through N and O particles with metals. Notwithstanding above, these ligands are accounted for to exist in following two conformational isomeric structures. ZnO as an economical n-sort and commendable semiconductor involved with has coordinate and wide hole of band of 3.37 eV at room temperature. Also, vitality about 60 meV restricted by a huge free - exciting . ZnO NaPs solidified as three forms : hexagonal wurtzite, cubic zinc blend, and the infrequently watched cubic rock salt; hexagonal wurtzite represent the most The stable structure at room temperature.

Results and Discusion

In this study, a total 0f 72 swabs obtained from patients suffering from acne, from the students of university in Karbalaa/Iraq during a period of two months . The patient's age ranged from (19 - 24 years). Only 60isolates of different bacteria were obtained as shown in Table (1) .The large group of microorganism universally cause acne and skin infection is the gram-positive bacteria . *S. aureus* seemed is the greatest pathogenic of the staphylococci,The high isolation frequency of *S. epidermidis* may belongs to establishment of these bacteria deeply inside the duct or also on the surface of the skin; also Ghodsi stated importance of these bacteria to avoid colonization by other pathogens and in maintain the balance of skin's micro flora. In opposite to other Gram positive bacteria and *P.acnes*, *S. aureus* and *S. epidermidis*can produce highly active antimicrobial components; and the lactic acid produced by *S. epidermidis* can be ferment by *P.acnes* to from acetic acid and propionic acid. *P.acnes* play a role in the progress of acne because it living away from skin's surface deeply in pores and follicles. Using a sebum, by products of metabolism and cellular debris for energy and nutrients; so highly active sebaceous glands manufacture a high sebum and obstruct a follicle, causing *P. acnes* bacteria to grow and reproduce. Four isolates of *Acinetobacter* had been isolated, and when compared by other studies we found that; these bacteria were broadly dispersed in population; and extensively spread in environment and can sometimes be cultivated from skin infections. Morever, the isolation of *Proteus mirabilis* from patients with severe form of acne has been demonstrated.

The effect of natural ZnO and ZnO NaPs on the bacteria isolated: In this study we used different Concentration of natural ZnO and ZnO NaPs . All Conc. of natural ZnO shown negative results with all isolates of *S. aureus* . While these bacteria appear sensitive in Conc. (25 and 50 mg/ml) of ZnONaPs . The results illustrated in the figure 2. The isolates of *A. baumanii*

and *P. mirabilis* approximately gave the similar results . They appear resist to natural ZnO . While only the conc. of ZnO NaPs 50 mg/ml kills the bacteria with 23 and 24mm of inhibition zones respectively, as the figure 3 . *P. acnes* and *P. aeroginosa* approximately give the nearest results and at the conc. 12.5, 25, and 50 mg/ml of ZnO NaPs; appear sensitive while against natural ZnO these bacteria show resistance against all Conc. prepared . Fig (3). Different types of bacteria can be efficiently affected by nanoparticles of ZnO and studies listed that, more smaller the particles in size, more effective in controlling and shedding the microorganisms. And Sunada displayed that, greater efficiency. A very wide range of microorganisms are significantly affected by nanoparticles of ZnO, by a different mode of actions such as accumulation of these particles within cell membrane or cytoplasm; and its size are highly influence on their mode of action; besides less is known about their toxicity and function at all; and many future researches are needed about that. Different concentrations of these particles with various types are studied and the inhibition developed at about 60 percent against *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Streptococcus pyogenes* and *Bacillus subtilis*. On the other side, In lesser concentration, many bacteria can be significantly growing and developing, and these nanoparticles recorded to be non-toxic to these bacterial species; because of that, these bacteria expected to metabolize and digest Zn^{2+}.In our study, *Staph. epidermidis* give bizarre results because the bacteria show susceptibility and inhibition zone with the lower concentration of ZnO NaPs; while with higher concentration of these particles the bacteria appear more resist and the inhibition zone narrowed than with the high concentration with these nanoparticle ions. The results illustrated in the figure 4. Some of bacterial species developed mechanisms to protect their cells from metal ions or extra metal ions by efflux and influx pump mechanisms to preserve stable concentration of these ions intracellularly; Zn^{2+} ions are from these ions; and numerous bacterial species have involved the genes responsible for transporting zinc ions including *Staphylococcus aureus, Streptococcus pneumoniae, Haemophilus influenzae,, Synechococcus* spp., *B. subtilis* and *Escherichia coli*. *zntA* and *zntR* genes recorded to be involved in In *Staphylococcus aureus*, and ZntA protein act as a transmembrane protein, that is responsible for the efflux of zinc ions and cobalt ions, while ZntR encodes for regulatory protein of Zn ions responsiveness. So the expectation is that; if the bacteria detect higher concentration of ZnO NaPs, they transport it out of the bacterial cell by efflux pump to protect the bacterial cell from damaging by high concentrations of these particles . And reach to the steady state as soon as possible to maintain the cell properties and characteristics.

Table (1): Prevalence of bacteria associated with acne .

Number of swabs	Number of isolates		Negative growth
72	Gram Positive Bacteria	Gram Negative Bacteria	12(17%)
	42(58%)	18(25%)	

Table (2): The genera and species isolated, in number and percentage.

Type of Bacteria	Number	%
Staphylococcus epidermidis	16	27
Staphlococcus aureus	16	27
Propionibacterium acnes	10	17
Pseudomonas aeroginosa	10	17
Acinetobacter baumanii	4	6
Proteus mirabilis	4	6
Total	60	100

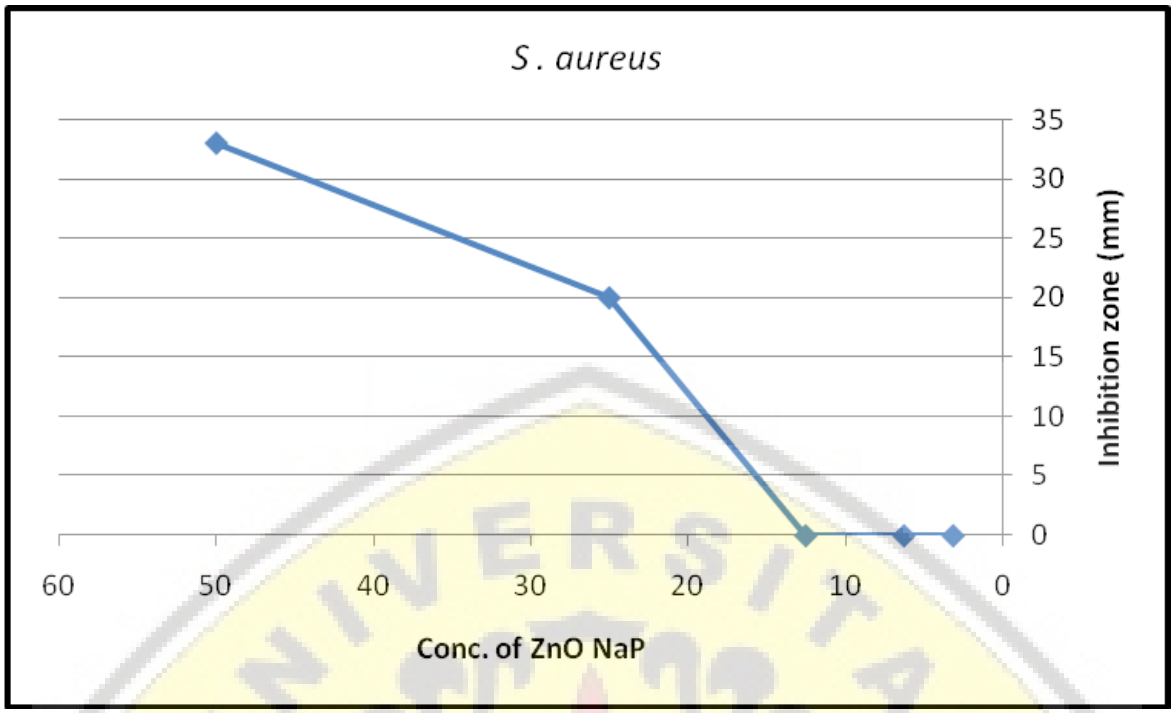

Figure (1) : The effect of ZnO NaPs on *S. aureus*

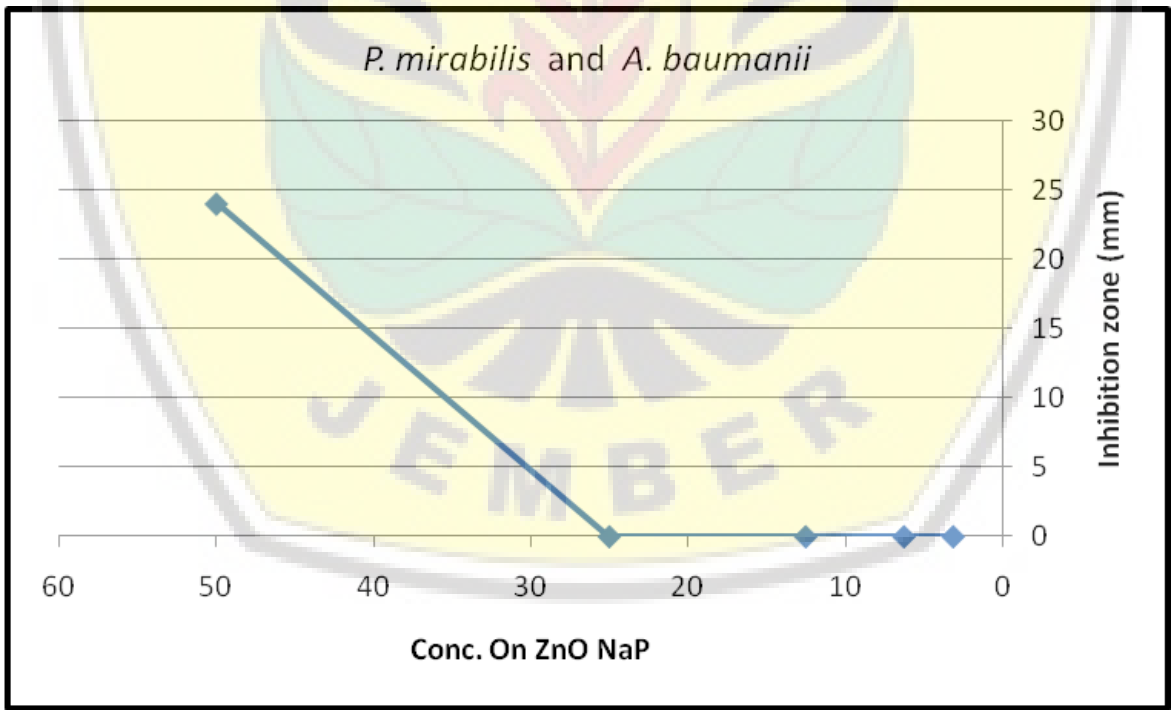

Figure (2) : The effect of ZnO NaPs on *A. baumanii* and *P. mirabilis*

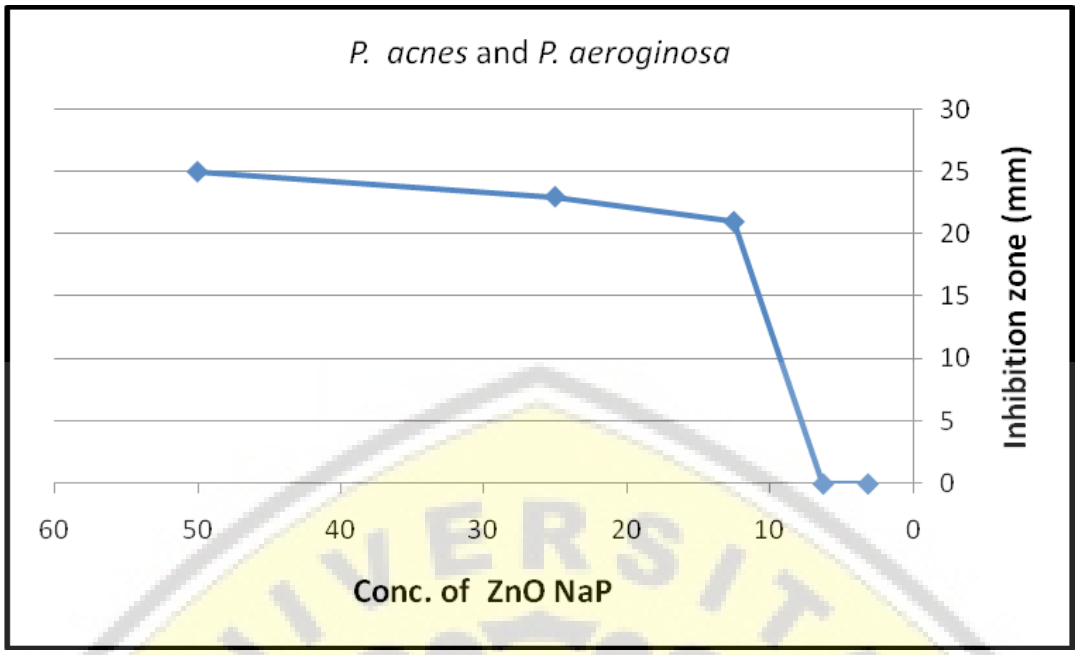

Figure (3) : The effect of ZnO NaPs on *P. acnes* and *P. aeroginosa*

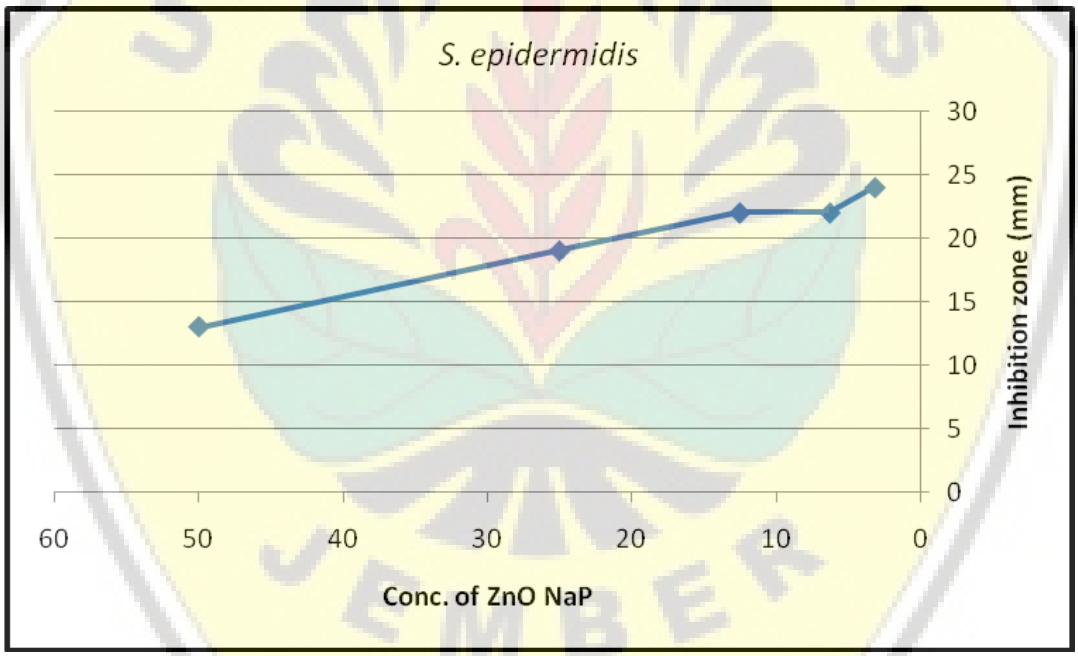

Figure (4) : The effect of ZnO NaPs on *S. epidermidis*

Conclusion

In the future, lotions and ointments of ZnO nanoparticle preparations may be employed for external uses for acne and some skin infection, mouthwashes, and surface layers as antibacterial agents to avoid colonization, attachment, formation biofilms and spreading of the bacteria in indwelling medical devices.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Kerebala/ Veterinary college – Microbiology department, Iraq

and all experiments were carried out in accordance with approved guidelines.

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Detection Some Pathogenic Bacteria Causing UTI in Type 2 Diabetic Patients and Determine Some Resistance Genes in Escherichia coli by PCR in Kirkuk City

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Abstract

Determine some types of bacteria that cause urinary tract infection among type 2 diabetes mellitus patients. A cross-sectional study was carried out among 210 patients selected by using non probability sampling (purposive sampling). According to study findings females were 64.3% of the study sample, most of them were an elderly age, 26.2% of them had positive urine culture and Escherichia coli was the most common cause of UTI and then Klebsiellapneumoniae and Staphylococcus aureus. Sensitivity tests were done to determine resistance of bacteria to antibiotic that used in this study and determine some of the resistance genes in E. coli. The gyrA gene and dfrA1 gene are found in resistance isolates of E. coli to Nalidixic acid and Trimethoprim respectively.

Keywords: *Urinary Tract Infection, Type 2 Diabetes Mellitus, Resistance genes, PCR.*

Introduction

Urinary tract infections are more common, more severe, and carry worse outcomes in patients with type 2 diabetes mellitus. They are also more often caused by resistant pathogens. Various impairments in the immune system, poor metabolic control, and incomplete bladder emptying due to autonomic neuropathy may all contribute to the enhanced risk of urinary tract infections in these patients.(1)

Type 2 diabetes mellitus is a heterogeneous group of disorders characterized by variable degrees of insulin resistance, impaired insulin secretion, and increased glucose production. Patients with type 2 diabetes mellitus are at increased risk of infections, with the urinary tract being the most frequent infection site.(2,3) Factors that were found to enhance the risk for UTI in diabetics include age, metabolic control, and long term complications, primarily diabetic nephropathy and cystopathy.(4)

The spectrum of UTI in these patients ranges from asymptomatic bacteriuria (ASB) to lower UTI (cystitis), pyelonephritis, and severe urosepsis. Serious complications of UTI, such as emphysematous cystitis and pyelonephritis, renal abscesses and renal papillary necrosis, are all encountered more frequently in type 2 diabetes than in the general population. (5, 6)

Objectives of the Study

1. To isolate strains of bacteria that causes urinary tract infection among type 2 diabetes patients.
2. To identify the sensitivity and resistance of this bacteria to antibiotics.
3. The study also aimed at the identification of specific genes in E. coli responsible for resistance to Nalidixic acid and to Trimethoprim using the PCR technique.

Methodology

The study population included (210) patients with type 2 diabetes mellitus selected by non-probability sampling method (purposive sampling) in teaching Azadi hospital and Kirkuk general hospital.

The researcher explain the study and the objective to the patients and take their oral consent to participate in

the study, then collect general information and the mid-stream urine specimen from the patients.

GUE: Urine specimen was centrifuged at 3000 rpm for 5 minutes. The supernatant then was decanted and the sediment suspended in the remaining urine. A single drop then transferred to a clean glass slide and cover slip was applied to direct microscopic examination for examination of pus cells, erythrocytes, crystals, bacteria and epithelial cells. Detection of pyuria was more readily determined by finding of >10 leukocytes of centrifuged urine.

Urine Culture: The recommended procedure uses a calibrated plastic or metal loop to transfer 1 µl of uncentrifuged urine to the culture medium (MacConkey agar with crystal violet and non-selective blood agar). The inoculated plates were incubated overnight at 37°C.

Diagnosis of bacteria by:

1. Morphological Examination
2. Gram Stain
3. Biochemical Tests: (Catalase test, Oxidase Test, Coagulase test, Carbohydrates Fermentation and Gas Production, Citrate Utilization Test, Urease (Christensen's) Production Test, Mannitol Motility Test, Indole Production test).
4. API 20 E (Analytical Profile Index System)
5. Vitek 2 System
6. Antimicrobial Susceptibility Test (Kirby-Bauer disc diffusion technique)
7. Polymerase Chain Reaction (PCR) and Gel Electrophoresis

Antimicrobial susceptibility testing: All of the Enterobacteriaceae isolates were tested for susceptibility to some antibiotic including Ampicillin, (Amoxicillin and Clavulanic acid), Cefoxitin, Ceftriaxone, Cefepime, Imipenem, Gentamicin, Amikacin, Tetracyclin, Doxycyclin, Chloramphenicol, Azithromycin, Nalidixic acid, Ciprofloxacin, Trimethoprim and Nitrofurantoin by standard disk diffusion method on Mueller Hinton agar medium.

DNA extraction and polymerase chain reaction (PCR): Genomic DNA of all resistance isolates of E. coli was extracted using Wizard genomic DNA Purification kit (Promega, USA) as stated by manufacturer instruction. PCR reaction was performed to amplify gyrA gene in Quinolone resistant determining region (QRDR), and dfrA1 gene, to detect Nalidixic acid and Trimethoprim resistance respectively, using specific primers in table (I). Reaction condition was initiated by pre-denaturation at 95 ºC for 5 min followed by 30 cycles (95 ºC for 30 sec; 60 ºC for 30 sec; 72 ºC for 30 sec) and final extension cycle (72 ºC for 7 min) for gyrA gene, and the same condition except annealing temperature was at (55 ºC for 30 sec) for dfrA1 gene. Bands on Agarose gel were visualized using Gel imaging system.

Results and Discusion

Table (1): Distribution of the study sample by their general information

Variables		No.	%
Gender	Female	135	64.3
	Male	75	35.7
	Total	210	100.0
Age by years	(28-35)	7	3.3
	(36-43)	26	12.4
	(44-51)	44	21.0
	(52-59)	67	31.9
	(60-67)	50	23.8
	(68-75)	13	6.2
	(76-83)	1	0.5
	(84-91)	2	1.0
	Total	210	100.0

No. = number, %= percentage

This table indicates that female (64.3%) more than male, (31.9%) of patients ages were between (52-59) years

Table (2): Results of Urine Culture of the patients with type 2 Diabetes mellitus

Results of Urine Culture	No.	%
Negative	155	73.8
Positive	55	26.2
Total	210	100.0

No. = number, %= percentage

The results of urine culture indicate that 155 (73.8%) of patients had negative urine culture, 55 (26.2%) of them had positive results.

Table (3): Types of Bacteria Present in the Urine Culture

Types of bacteria	No.	%
Escherichia coli	24	39.3
Klebsiellapneumoniae	10	16.4
Pantoeaagglomerans	4	6.56
Proteus mirabilis	2	3.28
Acinetobacterbaumannii	2	3.28
Klebsiellaoxytoca	1	1.64
Pseudomonas aeruginosa	4	6.56
Staphylococcus aureus	8	13.1
Staphylococcus saprophyticus	2	3.28
Enterococcus faecalis	2	3.28
Streptococcus agalactiae	2	3.28
Total	**61**	**100.0**

No. = number, %= percentage

According to 55 (26.8%) of a positive culture of urine, the most type of bacteria found in positive culture were E. coli (24) (39.3%) followed by Klebsiellapneumoniae (10) (16.4%) and then Staphylococcus aureus (8) (13.1%).

Table (4): Antimicrobial susceptibility testing for E. coli

Variable	AMP	AMC	CX	CRO	CPM	IMI	CN	AK	TE	DXT	C	AZM	NA	CIP	TMP	F
Resistant	24	24	15	15	11	-	2	1	18	14	2	10	15	9	16	3
Sensitive	-	-	7	9	13	24	20	22	4	8	19	14	3	14	8	21
Intermediate	-	-	2	-	-	-	2	1	2	2	3	-	6	1	-	-
Total	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**	**24**

R = Resistant, S = Sensitive, I = Intermediate, AMP = Ampicillin, AMC = (Amoxicillin and Clavulanic acid), CRO = Ceftriaxone, CPM = Cefepime, IMI = Imipenem, CN = Gentamicin, AK = Amikacin, TE = Tetracycline, DXT = Doxycyclin, C = Chloramphenicol, AZM = Azithromycin, NA = Nalidixic acid, CIP = Ciprofloxacin, TMP = Trimethoprim, F = Nitrofurantoin, CX = Cefoxitin

This table indicates that most of E. coli had resistant to Ampicillin, (Amoxicillin and Clavulanic acid), Cefoxitin, Ceftriaxone, Tetracycline, Doxycyclin, Nalidixic acid and Trimethoprim, and it was sensitive to Cefepime, Imipenem, Gentamycin, Amikacin, Chloramphenicol, Azithromycin, Ciprofloxacin and Nitrofurantoin.

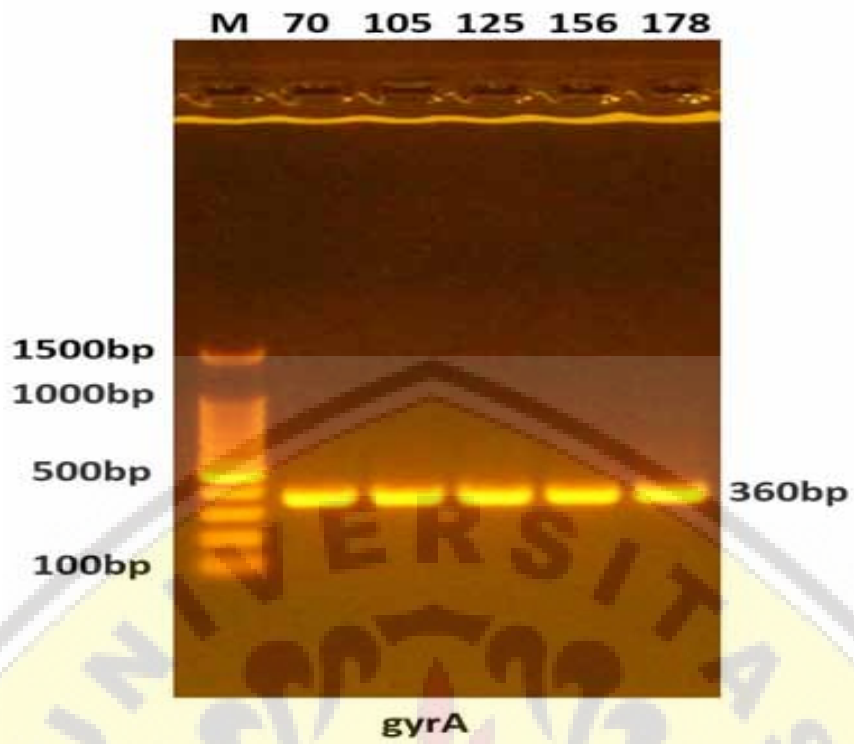

Figure 1. Presence of gyrA gene of Escherichia coli samples were fractionated on 1% Agarose gel electrophoresis stained with Eth.Br. Lane1:100bp DNA marker.

In Escherichia coli, resistance to quinolones frequently occurs through mutation in gyrA gene.

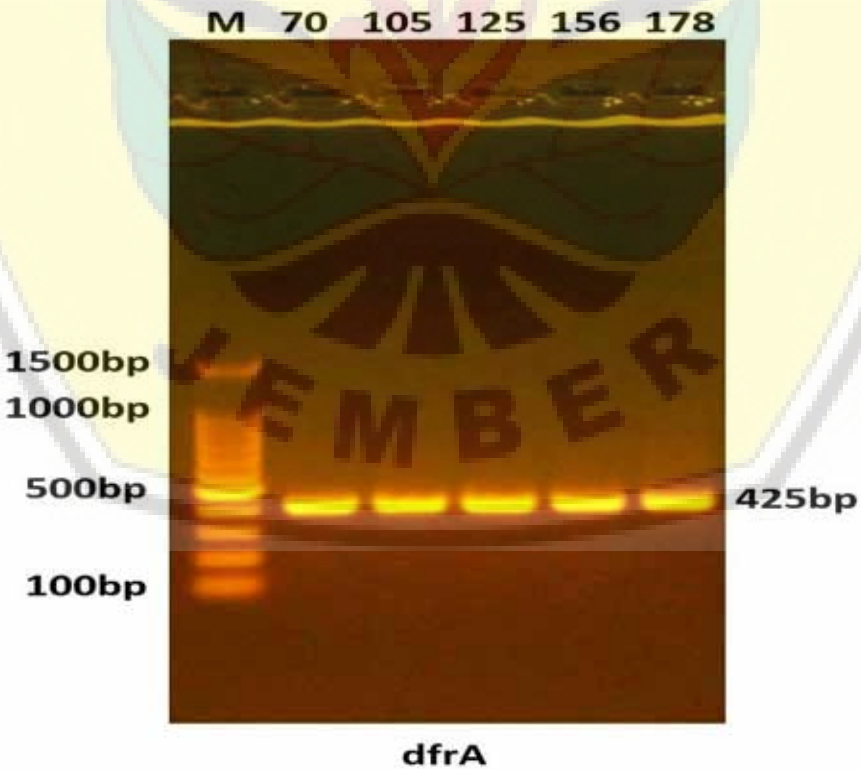

Figure 2. Presence of dfrA gene of Escherichia coli samples were fractionated on 1% Agarose gel electrophoresis stained with Eth.Br. Lane1:100bp DNA marker. E. coli are resistant to Trimethoprim by dfrA gene.

Conclusion

Females were more than males and most of patients were an elderly age. Quarter of the study sample had a positive urine culture. Escherichia coli were the most common causative agent of urinary tract infection then followed by Klebsiellapneumoniae and Staphylococcus aureus. There are some genes responsible of resistance of E. coli to Nalidixic acid and Trimethoprim.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Biology, College of Science, Kirkuk University and all experiments were carried out in accordance with approved guidelines.

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Association of Ile 462 Val(rs1048943) Polymorphism of CYP1A1 Gene and Uterine Leiomyoma

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Abstract

Uterine leiomyoma (UL) is a benign tumourarising from the myometrium of the uterus consisting of cells of smooth muscle, fibroblasts and is saturated with extra cellular matrix (ECM), (i.e., collagen, proteoglycan, fibronectin). The exact cause for this benign tumour is unknown. Previous studiespointing to an association of single nucleotide polymorphism (SNP) for the development of uterine leiomyoma. Aim of study: To find if there is an association betweenCYP1A1 gene polymorphism Ile462Val(rs1048943) and uterine leiomyoma development in Iraqi Arabian women from Babylon province.The study included 238 white Iraqi Arabian subjects, 118 women with uterine leiomyoma (cases) and 120 (controls). Genotyping ofCYP1A1gene(rs1048943) single nucleotide polymorphisms were carried out by PCR–RFLP. BsrDIrestriction enzyme was used for digestion ofCYP1A1 gene amplification product followed byagarose gel electrophoresis. Data were analyzed by various statistical analyses.CYP1A1gene(rs1048943) polymorphism revealed significant negative association with uterine leiomyoma development inIraqi Arabian women, women with heterozygous over dominantTC genotype in comparison to (TT+CC),exhibit significant negative association with uterine leiomyoma development, (odd ratio =0.32,C.I.95% = 0.18-0.56, p-value =0.0001).CYP1A1gene(rs1048943) polymorphismis negatively associated withuterine leiomyoma development inIraqi Arabian women.

Keywords: *Uterine leiomyoma, CYP1A1 gene, Ile462Valpolymorphism.*

Introduction

Uterine leiomyoma (UL) is a benign smooth muscle tumour, originating from themyometrium of the uterus[1], consisting of cells of smooth muscle, fibroblasts and is saturated with extra cellular matrix (ECM), (i.e., collagen, proteoglycan, fibronectin)[2,3].Genetically, it arise from a single progenitor cell asabnormal cellular clones[4]. The certain risk factors involved in developing uterine leiomyoma are:increased age among premenopausal women, black women in comparison to white, first degree relatives having leiomyoma, early age of menarche, null parity and oral contraceptive use before age of seventeen[5].Leiomyoma commonly classified according to their location into three groups:subserosal, intramural, and/or submucosal[6]. Symptoms of uterine leiomyoma might be of gastrointestinal, urinary and gynaecological problems[7]. Previous studiespointing to an association for theinvolvement of single nucleotide polymorphism (SNP) for the development of uterine leiomyoma[8]. In the present study, we investigate the association between CYP1A1gene Ile462ValSNPs and uterine leiomyoma in Iraqi Arabian women who were clinically diagnosed as UL. CYP1A1 gene is responsible for forming Cytochrome P450, family, subfamily A, polypeptide [9,10], a member of the cytochrome P450 superfamily of enzymes in humans (11)CYP1A1 enzyme involved in the catabolism of estrogen as well as in carcinogens metabolic activation [12,13]. Since UL is an estrogen-responsive tumour[14].Estrogen metabolism may affect UL by the effect of estrogen and its metabolites that having the same estrogenic activity, or by the effect of formation of reactive estrogenic catecholthat may cause oxidative damage[15]. Polymorphisms of genes that forming enzymes involved in estrogenmetabolism may lead to differential susceptibility to UL[16].

Subjects and Method

The study involved 238 white Iraqi Arabian subjects from Babylon province, 118 women with uterine leiomyoma (cases) and 120 (controls), who attended Health Centers, Private Clinics of Gynecology and Obstetrics, and Al-Hilla Teaching Hospital. The practical side of thestudy covered the period from 27th of February 2017 to 19thof May 2018. Online Sample Size Estimator (OSSE) was used to calculate sample size of the genetic study[17]. Diagnosis was made by ultrasound (U/S). EDTA- anticoagulant tubes were used to collect venous whole blood samples from women and stored in deep freeze -20˚C until DNA extraction. Extraction of DNA was from whole-blood samples using Favor Prep Blood Genomic DNA Extraction Mini Kit (Taiwan). Amplification was achieved by using specific primers then digestion with restriction enzyme, the primer sequence used for PCR amplification of CYP1A1 gene Ile462Val (A/G) (rs 1048943) was revealed in table (1). The primer sequence of CYP1A1 gene (rs 1048943) was used according to Jain et al (18).

Table 1: The primers sequence used for PCR amplification of CYP1A1 gene (rs 1048943).

Gene	Polymorphism (rs number)	Primer Sequence	Amplified Product (bp)
CYP1A1	Ile462Val (A/G) (rs 1048943)	F-5′-CTGTCTCCCTCTGGTTACAGGAAGC-3′ R -5′-TCCACCCGTTGCAGCAGGATAGCC-3′	204

Amplification reactionvolumes were: master premix of Biolabs (England) 10 µl (2x), Forward primer 1 µl (10 pmol/µl), Backward primer 1 µl (10 pmol/µl), DNA 2 µl (20-30 ng/µl) and molecular grade water 6 µl.The PCR thermocycling protocol for CYP1A1 gene amplification was presented in table (2).

Table 2: Thermocycling conditions protocol for CYP1A1 gene amplification.

Step	Temperature	Duration	Cycles number
Initial denaturation	94	5 minute	1
Denaturation	94	30 minute	35
Annealing	62	30 minute	
Extension	72	30 minute	
Final Extension	72	5 min	1

The PCR product (204 bp) of CYP1A1 gene (rs 1048943) was digested with the restriction enzyme BsrDI from BioLabs (New England), Incubation temperature (65 0 C) for 5-15 minute and can incubate overnight. The product of digestion ofCYP1A1 gene then separated by (3%) agarose gel electrophoresis technique and visualized on UV transilluminator.

Statistical Analysis: Microsoft Excel 2010 software was used to express values as mean ± standard deviation (SD), percentage (%). Statistical Package for the Social Sciences (SPSS) software version 22.0 was used to compare groups means by using two tail student t-test and the means differences were considered significant when the probability (P-value) was (> 0.05). Chi-square test was used to calculate odds ratios. Theparameters genetic associations were determined by the aid of online software SNPStats[19].

Results

Association Between Clinical Characteristics and Study Subjects: Association between clinical characteristics and the two studied groups were demonstratedin table (3).The mean age ± SD(year) was(42.30 ± 7.37) for cases and (39.20 ± 8.30) for control group, they were matched in age (p-value= 0.11). A significant association of early age of menarch

(year) with uterine leiomyoma (12.34 ±1.31) compared with that of control group (13.25 ±1.13) was revealed in the present study (p-value= 0.001).Regarding parity a significant association of null parity was demonstrated with uterine leiomyoma women (30.51%)compared with that of control group (5%) (p-value= 0.000001).

Table 3: Association between clinical characteristics and study subjects.

Variables	Cases No.=118	Controls No.=120	P-value
Age (year) Mean ± SD	42.30 ± 7.37	39.20 ± 8.30	0.11
Age of menarche (year) (mean ±SD)	12.34 ±1.31	13.25 ±1.13	0.001
Parity No. (%)	Null (0)	36 (30.51%)	6 (5%)	0.000001
	1-3	36 (30.51%)	54 (45%)	
	≤4	46 (38.98%)	60 (50%)	

PCR-RFLP Genotyping Analysis: The PCR product of CYP1A1 gene polymorphism (rs1048943) was digested by BsrDIrestriction enzyme. The products of digestion were analyzed by agarose gel electrophoresis. This enzyme will cut the product only if the T allele of (rs 1048943), present. Results revealed one band (204 bp) for those with CC, two bands (149,55 bp) for those with TT and three bands (204,149,55 bp) for those with TC figure (1).

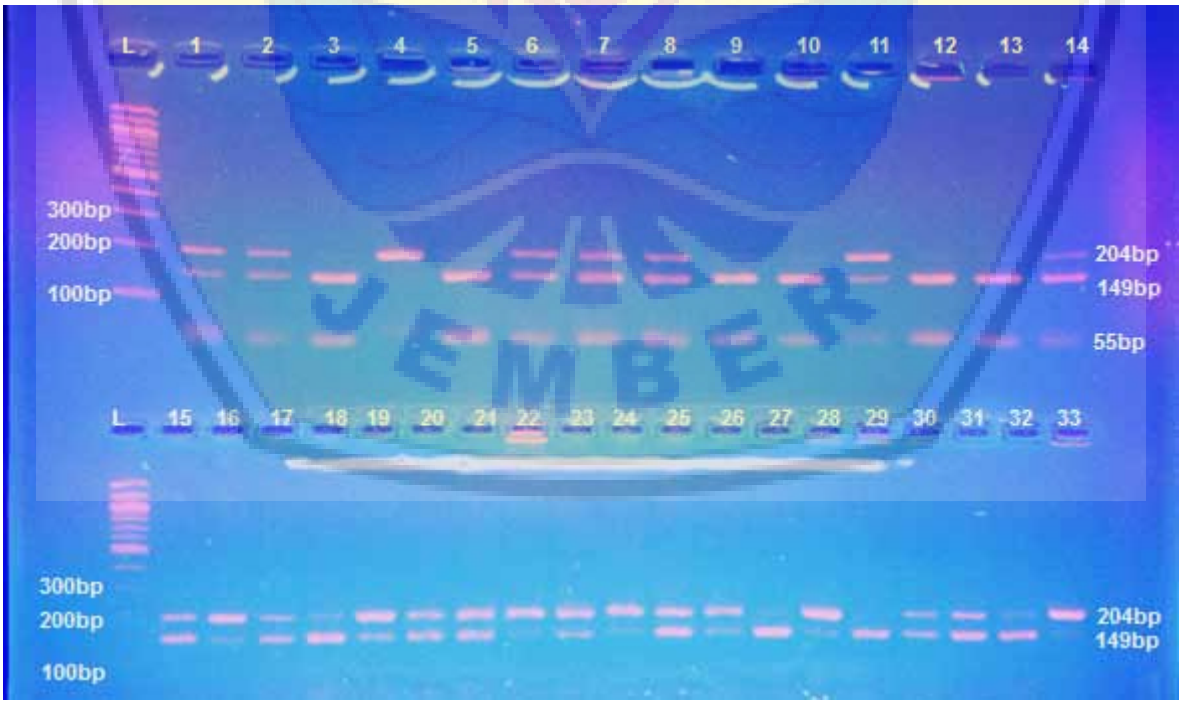

Figure 1: Agarose gel image of PCR-RFLP assay for the genotyping of CYP1A1 polymorphism (rs1048943), Lane L: 100 bp step ladder, Lanes 3,5,9,10,12,13,18,27,29 and 32 : T/T genotype, Lanes 4,16,22,28 and 33:C/C genotype, 1,2,6,7,8,11,15,17,19,20,21,23,25,26,30,and 31: T/C genotype.

Alleles and Genotypes Association of CYP1A1Gene Polymorphism (rs1048943) with Uterine Leiomyoma: No significant difference was demonstrated (p-value=0.25) between alleles frequencies among women with uterine leiomyoma (cases) and control group.

Table 4: Results of alleles frequencies and association of CYP1A1 gene polymorphism (rs1048943) among women with uterine leiomyoma and control group.

	Control (no.=120)		Cases (no.=118)		OR (95% CI)	P-value*
Allele	Number	Ratio	Number	Ratio		
T	132	0.55	142	0.60	1.236(0.859-1.779)	0.25
C	108	0.45	94	0.40	0.809(0.562-1.164)	

However, no positive or negative association were found between T and C alleles frequencies and uterine leiomyoma (odd ratio=1.236,C.I.95% = 0.859-1.779, p-value=0.25) (odd ratio=0.809,C.I.95% = 0.562-1.164, p-value=0.25) respectively as demonstrated in table (4).The association of each genotypes frequencies of CYP1A1 gene polymorphism (rs1048943) among women with uterine leiomyoma and control group under different models of inheritance was demonstrated in table(5).

Table 5: Results of genotypes frequencies and association of CYP1A1 gene polymorphism (rs1048943) among women with uterine leiomyoma and control group.

Model	Genotype	Control no. (%)	Case no. (%)	OR (95% CI)	P-value*
Codominant	T/T	18 (15%)	38 (32.2%)	1.00	0.0003
	T/C	96 (80%)	66 (55.9%)	0.33 (0.17-0.62)	
	C/C	6 (5%)	14 (11.9%)	1.11 (0.36-3.35)	
Dominant	T/T	18 (15%)	38 (32.2%)	1.00	0.0016
	T/C-C/C	102 (85%)	80 (67.8%)	0.37 (0.20-0.70)	
Recessive	T/T-T/C	114 (95%)	104 (88.1%)	1.00	0.053
	C/C	6 (5%)	14 (11.9%)	2.56 (0.95-6.90)	
Overdominant	T/T-C/C	24 (20%)	52 (44.1%)	1.00	0.0001
	T/C	96 (80%)	66 (55.9%)	0.32 (0.18-0.56)	

A significant difference was revealed between the three inherited genotypes of CYP1A1 gene polymorphism (rs1048943) (p-value=0.0003) among patients with leiomyoma and control group. The TC genotype had a significant negative association with uterine leiomyoma when compared with TT genotype, (odd ratio = 0.33,C.I.95% = 0.17-0.62, p-value=0.0003) andthis revealed that TC genotype considered as protective genetic factor against uterine leiomyoma. The association of each genotype with uterine leiomyoma was further tested under different models of inheritance. The (TC+CC) genotypes had a significant negative association with uterine leiomyoma,(odd ratio=0.37, C.I.95%= 0.20-0.70, p-value=0.0016) and this revealed that women with (TC+CC) genotypes collectively in comparison to TT genotype considered as protective genetic factors against uterine leiomyoma. While women with over dominant heterozygous TC genotypes were shown a significant negative association with uterine leiomyoma, (odd ratio=0.32,C.I.95% =0.18-

0.56, p-value= 0.0001). The results revealed that women would be protectable from uterine leiomyoma, if carry over dominant heterozygous TC genotype in comparison to (TT+CC). Uterine leiomyoma consider a tumour of premenopausal women, increased age among premenopausal women is a risk factor for leiomyomas[20]. The variance in prevalenceof uterine leiomyomabetween premenopausal and postmenopausal women is explained by the variance in hormonal status during these two period [21].Early age of menarche is also a risk factor forUterine leiomyoma and other hormonally mediated conditions such as endometrial and breast cancer[22,23]. There may be direct effects from each additional year of hormonal stimulation, but the association could also arise from early-life factors that cause both early menarche and adult disease[24].The result of significant association of null parity with uterine leiomyoma agreed with other studies that reveal an inverse association was detected between parity and UL risk, Baird and Dunson have demonstrated in their study that women who have pregnancies that are (>20 weeks) have reduced the risk of developing myomas[25], this result was approved by previous studies[26,27]. Regarding alleles and genotypes association of CYP1A1 gene polymorphism (rs1048943) with uterine leiomyoma, results revealed no significant difference was demonstrated between alleles frequencies among women with uterine leiomyoma(cases) and control group. However, no positive or negative association were found between T and C alleles frequencies and uterine leiomyoma. This result was in accordance with few studies, those studies conducted on, African Americans and white Americans women in 2006 and Iranian women in 2014 and 2016[15], and was discordance with studies conducted on chines women in 2008 and 2014, and in Egyptians women in 2011[30].The TC genotype had a significant negative association with uterine leiomyoma when compared with TT genotype, and this revealed that TC genotype considered as protective genetic factor against uterine leiomyoma.The association of each genotype with uterine leiomyoma was further tested under different models of inheritance. The results revealed that women would beprotectable from uterine leiomyoma, if carry over dominant heterozygous TC genotype in comparison to (TT+CC). These variances in results may be due to different genetic backgrounds or heterogeneity effect of specific gene polymorphisms in various populations.This result did not mean that CYP1A1 gene polymorphism do not have role in development of uterine leiomyoma, but the reason behind our result may be due to small sample size that this study had been carried out or might be the effect of different races and ethnicity on the relation of CYP1A1 gene polymorphism with uterine leiomyoma. Also, larger sample size was needed to investigate the role of gene-environmental interactions in the development of uterine leiomyoma.

Conclusion

In conclusion, the present study reveal no significant positive association between CYP1A1 gene Ile462Val polymorphism (rs1048943) and uterine leiomyoma risk, this result was in accordance with Gooden study in2006, Mortezaee et al. study in 2014 and Salimi et al. study in 2016, and was discordance with Ye et al. study in 2008, El-Shennawy et al. study in 2011 and Shen et al. study in 2014.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Ministry of health, Babylon health directorate, Hilla,, Iraq and all experiments were carried out in accordance with approved guidelines.

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Evaluation of Adolescents with Chronic Illness Knowledge and Attitudes about Health Promotion in Baghdad City: A Cross-sectional Study

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Abstract

Objective(s): To evaluate adolescents with chronic illness knowledge and attitudes about health promotion and to compare between them with respect to their knowledge and attitudes about health promotion in Baghdad City.A cross-sectional design is employed to evaluate adolescents with chronic illness knowledge and attitudes about health promotion and to compare between these adolescents' knowledge and attitudes about health promotion for the period of November 3rd 2018 to April 8th 2019. Purposive, non-probability, sample of (137) adolescent is recruited for the present study. An evaluation tools are constructed for the purpose of the study. Reliability and validity of the study instrument is determined through pilot study. Data are collected through the use of constructed questionnaires and the application of the interview technique as means for data collection. Data are analysed through the application of descriptive statistical data analysis approach of total scores and range and inferential statistical data analysis approach of analysis of variance. The study indicates that that most of the early age adolescents have fair level of knowledge about health promotion and most of the middle and early age groups have good level of knowledge about health promotion.

Keywords: *Adolescents, Chronic Illness, Knowledge, Attitudes, Health Promotion.*

Introduction

In fact, increasing data indicate that adolescents with chronic conditions are engaged to the same extent or even more in health-risk behavior compared with their healthy counterparts. Further, there is evidence that health-risk behavior tend to cluster together. Due to this, young people with chronic conditions have double disadvantage during their adolescence. Moreover, adolescents with disabilities are less exposed to protective factors and children with chronic conditions are more exposed to bullying, have fewer contacts with peers and more emotional problems than healthy counterparts. Furthermore, a study in a recent past indicated an association between chronic conditions in children and lower family socioeconomic status, compared to healthy peers[1]. Chronic conditions in adolescents are associated with few protective factors and clustered health-risk behavior. The combination of chronic conditions and low numbers of protective factors are often hazardous and associated with an increased risk of clustered health-risk behavior[2]. The promotion of a healthy personality is the essential foundation for the prevention, treatment, and rehabilitation of chronic disease: an unhealthy personality is a major contributor to vulnerability to chronic disease, poor compliance with treatment, and poor outcomes. Health-promoting behaviors could serve as a major strategy to optimize long-term outcomes for adolescents with chronic disease. The associations assessed from a positive perspective of knowledge, attitudes, and practice model would potentially cultivate health-promoting behaviors during adolescence [3]. Based on the early stated evidence, the present study aims at evaluating the adolescents with chronic illness knowledge and attitudes about health promotion.

Methodology

A cross-sectional design is employed to evaluate adolescents with chronic illness knowledge and attitudes about health promotion and to compare between these adolescents' knowledge and attitudes about health promotion for the period of November 3rd 2018 to April 8th 2019. Purposive, non-probability, sample of (137) adolescent is recruited for the present study in Baghdad. All adolescents, who have participated in the study, have signed consent form for the purpose of ethical consideration. Evaluation tools are constructed for the purpose of the study. Internal consistency reliability is determined when split-half techniques is employed and computation of Cronbach alpha correlation coefficient of (r=0.87) for the adolescents knowledge about health promotion internal scale and (r=0.88) for the adolescents attitudes internal scale which are indicating that the measures are adequately reliable and content validity of the study instruments is determined through panel of (10) experts in the area of the research and through pilot study. The study instruments are rated and scored as 3 for I know, 2 for uncertain and 1 for I do not know of the knowledge scale and 3 for agree, 2 for uncertain and 1 for disagree of the attitudes scale. Data are collected through the use of constructed questionnaires and the application of the interview technique as means for data collection. Data are analysed through the application of descriptive statistical data analysis approach of total scores and range and inferential statistical data analysis approach of analysis of variance.

Results and Discusion

Results of such evaluation indicate that most of the early age adolescents have fair level of knowledge about health promotion and most of the middle and early age groups have good level of knowledge about health promotion**.** Results out of this table indicate that most of the adolescents age group have developed fair level of knowledge about health promotion for nutrition.Results out of this table reveal that most of the adolescents have fair level of knowledge about health promotion for social support.Results out of this table indicate that most of the adolescents' age groups have fair level of knowledge about health promotion for health responsibility.Results out of this table depict that most of the adolescents' age groups have fair level of knowledge about health promotion for life appreciation.Results out of this table present that most of the adolescents' age groups have fair level of knowledge about health promotion for exercise.Results out of this table reveal that most of the adolescents' age groups have fair level of knowledge about health promotion for stress management.Results out of such analysis indicate that there is significant difference between the adolescents relative to their attitudes toward health promotion. Analysis of such overall evaluation indicates that early age adolescents have acquired fair level of knowledge about health promotion but middle and late adolescents have obtained good level of knowledge about health promotion (Table 1 through 7). Interpretation for such findings reveals that adolescents of all age groups have demonstrated fair level of knowledge with respect to nutrition; social support; health responsibility; life appreciation; Exercise; and stress management. These findings provide evidence that these adolescents are not fortunate to acquire sufficient degree of knowledge to be efficiently aware and well-oriented to chronic illness.Knowledge is not the same as understanding. Knowledge is a mere accumulation of facts and data, while understanding requires a bit more. It demands insight, sensitivity, and intimacy with any given situation – and, sometimes, it necessitates people have borne a particular burden. There is a basic lack of understanding regarding the effects chronic illnesses have on the lives of those they affect. But such deficiency is recognized and it mustnot necessarily lead to discord and strife. People may have knowledge of my illness. Perhaps they can even define it, explain it, and list its symptoms, as well as they have the capability to even promote their health and maintain their wellness (Van Houten, 2017) [4].It has been noted that patient awareness of a chronic condition reinforces their capacity to self-manage that condition. Self-management, a pillar of chronic disease management, is unachievable if patients are unaware of their condition. Supporting patients to self-manage their chronic diseases can improve health outcomes, health promotion, wellness and quality of life measures [5]. Adolescents with chronic conditions are highly likely to encounter physical, social and psychological difficulties that can threaten their overall wellbeing and health. As any other adolescent, they need to be helped to tackle the non-medical determinants of their health through their understanding of the health promotion principles [6].A cross-sectional survey inspects the relationships between disease knowledge and health-promoting behaviors in adolescents with congenital heart disease. A total of (320) adolescent, with congenital heart disease that is aged (12-18) years, are recruited from pediatric cardiology outpatient departments. The findings of

this study offer new understandings into the role of disease knowledge in the health-promoting behavior of adolescents with congenital heart disease [7].With regard to their attitudes toward health promotion, the study findings provide truthful fair level of attitudes toward health responsibility aspect of health promotion and attitudes toward health promotion selected issues (Table 8 and 9).The National Center for Chronic Disease Prevention and Health Promotion has emphasized that establishing healthy behaviors to prevent chronic disease is easier and more effective during adolescence than trying to change unhealthy behaviors during adulthood (NCCDPHP, 2019)[8].Adolescents with chronic conditions are extremely expected to meeting series of problems that can influence their overall wellbeing and health. As any other adolescent, they require to be assisted to challenge the non-medical determinants of their health through their thoughtfulness of the health promotion values[6].A qualitative study is conducted to explore adolescent's attitudes to health and seeking help for health-related problems. Interviews are steered with five adolescents visiting a youth health clinic in Moss, Norway. The interviews are audiotaped, transcribed and analyzed according to systematic text condensation. The participants are two boys and three girls, ranging from (17-19) years of age. The study finds that all adolescentsincorporated psychological and social qualities in their view on health. Positive social connections with family and friends were the most important factors for good health for all participants. They all conveyed resistance to disclosing mental health issues, although this was recognized as the most important barrier for good health. Establishing a trusting relationship with a health care provider was necessary before disclosing mental health issues and receiving help. In this qualitative assessment of adolescent's attitudes to health and seeking help for health related problems, they found that their focus was on mental and social aspects of health, and that a trusting relationship with health care providers was necessary for the adolescent's to seek help within the health care system [9].Health-promoting behaviors could serve as a major strategy to optimize long-term outcomes for adolescents with congenital heart disease. The associations assessed from a positive perspective of attitudes would potentially cultivate health-promoting behaviors during adolescence. A cross-sectional survey examines the relationships between disease attitudes and health-promoting behaviors in adolescents with congenital heart disease. A total of (320) adolescent, with congenital heart disease that is aged (12-18) years, are recruited from pediatric cardiology outpatient departments. The findings of this study provide new insights into the role of disease attitudes in the health-promoting behavior of adolescents with congenital heart disease[7].Analysis for such comparison offers significant findings that all adolescents demonstrate differences in their knowledge (Table 10) and attitudes (Table 11) about health promotion. This evidential finding can be interpreted in a manner that as far as these adolescents with chronic illness get older, their knowledge and attitudes about the concern of health promotion is well-oriented, motivated and increased, as well as improved. The comparison adds additional evidence that middle age and late age adolescents with chronic illness have reserved better knowledge and developed well-oriented attitudes about health promotion along with their experience of chronic illness.

Table (1): Overall Evaluation of Adolescents' Knowledge about Health Promotion (N=137)

Age Groups	n	Poor (59-98)	Fair (99-138)	Good (139-177)
1. Early Age	38	0	25	13
2. Middle Age	54	0	18	36
3. Late Age	45	0	12	33

N= Sample Size; n= Single Group Size

Table (2): Overall Evaluation of Adolescents' Knowledge about Health Promotion for Nutrition

Age Groups	Poor (6-10)	Fair (11-14)	Good (15-18)
1. Early Age	0	32	6
2. Middle Age	0	40	14
3. Late Age	0	29	16

Table (3): Overall Evaluation of Adolescents' Knowledge about Health Promotion for Social Support

Age Groups	Poor (7-12)	Fair (13-17)	Good (18-21)
1. Early Age	0	33	5
2. Middle Age	0	39	15
3. Late Age	0	29	16

Table (4): Overall Evaluation of Adolescents Knowledge about Health Promotion for Health Responsibility

Age Groups	Poor (8-13)	Fair (14-18)	Good (19-24)
1. Early Age	0	36	2
2. Middle Age	0	41	13
3. Late Age	0	31	14

Table (5): Overall Evaluation of Adolescents Knowledge about Health Promotion for Life Appreciation

Age Groups	Poor (8-13)	Fair (14-18)	Good (19-24)
1. Early Age	0	37	1
2. Middle Age	0	41	13
3. Late Age	0	30	15

Table (6): Overall Evaluation of Adolescents Knowledge about Health Promotion for Exercise

Age Groups	Poor (5-8)	Fair (9-11)	Good (12-15)
1. Early Age	0	32	6
2. Middle Age	0	42	12
3. Late Age	0	29	16

Conclusion

The study concludes that the study confirms that the older the adolescents, their knowledge and attitudes about the interest of health promotion convert well-oriented, motivated and increased, as well as improved. However, their knowledge dramatically maintained and attitudes affectedly changed.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Ministry of Health and Environment and all experiments were carried out in accordance with approved guidelines.

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Evaluation of Continuing Nursing Education Programs at Health Directorates in Baghdad Governorate

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Abstract

Objective(s): To evaluate continuing nursing education programs at health Directorate in Baghdad Governorate and to compare between hospitals at these directorates with respect to the programs. A descriptive design, using the evaluation and comparative approaches, is employed to evaluate continuing nursing education programs at health directorates in Baghdad Governorate for the period of November 3rd 2018 through May 30th 2019. Purposive sample of (120) staff nurse is selected from these health directorates in Baghdad Governorate. Self-report evaluation tool is constructed for the purpose of the study. Reliability and validity of the evaluation tool are determined through pilot study. Data are analyzed through the application of descriptive statistical data analysis approach of mean, total score and range and inferential statistical data analysis approach of analysis of variance. There is no significant differences between general, specialized, pediatrics and private hospitals at all health directorates relative to the evaluation of the continuing nursing education programs. The study concludes that the continuing nursing education programs have experienced good level of overall evaluation at Medical City, Al-Karkh and Al-Russafa Health Directorates. The continuing nursing education programs have experienced good level of overall evaluation in general, specialized, pediatric and private hospitals.

Keywords: *Evaluation, Continuing Nursing Education Programs, Baghdad Governorate.*

Introduction

Continuing education in nursing is a planned activity directed towards meeting the learning needs of the nurse following basic nursing education, exclusive of full time formal post basic education[1]. Continuing nursing education (CNE) refers to courses specifically for nursing professionals, aimed at keeping them up-to-date with the latest health knowledge. CNE ensures professional development and enables re-licensure and certification points in several Pacific countries. CNE also expands nurses' knowledge, skills and attitude while contributing to their career development[2]. Based on the early stated evidence, the present study ought to evaluate the Continuing Nursing Education Programs at Al-Karkh, Al-Russafa and Medical City Health Directorates in Baghdad Governorate.

Methodology

A descriptive design, utilizing the evaluation and comparative approaches, is engaged to evaluate continuing nursing education programs at health directorates in Baghdad Governorate for the period of November 3rd 2018 through May 30th 2019. Purposive sample of (120) staff nurse is nominated from these health directorates in Baghdad Governorate. All staff nurses, who have participated in the study, have signed a consent form for ethical consideration purpose. Self-report evaluation tool, of (6) aspects and (47) item, is constructed for the purpose of the study. Internal consistency reliability is obtained for the study instrument through the use of split-half technique and the computation of Cronbach alpha correlation coefficient of (r= 0.87) and content validity of the evaluation tool is

determined through panel of (10) expert and the conduct of a pilot study. Data are collected through the utilization of the study instrument and the interview technique as means of data collection. Data are analyzed through the application of descriptive statistical data analysis approach of mean, total score and range and inferential statistical data analysis approach of analysis of variance.

Results

Table (1): Overall Evaluation of the Continuing Nursing EducationPrograms

Health Directorate	Poor (46-76)	Fair (77-107)	Good (108-138)
1. Medical City	1	4	35
2. Al-Karkh	1	4	35
3. Al-Russafa	1	3	36

Results out of this table indicate that evaluation of most continuing nursing programs at all Health Directorates in Baghdad Governorate is good.

Table (2): Analysis of Variance for the Differences between General Hospitals

Descriptives

Hospitals

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	10	118.00	20.122	6.363	103.61	132.39	75	138
2	10	125.20	10.304	3.258	117.83	132.57	100	138
3	10	116.00	18.068	5.714	103.08	128.92	76	133
Total	30	119.73	16.615	3.034	113.53	125.94	75	138

ANOVA

Hospitals

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	468.267	2	234.133	.839	.443
Within Groups	7537.600	27	279.170		
Total	8005.867	29			

1: Medical City, 2: Al-Karkh Health Directorate, 3: Al-Russafa Health Directorate

Such analysis presents that there are no significant differences between general hospitals relative to the evaluation of continuing nursing education programs.

Table (3): Analysis of Variance for the Differences between Specialized Hospitals

Descriptives

Hospitals

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	10	120.60	10.916	3.452	112.79	128.41	106	136
2	10	120.20	24.453	7.733	102.71	137.69	68	138
3	10	122.00	14.742	4.662	111.45	132.55	87	137
Total	30	120.93	17.047	3.112	114.57	127.30	68	138

ANOVA

Hospitals

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	17.867	2	8.933	.029	.972
Within Groups	8410.000	27	311.481		
Total	8427.867	29			

1: Medical City, 2: Al-Karkh Health Directorate, 3: Al-Russafa Health Directorate

Such analysis presents that there are no significant differences between specialized hospitals relative to the evaluation of continuing nursing education programs.

Table (4): Analysis of Variance for the Differences between Pediatric Hospitals

Descriptives

Hospitals

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	10	129.20	7.843	2.480	123.59	134.81	119	138
2	10	132.30	4.855	1.535	128.83	135.77	125	138
3	10	132.30	8.001	2.530	126.58	138.02	118	138
Total	30	131.27	6.963	1.271	128.67	133.87	118	138

ANOVA

Hospitals

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	64.067	2	32.033	.645	.533
Within Groups	1341.800	27	49.696		
Total	1405.867	29			

1: Medical City, 2: Al-Karkh Health Directorate, 3: Al-Russafa Health Directorate

Such analysis indicates that there are no significant differences between pediatric hospitals relative to the evaluation of continuing nursing education programs.

Table (5): Analysis of Variance for the Differences between Private Hospitals

Descriptives

Hospitals

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	10	128.00	13.233	4.185	118.53	137.47	95	138
2	10	122.90	11.367	3.595	114.77	131.03	100	136
3	10	126.50	17.627	5.574	113.89	139.11	84	138
Total	30	125.80	13.986	2.554	120.58	131.02	84	138

ANOVA

Hospitals

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	137.400	2	68.700	.335	.718
Within Groups	5535.400	27	205.015		
Total	5672.800	29			

1: Medical City, 2: Al-Karkh Health Directorate, 3: Al-Russafa Health Directorate

Such analysis reveals that there are no significant differences between private hospitals relative to the evaluation of continuing nursing education programs.

Part I: Discussion of the Overall Evaluation of the Continuing Nursing Education Programs: The overall evaluation of the continuing nursing education programs at the Health Directorates in Baghdad Governorate indicate that the programs have experienced good levels of evaluation (Table 1). Such finding can be interpreted in a manner that these programs have qualified the standardized features for their evaluation.A study was done, In Korea, to develop a measurement tool for evaluation of continuing nursing education programs and to verify its validity for effective management and quality of education programs. The draft of the evaluation measurement is developed from consultation with professionals, focus group interviews targeting groups of nurses, and individual interviews with education program planners. After (6) professionals examined content validity, 46 items were retained. A pilot-survey is conducted to confirm the time required to complete the questionnaire and the level of understanding of general content and each item in the questionnaire. Construct validity is verified through exploratory factor analysis of data from a survey with (44) items completed by (452) nurses and (59) education program planners. The final evaluation measurement for continuing nursing education programs consisted of (6) evaluation factors and (36) evaluation items. The (6) evaluation factors include identifying program goals and target groups, program planning, performance, operation and management, program outcomes, and program effectiveness. The study concludes that the evaluation measurement for continuing nursing education programs developed in this study is considered suitable to utilize as an evaluation measurement of the quality of continuing education programs for nurses[3]. Recently, Continuing Nursing Education (CNE) has been debated as an important process in learning due to the unexpected growth in professional knowledge, rapid changes in the healthcare system and the changes in nurses' roles. Continuing Nursing Education (CNE) within the Nursing Practice Environment (NPE) is important in determining issues associated with unsafe practice, unproductiveness or incompetent nurses. A descriptive correlational study was designed to determine the best practice initiative in NPE whereby 395 (94.3%) nurses participated. This study showed that the highest mean score was 2.91 on 'Nursing Foundations for Quality of Care' of which 314

(79.5%) nurses highly agreed that CNE programs are the most important. The study concludes that CNE program is the best practice initiative and it is recommended that CNE will encourage lifelong and transformational learning in the nursing career[4]. Continuing nursing education (CNE) has become essential for the assurance and improvement of quality patient care. CNE includes self-education and directed training activities designed to acquire new knowledge further to that which is acquired through the basic nursing education. It is a process that begins with the end of studies and lasts for the entire life of the individual. A descriptive correlational study investigates the motivating factors for participation of nurses in continuing nursing education (CNE) and their perceptions about the necessity for programs in CNE. The Participation Reasons Scale (PRS) is completed by (475) nurses working in three hospitals in Athens and the Peloponnese region and the socio-demographic data of participants are recorded. The study shows that the majority (62.3%) of the sample showed positive perceptions and attitudes about CNE programs which are based on real needs. Subjects rated all five factors (dimensions) of the PRS as "moderately important" in high percentages, specifically: "Professional improvement and development" 98.9%, "professional service" 91.8%, "collegial learning and interaction" 82.6%, "personal benefits and job security" 91.0%, "professional commitment" 88.4%. "Professional commitment" recorded the highest mean score (4.95±0.744). "Professional improvement and development" correlated positively with "collegial learning and interaction" ($r=0.229$; $p<0.001$) and "personal benefits and job security" ($r=0.115$; $p=0.015$). The study concludes that motives and personal professional attitudes exert a significant effect on the participation of nurses in CNE programs[5]. Continuing nursing education and the application of new knowledge to practice are increasingly important means to improve patient care in today's health environment. The willingness and ability to transfer knowledge, skills, and attitudes are critical to improving patient outcomes. Evaluating the effectiveness of continuing nursing education does not always include behavioral change and patient health outcomes. A qualitative analysis of open-ended evaluation questions from continuing nursing education activities was conducted. The aim was to evaluate learners' intentions to change their practice resulting from their learning and their perceived barriers to implementing practice changes. Results revealed the multiple, interconnected challenges involved in translating new learning into practice[6]. Continuing education (CE) is increasingly critical for nurses to keep abreast of rapid changes in patient care due to advancements in knowledge and technology. A cross-sectional study, of (2727) hospital-employed Chinese nurses from ten general hospitals, is conducted to explore Chinese nurses' perceptions on continuing education, how best CE practices meet their learning needs, and the motivation and barriers nurses face in completing CE from September to October 2010. Nurses' perceptions on CE, as well as motivational and preventive factors in CE were assessed. The study results indicate that the majority of nurses (97.3%) attended CE activities in the last twelve months. More than (92.2%) of the nurses were familiar with the value of CE. Nurses expected CE activities to take place within a five-day period and to consist of 2h per activity. The major factors that motivate nurses to participate in CE are the desire to gain and update their knowledge of the newest nursing development and procedures, to improve their practical skills and comprehensive qualities, to maintain professional status and to receive an academic degree. Factors that hindered nurses' participation in CE included time constraints, work commitments, a lack of opportunity, cost of the courses and previous negative experiences with CE programs. The study concludes that Chinese nurses consider CE an extremely important measure to further develop their professional competency. Nurses' actual expectations for CE and the motivation and barriers for participation in CE from nurses' individual, family and hospital perspective must be taken into the account in order to make CE programs more effective[7]. Continuing education program is any extension of opportunities for reading, study and training to any person and adult following their completion of or withdrawal from full time school and/or college program[8]. Continuing education benefits for nurses include: Staying current in evidence based practices in order to provide safe and quality patient care. Many organizations include continuing education in their employee performance evaluations, professional and personal satisfaction. The findings out of the comparison between the continuing nursing education programs at general, specialized, pediatric and private hospitals at these health directorates demonstrate that these hospitals are employing almost the same quality continuing nursing education programs relative to all standardized features of their accreditation (Table 2 through 5). Unfortunately, no supportive empirical evidence is available in the literatures to support these findings.

Conclusion

Based on discussion and interpretation of the study findings, the study can conclude that: The continuing nursing education programs have experienced good level of overall evaluation at Medical City, Al-Karkh and Al-Russafa Health Directorates. The continuing nursing education programs have experienced goodlevel of overall evaluation at general, specialized, pediatric and private hospitals. Staff nurses have all benefited out the continuing nursing education programs. So, the differences in their demographic characteristics have no influence on the evaluation of these programs.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Ministry of Health and Environment and all experiments were carried out in accordance with approved guidelines.

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The Link between Locus of Control Orientation and Patients' Adherence to Medication After Chronic Obstructive Pulmonary Disease

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Abstract

The main cause of disease is tobacco smoking. Symptoms of the disease gradually appear from age 40 and above, and men are more likely to be effect with the disease than women around the world. The study focused on the relationship between awareness of the locus control orientation and of patients' adherence to medication and in making appropriate decisions that avoid complications of disease and reduce the risk factors. A Descriptive Correlational Design is used through the present study in order to determine link between locus of control orientation and patients' adherence to medication after chronic obstructive pulmonary disease. From October, 17th, 2018 to June, 13th, 2019. A Non- Probability (Accidental Sample) of (104) patients with chronic obstructive pulmonary disease. The study is conducted in Al-Najaf Al-Ashraf City's hospitals. The study instrument is adopted and developed by the researcher to investigate the study phenomenon. The study results indicate that there is a direct and high significant and positive correlation between locus of control orientation and adherence to medication. The study concludes that there is a correlation between locus of control orientation and patients' adherence to medication after chronic obstructive pulmonary disease

Keywords: *Locus of control orientation, adherence to medication, chronic obstructive pulmonary disease.*

Introduction

Chronic Obstructive Pulmonary Disease is a major health problem that affect a millions of people worldwide [1]. The prescription of medication refers to a cornerstone in the management of chronic obstructive pulmonary disease (COPD). Furthermore, the effect of the prescription of medications is threated by many factors, one of the factors is the patients' mal-adherence [2]. Chronic Obstructive Pulmonary Disease (COPD) it is one of the most dangerous diseases affecting the respiratory system globally. It is classified as the fifth most dangerous disease in the world. It is difficult to determine the real number of deaths worldwide. And the COPD is a deadly disease that causes human disability [16]. Chronic Obstructive Pulmonary Disease COPD is a common disease that causes death or disability and can be prevented or treated. It is characterized by severe symptoms such as difficulty breathing and tightness of respiratory tracts resulting from physiological changes in the lungs[4-7]. COPD it often caused by a number of chemical and/or biological causes, and there are a different risk factors that may influence the incidence of COPD such as smoking, age, gender, …etc. the most common symptoms of COPD are frequent coughing, sputum production and dyspnea. All of these symptoms are results from the physiological changes in the lungs [21]. Statistics from the United States showed more than 24 million people in the adult population who were diagnosed with chronic obstructive pulmonary disease (COPD), the third-largest cause of death in the United States, according to the National Heart and Lung Institute According to these statistics, the mortality rate of other diseases is declining, as opposed to the proportion of deaths related to chronic obstructive pulmonary disease. Some studies showed that five percentage suffer from COPD disease, where nearly fourteen million cases of COPD affected are documented. Most of these patients suffer from chronic bronchitis and emphysema [12] . As

previously mentioned that emphysema and chronic bronchitis are among the group of chronic obstructive pulmonary disease (COPD). They are also very similar to the signs and symptoms that overlap a lot. So, the lack of air passing through the bronchi and bronchi, causing severe breathlessness, is occurs under the roof of chronic obstructive pulmonary disease (COPD) but were excluded for the lack of physiological similarity of the disease. These include bronchial asthma and cystic fibrosis [12]. One of the qualities of good personality is the locus of control and the ability to control the actions are very useful in cases of chronic diseases and contributes to the sense of control and health behavior, through learning and change behavior towards positive results to reach the person to cross the threshold of disease, that the actions of people depend on internal control And external control of their actions and attitudes to the participation of others and collective learning and influence. The goal of this internal control sense of control is the adherence to medication that enable the patient to heal or reduce complications[24].

Methodology

Design of the Study: A Descriptive Correlational Design is used through the present study in order to determine the link between locus of control orientation and patients' adherence to medication after chronic obstructive pulmonary disease**.** The period of the study is from October 17, 2018 to June 13, 2019.

Ethical Considerations and Administrative Agreements: The researcher obtained an approval from the Faculty of Nursing/University of Kufa to conduct the study, permission is obtained from the ethical committee in Faculty of Nursing, and this is one of the most basic principles before conducting the study, to protect the participant and or researcher rights. In addition, an official permission is obtained from the Ministry of Planning/ Central Council for Statistics in order to accept the study questionnaire. Another approval is obtained from Al-Najaf Al-Ashraf Health Directorate, Al-Sadder Medical City, AL-Hakeem General Hospital and The Middle Euphrates Teaching Hospital, In order to collect the data. And finally, subjects' agreement also obtained from the patients themselves after the researcher explained the purpose of the study to them; seeked informed consent and offered a respect to participants' confidentiality as well as making the participation voluntary, to answer the questionnaire's items.

Setting of the Study: The study is conducted in Al-Najaf Al-Ashraf City, Al-Najaf Al-Ashraf Health Directorate (Al-Sadder Medical City, AL-Hakeem General Hospital and The Middle Euphrates Teaching Hospital).

Sample of the Study: A Non- Probability (Accidental Sample) of (104) patients with chronic obstructive pulmonary disease. Those patients are already diagnosed with chronic obstructive pulmonary disease and had already use the medication and they visit the hospitals for treatment or follow or both the study sample was selected from medical world, medical consultations, medical emergency department and the intensive care unit. These places are the most places receive a patients with chronic obstructive pulmonary disease.

Sample Size: The researcher used the power analysis method (Cohen's method) to determine the study sample size. This method can be used through its factors which include: power, effect size, and level of significance. Power is an essential factor to determine an acceptable sample size for descriptive correlational study. Power is the ability of the study to discover the relationships between dependent and independent variables. The minimum acceptable power's level for nursing studies is 80%, and the greater the power, the larger the sample size that is needed. The effect size was determined based on three levels of effect size: large effect (0.10), moderate effect (0.30), and small effect (0.50). The significance level or alpha (α) for this study was 0.05, because 0.05 means that the accepted chance of being wrong is only 5% of the time or less after infinite repeated sampling [2, Grove et al., 2013). Therefore, based on the following factors (power = 90, α = 0.05, and effect size = 0.30), the adequate sample size that was needed for this study was a minimum of (n =99). However, to increase sample size that was needed to increase the power of the study, the researcher increase the sample size to (104) to increase the power of the study to reach 99%.

The Study Instrument: An assessment tool is adopted and developed by the researcher to investigate the phenomena. The final study instrument consists of four parts: demographic data, clinical data, locus of control orientation measurement scale and adherence to medication scale (Morisky medication adherence scale)

Reliability of the Study Instrument: Reliability is concerned with the consistency and dependability

of a study instrument to measure a variable of interest. Determination of reliability of the questionnaire is based on the internal consistency reliability/Alpha Cronbach technique. The reliability determined through the use of SPSS software version 25.

Data Collection: The data has been collected through the utilization of the developed questionnaire after the validity and reliability are estimated, and by means of a structured face to face interview technique with the subjects who were individually interviewed, by using the Arabic version of the questionnaire and they were interviewed in a similar way, by the same questionnaire for all those subjects who are included in the study sample. The data collection process has been performed from 30th December 2018, to 1st March 2019. The time (20-25) minutes to complete the interview.

Results:

Table (1): Clinical Data of the Study Sample

Clinical Data	Rating and Intervals	Frequency	Percentage
Disease Duration Since Diagnosis/ Years	1 – 3	27	26.0
	4 – 6	23	22.1
	7 – 9	25	24.0
	10+	29	27.9
Mean= 7.5			
Do You Receive an Education about Importance of Adherence to Medication	Yes	61	58.7
	No	43	41.3
The Source of Received Knowledge Education	Nurse	15	25
	Doctor	46	75
Smoking	Yes	90	86.5
	No	12	11.5
	Stop Smoking	2	1.9
Type of Smoking	Hookah	4	3.8
	Cigarette	86	82.7
Duration of Smoking/Years	4 – 6	4	3.8
	7 – 9	13	12.5
	10+	73	70.2
Mean = 22.37			
How Many Cigarette	1 – 10	8	7.7
	11 – 20	25	24.0
	21 – 30	16	15.4
	31 – 40	24	23.1
	41+	17	16.3
Total		**104**	**100.0**

Table (1) shows that the mean duration of disease is (7.5) years. In addition, the study results indicate that more than half of the study subjects are received health education about the important of the adherence to medication (58.7%), and the physician is the dominant health education providers (75%). Regarding smoking the study results indicate that (86.5 %) of the study subjects are smokers, (82.7%) of them are cigarettes smokers, and they smoke 11-20 cigarette/day (24%), since 10 years ago (70.2).

Table (2): Overall Assessment of patients' Adherence to Medication

Level of Adherence	Frequency	Percentage	Mean of Score	Assessment
Good	15	14.4	1.6741	Fair Adherence
Fair	60	57.7		
Poor	29	27.9		
Total	104	100.0		

Good (mean of scores from 2.34-3), fair (mean of scores from 1.67-2.33), poor (mean of scores from 1-66) cut off point (0.66), mean of score (2).

Table (4.4) shows that the more than half of the study subjects are fairly adherence to medication (57.7%) with a statistical mean of score (1.671).

Table (3): Analysis of Variance (ANOVA) of the Patients' Adherence to Medication According to their Educational Level

Educational Level	N	Mean	Std. Deviation	F	P-value
Doesn't Able to Read and Write	42	1.9266	0.35060	1.187	0.321 NS.
Able to Read and Write	27	1.9309	0.37040		
Primary School Graduate	9	1.7666	0.41360		
Intermediate School Graduate	16	1.7684	0.32416		
Preparatory School Graduate	7	2.0672	0.45201		
Post Graduate	3	2.0924	0.45121		
Total	**104**	**1.9038**	**0.36845**		

N=104, F (ANOVA) test, NS. (Non-significant at p-value more than 0.05).

Table (4.7) shows that there is a non-significant difference in the patients' adherence to medication according to their educational level. Additionally, with respect to the statistical mean, the mean differences indicate that the patients' adherence to medication increased as the educational level increased.

Table (4): Association between Patients' Locus of Control Orientation and their Clinical Data (n=104)

Clinical Data	Rating and Intervals	LOC Orientation		Chi-Square Value	Df	P-Value
		Moderate Orientation	High Orientation			
Disease Duration Since Diagnosis/Years	1-3	24	3	4.48	3	0.21 NS
	4-6	16	7			
	7-9	18	7			
	10+	19	10			
Receiving a health education	Yes	44	17	.27	1	0.59 NS
	No	33	10			
Sources of the received health education	Nurse	12	3	.92	2	0.63 NS
	Doctor	32	14			
Smoking	Yes	69	21	6.36	2	0.04 S
	No	8	4			
	Stop Smoking	0	2			

Type of Smoking	Hookah Smoking	4	0	1.27	1	0.25 NS
	Cigarette	65	21			
Duration of smoking/Years	4-6	4	0	3.66	2	0.15 NS
	7-9	12	1			
	10+	53	20			
Number of Cigarette/Day	1-10	8	0	7.29	4	0.12 NS
	11-20	22	3			
	21-30	12	4			
	31-40	15	9			
	41+	12	5			

Discussion

COPD is a major health problem that affect a millions of people worldwide. The prescription of medication refers to a cornerstone in the management of chronic obstructive pulmonary disease (COPD). Furthermore, the effect of the prescription of medications is threated by many factors, one of the factors is the patients' mal-adherence. Overall Assessment of the Study Subject's Locus of Control Orientation toward Adherence to Medication are moderately oriented toward adherence to medication.[4] conducted the study result about Correlates of health locus of control among patients diagnosed with chronic disease their results indicate subjects are moderately oriented toward adherence to medication.

Overall Assessment of patients' Adherence to Medication are fairly adherence to medication. [9] their study conduct about "Patient adherence in COPD". Their results study indicate that more than half of patients are moderately adhering to medication.[20] and Leong et al, (2004) conducts a studies about adherence to medication. Their results conducts that the study sample had a low level of adherence to the medication. Regarding these results, can be confirmed that there is a positive relationship that the greater the orientation and the locus of control in patients increased adherence to medication. The study result indicate that there is a direct and high significant and positive correlation between locus of control orientation and adherence to medication.[22] conducted a study about "Correlation between compliance regimens with health locus of control in patients with chronic diseases" their study results indicate that there is a direct significance and positive correlation between the adherences to medication with internal health locus of control in patients with chronic diseases. In addition, the patients with high locus of control had controlled the progression of disease and control of complications. The study result indicate that there is a high significant association between adherence to medication and level of education. While there is a non-significant associated between adherence to medication and other demographical data. [7] conducts a study about "Associations between patient factors and medication adherence" their results indicate that there is a high significant association between adherence to medication and level of education. The study result indicate that there is a non-significant associated between patient's adherence to medication and their clinical data.

Conclusion

The incidence of chronic obstructive pulmonary disease (COPD) is increase as the patients' age increased. Chronic obstructive pulmonary disease (COPD) occurs mostly in male compare with female. Smoking is the one of risk factors of chronic obstructive pulmonary disease. The study confirms that there is a deficient in the patients' adherence to medication after chronic obstructive pulmonary disease. There is a significant impact of the level of education on patients' adherence to mediations. The patients' age, educational level, residence, and socio-economic status, affect their locus of control orientation.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols

were approved under the University Of Kufa. Faculty of Nursing and all experiments were carried out in accordance with approved guidelines.

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Serum Zinc Level in Children with Relapsing Nephrotic Syndrome

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Abstract

Zinc as a second trace element of human body plays an important role in numerous function. Abnormality in the metabolism of zinc in renal problem especially nephrotic syndrome is well documented. We aim in this study to measure the serum zinc level in children with relapsing nephrotic syndrome.A hospital based case control study that conducted at nephrology clinic at Al-Sadder and AL-Zahra teaching Hospitals for period between 1stJanuary 2013 to end of October 2013 . A total of 60 pediatric patients with relapsing nephrotic syndrome were included in this study. They were divided in two groups,(30) patients constituent ofgroup A (patients with infrequent relapsing) and (30) patients constituent group B (patients with frequent relapsing). Control group consist of 32 healthy children. Serum zinc was measured by atomic absorption spectrophotometery.patients aged 2-14 years, boys were 40 and girls were 20. The mean age of patients was 7.5 years. The Mean serum zinc level in group B (frequent relapse) (58.45 µg/dl) that was significantly lower than that of group A (infrequent relapse) (61.58 µg/dl) and control group (89.64 µg/dl) respectively

Keywords: *Frequent relapses. Nephrotic syndrome. Zinc.*

Introduction

Nephrotic syndrome was primarily a pediatric disorder and was 15 times more common in children than adults. The incidence was 2-3/100,000 children per year; and the majority of affected children will have steroid-sensitive minimal change disease.[1] The nephrotic syndrome was caused by renal diseases that increase the permeability across the glomerular filtration barrier. It was classically characterized by four clinical features, but the first two are used diagnostically because the last two may not be seen in all patients:

1. Nephrotic range proteinuria (Urinary protein excretion greater than 50mg/kg per day) or 40 mg/ m^2 per hour.
2. Hypoalbuminemia (Serum albumin concentration less than 2.5 g/dL(25g/L))
3. Edema
4. Hyperlipidemia[1]

Risk Factors for Relapse in Childhood Nephrotic Syndrome[2]:

1. Cold and infections. Cold and infections are the most common cause of relapse of nephrotic syndrome. If left untreated, illness conditions will become even worse. Children and adolescents are still in the growth period and many of their tissues and organs are still immature. Compared with adults, children patients have weak immune system and they are more susceptible to be attacked by various viruses, bacteria which often cause the proteinuria, hematuria, swelling to reoccur.
2. Poor compliance. Different from adult patients, small children usually do not understand why they need to take so many bitter drugs and the importance to have the right dosage on schedule. Often the reduction of dosage or stopping taking the prescribed medicines often cause relapse of illness. Therefore it is very important that parents should supervise the children to have medicines at the right time and with the right dosage.

Proper treatment is very important to prevent relapse of nephrotic syndrome in children. Hormones and immunosuppressant are effective at relieving symptoms

but cannot solve the root problems, that is why patients often become dependent on these drugs and illness often relapse when the dosage is reduced or the drug is stoped. Often these drugs have some side effects and harms to the kidneys if taken for long time, that is why nephrotic syndrome will continue to become worse after each relapse.[3]

Infection is an important cause of morbidity and mortality in nephrotic children. Patients with steroid sensitive nephrotic syndrome (SSNS) have increased susceptibility to bacterial infections and various infections may result in relapses or steroid resistance or may trigger the onset of disease[4].Relapses in SSNS often follow infections of upper airway or gastrointestinal tract and cellulitis. It is estimated that 52–70% of relapses among children in developing countries chiefly follow the upper respiratory tract infection[(5,6)]. Common infections associated with either onset of disease or in the course of disease are acute upper and lower respiratory infections (ARI) including pneumonia with or without empyema, skin infections including impetigo and cellulitis, acute watery or invasive diarrhea, urinary tract infections (UTI) and primary peritonitis[9]. Studies have shown that use of prophylactic antibiotics, immunoglobulins replacement therapy, vaccination against streptococci pneumoniae, thymosin as immuno-modulating agent, use of Chinese medicinal herb (TIAOJINING) and zinc supplements may have a role in prevention of these infections[12]. However, in a recent Cochrane Database of Systemic Review, it has been concluded that there is no strong evidence for any of above interventions for prevention of infection in nephrotic syndrome[7]. Though pneumococcal peritonitis and cellulitis are decreased with use of pneumococcal vaccine and antibiotics but these infections are still responsible for 1.4-10% of mortality and repeated relapses in more than 80% of cases, requiring high dose steroids and hospitalization[5]. A high frequency of infections in children with nephrotic syndrome (38–83%) has been reported from developing countries like India, Pakistan & Bangladesh in different studies[8]. Studies from developing countries have also suggested that increasing the maintenance dose of steroid from alternate day in a child with remission to daily during the episode of mild infections can prevent relapse[(8, 9)]. Thus a strong suspicion regarding infections in a nephrotic child is important not only for treatment but also to prevent infection associated relapse.

Zinc was an essential trace element. Zinc intake was closely related to protein intake; where diet rich in proteins stimulate zinc absorption as a result, it was an important component of nutritionally related morbidity worldwide.[10]

The usual oral intake of zinc was approximately 4 to 14 mg/day; the recommended dietary allowance (RDA) was 8 mg/day for children ages 9 to 11 years; [21]. Primary dietary sources of zinc include animal products such as meat, seafood, and milk. Ready-to-eat cereal contains the greatest amount of zinc consumed from plant products[11].

Approximately 10 to 40 percent of dietary zinc was absorbed in the small bowel;absorption was inhibited by the presence of phytates and fiber in the diet that bindto zinc, as well as dietary iron, cadmium,calcium, copper and phosphorus in high amounts[22]. Approximately 0.5 to 1.0 mg/day was secreted in the biliary tractand excreted in the stool. Zinc circulates at a concentration of 70 to 120 mcg/dL with 60 percent loosely bound to albumin and 30 percent tightly bound to macroglobulin. Urinary excretion typically ranges from 0.5 to 0.8 mg/day. The primary stores of zinc include the liver and kidney. Most of the body zinc stores are intracellular where zinc was bound to metalloproteins.[11]

Relapses in steroid-sensitive nephrotic syndrome (SSNS) often follow infections of the respiratory or gastrointestinal tract. Based on data that zinc supplements reduce the risk of infections, we examined the efficacy of such supplements in reducing relapse rates in the patient.[18]

Materials and Method

This was a hospital based case control study on samples at nephrology clinic at Al-Sadderand AL-Zahra teaching. Hospitals for period between 1st January 2013toend of October 2013 as following.

Sample Size: A total of 60 pediatric patients age 2-14 years with relapsing nephrotic syndrome were included in this study, male were 40 and female were 20. They were separated into two groups: Group A(infrequent relapsing),30 children, where there were 20 males and 10 females(relapse once time during 6 months since diagnosis of disease). Group B (frequent relapsing), 30 children, where there were 20 males and 10 females (relapse two or more during 6 months since diagnosis of disease).These patients were compared with 32 healthy children called"control group", where there were 17 males and 15 females.

For both groups and control, blood samples were collected to measure the serum zinc concentration level by using Spectrophotometer.

Zinc Measurement . This occur by spectrophotometry where zinc reacts with chromogen present in reagent forming coloured compound which colour intensity proportional to the zinc concentration present in sample.

In fasting state 3 ml of blood was drawn with plastic syringe from each nephrotic and control subject . After centrifugation at 3000 rpm for 10 minutes, separated sera were kept frozen at -70°C. Haemolysed sera were taken out of the study. Serum zinc was measured by atomic absorption device model Carl Zeiss Jena (Jena, Germany) Model AAS3 flame atomic absorption spectrometer. A cut-off value of 70 µg/dl - 115 mg/dl was used for serum zinc, samples below 70µg/dl was regarded as low (hypozincemia) .After collecting data, statistical analysis was performed by SPSS 16.0.2. Values were presented as means ± 2 SD. Differences were considered significant at P <0.05. . Laboratory observer and data analyzer had not any idea about the relationship of samples to patients or normal subjects. The study was approved by the local research and the ethics committee in the hospital and the college, parents consent was taken.

Results

We made the statistical analyses to correlate the different conditions groups (Control, A, and B). These different conditions were divided according to the historical background of the patients (frequent and infrequent relapsing) in the mentioned hospitals during the lifetime of the disease (nephrotic syndrome).

Table 1: The Samples Sizes for Each Group.

Variables	Group Symbol	Sample Size		Total
		Male	Female	
Control	control	17	15	32
Infrequent Relapsing	A	20	10	30
Frequent Relapsing	B	20	10	30

Table 2: Mean Serum Zinc Concentration for Males and Females in all groups studied

Groups	Sex	Mean, mcg/dl	Standard Deviation	Standard Error	P-Value
Control	Male	92.159	17.25	4.18	*0.209
	Female	86.787	19.46	5.025	
A	Male	62.095	4.07	0.91	**0.214
	Female	60.55	5.26	1.66	
B	Male	58.45	6.60	1.47	***0.498
	Female	58.46	5.97	1.888	

Table 3: Statistical Analyses to Correlate the Different Groups.

Variables	Sample Size	Mean	Standard Deviation	P-Value
Control	32	89.64	18.223	<0.001
A	30	61.58	4.469	
Control	32	89.64	18.223	<0.001
B	30	58.45	6.286	
A	30	61.58	4.469	0.028426
B	30	58.45	6.286	

In this study The Mean serum zinc level in group B (frequent relapse) (58.45 µg/dl) that was significantly lower than that of group A (infrequent relapse) (61.58/ dl) and control group (89.64 µg/dl) respectively . P-value <0.001 these finding can be explained by Mild zinc deficiency is believed to result in a reduced production of Th1 cytokines, resulting in Th2 cytokine bias[13, 14]. In contrast, zinc supplementation is proposed to augment gene expression for IL-2 and IFN-γ, thereby restoring the Th1 immune response[15]. Since the Th1–Th2 cytokine imbalance is also believed to result in relapses of SSNS.So this results support the findings that suggest the patients with SSNS receiving supplementation with RDA of zinc show a trend towards fewer relapses and higher likelihood of remission. The response was better in the frequent relapsers[16,17]. The Mean serum zinc level of group A (infrequent relapse) is also low (61.58/dl),this finding can explained by The increase urinary zinc excretion in children with NS (whether in relapse or in remission) was attributed as a cause for low serum zinc level by many authors who reported a positive correlation between urinary zinc and protein excretion in their studies.[18,19,20,21]. Also Several studies demonstrated low blood or serum zinc levels among children with NS compared to that of the control groups.[16,18] This study certifies insignificant difference corresponding to sex in all groups of patients studied .This result was also stated by[22].

Conclusion

Hypozincemia can occur in chronic renal problem like nephrotic syndrome. The low level of serum zinc mainly found in those with frequent relapses there is no effect of sex on mean serum level in all group studied.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Al-Sadder and AL-Zahra teaching Hospitals, Iraq and all experiments were carried out in accordance with approved guidelines.

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Prevalence of Intestinal Parasites among Children in Khanaqin City East of Diyala/Iraq

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Abstract

The current study was carried out during the period between November/2018 and March/2019. The study was aiming to investigate the types and proportions of intestinal parasites among children who visited the primary health care center in the city of Khanaqin - Diyala governorate. The total number of specimens examined, during the course of study, was 805 stool specimens. These specimens were taken from children in the age range 1-10 years, and direct smear was the method used for the investigation of the intestinal parasites existence. The results showed that 156 children were infected with intestinal parasitic infections. These infections were categorized as four types of Protozoa and one type of intestinal Helminthes. The incidence ratio of intestinal parasitic infection was 19.373%, where the percentages of parasites considered in the current study have found to be 62.179% for the *Entamoebahistolytica* followed by 12.820% for the *Giardia lamblia*, 12.820 of *Entamoebacoli*, and 3.205% for the *Iodomoebabutschillii*. Moreover, the study has reported one type of Helminthes represented by the *Entrobiusvermicularis* with occurrence ratio of 6.410%.

Keywords: *Intestinal parasite, Entamoebahistolytica, Protozoa, Helminthes, Giardia lamblia.*

Introduction

Intestinal parasite (IP) is one of the most widespread pathogens in the world, it infects around 3.5 billion persons a year, the majority of them are children[1]. This type of infection represents an endemic disease worldwide, especially in the tropic and subtropical regions[1]. It is mainly represented by Protozoa and Helminthes[3], and they are transmitted by water and contaminated food[4]. However, the infection can also be transmitted from person to person by Oral-Fecal[5]. Apparently, all age groups are susceptible to IP infection, however the infection is likely to increase among children, especially those who are living in overcrowded, poor and rural communities that do not meet health care requirements [6,7]. For children, IP infections may cause many critical heath issues. It results in iron deficiency, anemia, growth delay, weight loss, abdominal pain, dyspepsia and many health and physical issues[8]. Generally, literature review has revealed wide prevalence of IPs. In a study conducted by[9] on a number of primary schools in Al-Khalis district/Diyala province, wide spread of many types of IPs, among children, was reported, and the effect of some environmental factors on the infection was recorded.In another study, an increase in the incidence of IPs infection among families with low educational levels was reported[10].In the same context, another study was indicated high incidence ratio of intestinal parasites infections among children in rural areas, and attributed the reason to the lack of services and scarcity of good drinking water[11]. In the same way, several other studies conducted by[12, 13] have indicated the spread of intestinal parasites among children in Baghdad. They have also pointed out some important aspects that could contribute to the spread of infections. Furthermore[3], conducted a study in Dohuk – Kurdistan/ Iraq and reported the types and extent of existence of IPs among children.

Material and Method

During the period between November 2018 and March 2019, 805 stool samples were collected and inspected to investigate the types and prevalence of

intestinal parasites among children in Khanaqin city. The samples were taken from children who visited the primary health care sector due to suffering from gastrointestinal diseases, intestinal colic, and diarrhea cases. The samples were initially collected from the children's stools and kept in clean, perfectly sealed and dry plastic containers to keep the sample hydrous, as well as to prevent dryness. A questionnaire was then prepared to collect the required information from the children's parents. The collected information included child's sex, age, living area, number of family members, and the drinking water source (tap or filtered water).Collected stool samples were then subjected to laboratory test to investigate the presence of parasites (Trophozoites, Cyst, and Ova). 156 infected cases with intestinal parasites Protozoa and Metazoa were isolated.

The laboratory test consisted of two method:

A. Gross Examination: Before conducting the microscopic test, the samples were examined with necked eyes. The purpose of this examination was to check the status of the stool samples in terms of the texture, color, and odor. Mostly, liquid stool contains trophozoites, while the cyst is predominantly found in the full-formed stool. Diarrhea caused by *Entamoedahistolytica* are normally recognized by its pong, and the existence of blood or mucus which are the evidence of the presence of amoebic infection. However, the existence of *Giardialamblia* in the stool is recognized by the yellowish-green color, oily texture, and the mucus. On the other hand, in case of infection with helminthes, the stool mostly be in its full-form unless co-infection.

B. Direct Smear Method: This method was implemented by preparing a clean slide, before a drop of the physiological solution (0.9%) table salt was placed on one side of the slide. Then, small amounts of the stool sample were taken from different places of the sample using a wood stick, and one of them was mixed with the physiological solution. On the other side of the slide, a drop of iodine solution was placed and thoroughly mixed with another small amount taken from the same stool sample. After that, the slide was covered with the slide cover.

Subsequently, the microscopic slides were examined using a microscope with magnification force of (40x, 10x).

Results

The results obtained from the present study showed that children in Khanaqin were infected by a number of IPs during the period between November 2018 and March 2019. A total of 805 stool samples were collected from children and tested in the primary health care sector in Khanaqin city. The children were suffering from gastrointestinal diseases and diarrheal diseases, they were clinically examined by specialist doctor before laboratory tests were made to investigate the presence of IPs infection. The results revealed that 156 children were infected, which represents total infection percentage of 19.378%. From the total number of infected cases, 70 infections were for females which represent 44.871%, and 86 infections were for males which represent 55.128% as shown in Table (1).

Table 1. Percentage of IPs infection between the studied samples for both sexes.

Infection percentage	Number of infected females	Infection percentage	Number of infected males	Infection percentage	Number of parasitic infections	The total Number of examinees
44.871%	70	55.128%	86	19.378%	156	805

The study, also, showed that children were infected with 5 types of the IPs. Out of these 5 types, 4 belong to protozoa which are *Entamoadahistolytica*, *Giardia Iamblia*, *Entamoeba coli*, and *Iodooebabutchillii*. Table (2) shows that *E.histolyti*ca was in the first place with highest incidence of parasitic infection, it has infected 97 children which represent 62.179%. In the second place, the *Giardia lamblia* comes with total number of infections of 59 that is 37.820%, followed by *E. coli* which infected 20 children with infection percentage of 12.820%, and then *Iodomoebabutchillii* 5 infected cases which represents 3.205%. Moreover, the study showed some infections with helminthes, 10 children were diagnosed to be infected with *Entrobiusvermicularis* which is 6.410%.

Table 2. Types of IPs and the number and ratio of infections for each them during the study period.

Type of parasite	Number of infections	Percentage by the parasite
Entamoebahistolytica	97	62.179%
Giardia lamblia	59	37.820%
Entamoeba coli	20	12.820%
Entrobiusvermicularis	10	6.410%
Iodomoebabutschillii	5	3.205%

The results given in Table 3 confirm the presence of some bilateral intestinal parasitic infections which means that the children were simultaneously infected with two different types of IPs. These infections were characterized as; *Giardia lamblia* with *E. coli* in 12 infected cases which is 7.629% of the total number of infections, followed by *Entamoebahistolytica* with *Entrobius vermicularis* 10 cases representing 6.410% of the infections. Moreover, the *Entamoebahistolytica* with *Entamoeba coli* were found in 8 infections which is 5.128% of the total cases. The minimum recorded infection incidence ratio was 3.205% which represents 5 infections caused by *Giardia lamblia* with *Iodomoebabutschillii*.

Table 3. Co-infections with IPs among the investigated samples.

Co-infection type	Number	Infection occurrence rate
E.histolytia + E.coli	8	5.128%
Giardia lamblia + E.coli	12	7.692%
E.histolytia + Entrobiusvermicularis	10	6.410%
Giardia lamblia + Iodomoebabutschillii	5	3.205%

Table 4 shows the incidence ratio of IPs infection among the children categorized according to their sex and age group. It has been found that highest infection incidence ratio was among children in the aged between 5-10 years old which represents 47.435%. The infected cases were divided into 40 infected males (54.1%), and 34 infected females (45.94%). Infants' infections come in the second place with 48 infected cases representing a percentage of 30.769%. Out of the 48 infections, 27 were for males and 21 for females which are respectively signify 56.3% and 43.8%. However, the lowest infection incidence ratio was in children under the age of 5 years. The total number of infections was 34 and the infection incidence ratio was 21.794%, 19 were males and 15 were females representing 55.9% and 44.11% respectively.

Table 4. Percentage of IPs infection according to age groups.

Age group	Number of infections	Infection percentage	Number of infected males	Infection percentage	Number of infected females	Infection percentage
Infants	48	30.769%	27	65.3%	21	43.8%
Below 5-years	34	21.794%	19	55.9%	15	44.11%
5-10 years	74	47.435%	40	54.1%	34	45.94%

Table (5) shows the incidence ratio of intestinal infection categorized according to living area (city center, district, and village). The results revealed that the highest ratio of infection was among the children who live in villages. The whole number of infections were 87, (55.769%) split into 44 males (50.6%) and 43 females (49.7%). Districts come in the second place after the villages with total number of infections of 43 cases (27.564%), the males share was 31 cases (72.1%) while the females share was 21 cases (27.9%). Finally, city center cames in the last place with minimum number of infections. The study recorded 26 infected case in the city center, which signifies occurrence ratio of 16.666%. Out of these cases, the number of males were 11 and females were 15 which denote occurrence ratio of 42.3% and 57.7% respectively.

Table 5. Percentage of IPs infection according to living area.

Living area	Number of infections	Infection percentage	Number of infected males	Infection percentage	Number of infected females	Infection percentage
City center	26	16.666%	11	42.3%	15	57.7%
District	43	27.564%	31	72.1%	12	27.9%
Village	87	55.769%	44	50.6%	43	49.4%

The study has also investigated the relation and occurrence ratio of children's infection with intestinal parasites and the drinking water source. The study has observed increment in the number of infected children who depend on tap water as a drinking water source. The number of infected children were found to be 92, (58.974%) compared to 64, (41.025%) for children who used to drink filtered water, as given in Table 6 below.

Table 6. The relationship and percentage of the infection with intestinal parasites and the source of drinking water.

Drinking water source	Number of infections	Infection percentage
Tap water	92	58.974%
Filtered water	64	41.025%

Discussion

This study has been conducted in the primary care sector in the city of Khanaqin-Diyala. The study was targeting children who visited the pediatric care department and were complaining from gastrointestinal diseases and diarrhea. The study considered children from different living areas, that relatively vary in the social environmental and economic conditions, to make it possible to relate the prevalence of the disease to the living conditions of those areas. Current study disclosed that the total incidence of the intestinal parasite infection was 19.778%. This is lower than what was reported by[15] and[3] who have reported infection incidences ratio of 24% and 22.27% respectively. However, the result presented here is higher than that of[16] and[17] who reported occurrence ratio of 14% and 17.4%, respectively. Current study revealed that the highest infection occurrence ratio was with *E. histolytica* (62.179%). This conforms with what was recorded[19], who reported increase in this parasite compared to the rest of Protozoa. The second was the *Giardia lamblia* which was the reason behind 37.820% of the infections. This result is very comparable with what has been reported by[6] where the existence ration of *Entamoebahistolytica* and *Giardia lamblia* have been shown to be 66.8% and

36.8% respectively. The most common reason behind the wide spread of the of IPs infections is attributed to their direct transmittance to humans by taking food and water contaminated with contagious stages, and due to the superior ability of the Cyst to transmit the infection and to resist the environmental conditions[20]. Though, flies play more significant role because they represent a *vector host* for the infection. The present study has also shown infections with *Entrobiusvermicuralis* (6.410%), which is relatively lower than what[21], as he has pointed that the infection occurrence ratio as 24.9%. The *Entrobiusvermicuralis* was the most common intestinal worm among children. This was ascribed to the large number of children within the same family, their participation in blankets, clothing and sleeping places, as well as the lack of health and social awareness, and the low educational level of the parents[22]. Further, the study has also recorded many cases of co-infections with IPs. 35 cases were recognized representing 22.43%. This finding conforms with number of studies found in the literatures that recorded many co-infections with IPs.

Conclusion

The results showed that 156 children were infected with intestinal parasitic infections. These infections were categorized as four types of Protozoa and one type of intestinal Helminthes. The incidence ratio of intestinal parasitic infection was 19.373%, where the percentages of parasites considered in the current study have found to be 62.179% for the *Entamoebahistolytica* followed by 12.820% for the *Giardia lamblia*, 12.820 of *Entamoebacoli*, and 3.205% for the *Iodomoebabutschillii*. Moreover, the study has reported one type of Helminthes represented by the *Entrobiusvermicularis* with occurrence ratio of 6.410%.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Education for pure science, Iraq and all experiments were carried out in accordance with approved guidelines.

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Phylogenetic Profile of Staphylococcus Aureusmec A and ICA a Genes Associated with UTI Patients

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Abstract

The latest years indicated an upsurge in the urinary tract infections (UTIs) occurrence instigated by *Staphylococcus aureus* at the ward of urology. A total of 50 *S. aureus* isolate from UTI patients during the period from August to December 2018 at the AL-Hussein Teaching Hospital in Nassyriah City, Southern Iraq were assayed to find the presence of *mec* A & *ica* A genes by Polymerase Chain Reaction technique. Selection of six PCR products of *mec* A and *ica* A genes named primarily (No 1, No 2, and No 3 for each gene) was done and further exposed to the partial sequencing of DNA to aid the targeted genes for following up their probable relation amongst the global records of Genbank and local isolates. The phylogenetic tree that was created by MEGA 6.0 version software showed closed different molecular relationships among the local *S. aureus* isolates with similar ones around the world of *mec* A (No.1-No.3) which were closely related to NCBI-BLAST *S. aureus* strain MRSA 365325 (MH798858.1) at total genetic changes (0.0005-0.0025%). while, *ica* A gene in local *S. aureus* human urine isolate (No.1-No.3) showed close interrelation to the NCBI-BLAST *S. aureus* strain Pn2301 (FJ004990.1) at the total genetic changes of about 0.2-1.0%.

Keywords: *Staphylococcus aureus, Urinary tract infections,Gene sequencing, Virulence factors.*

Introduction

Urinary tract infections (UTIs) are triggered by microorganisms' growth and presence anywhere in the urinary tract. This might be the only most communal bacterial infection in humans[1]. In unindustrialized countries, the UTI infections indicates the utmost significant health problem's effects in the population of all age groups [2]. Since the pathogens appearance along with the up surging antimicrobial agent's resistance, it has become challenging to treat the UTI. It occurs much more frequently in females than males due to the proximity of the urethra to the anus[(3,4).] Its yearly global occurrence is of nearly 250 million [5]. From most common pathogens are associated with UTIs Staphylococcus, particular *S. aureus*which is a major human pathogen and a widespread contaminant in hospitals. Though, in several patients, the *S. aureus* isolation from the sample of urine is frequently subordinate to the escalating Staphylococcal bacteremia somewhere else for example endocarditis cases. Likewise, the ascending colonization of urinary tract and infections are instigated by *S. aureus*[6].

The foremost *S. aureus* pathogenicity is linked to its capability of a number of virulence factors' production, most specifically extracellular factors as well as toxins' synthesis, adherence ability and biofilm formation on host surfaces and lastly causing a resistance to the phagocytosis [7]. Moreover, the pathogenic bacteria's molecular typing comprising *S. aureus* can be beneficial to support the controlling measures of infections, for suspected outbreaks' investigation and nosocomial transmission prevention [8]. The recent study targeted the investigation of molecular characterization of genes*ica* A and *mec* A in various isolates of *S. aureus* from patients of UTI in the city of Nassyriah.

Materials and Method

Samples Collection, Isolation and Identification: Current research utilized 50 total *S. aureus*isolates that were collected from the UTI patients in AL- Hussein Teaching Hospital in Nasiriyah City, Southern Iraq from August to December 2018. Identification of all *S. aureus* isolates was done depending on Gram's stain; Mannitol

salt agar (MSA), cultural characteristic and conventional biochemical tests[9]. API system as well as Vitek2 compact (BioMerieux, France) was used to confirm the diagnosis of bacteria. A latex agglutination test was used as per the manufacturing (Remel,UK) company's directions to serologically diagnose the proteins A for all *S. aureus*isolates.

Antibiotic susceptibility test for S. aureus isolates: The total isolates of *S. aureus* were exposed to the susceptibility of antibiotics with the help of disc diffusion procedure [10]. Moreover, the interpretation and measurements of diameters of inhibition zone were carried out conferring to [11].

Detection of *mec* A and *ica* A genes by Polymerase chain reaction: *S. aureus* isolates were exposed to the identification of methicillin*mec*A & biofilm *ica* Agenes by conventional PCR technique using specific primer pairs (Table 1). The amplification was conducted in a thermal cycler(BioRad, USA) that has been automated as follows: with one cycle, the initial denaturation stage was done at 95°C for five minutes. Whereas, amplification with 30 cycles was executed by following conditions: 30 seconds denaturation at 95°C, 30 seconds annealing at 58 and 59 °C, one minute extension at 72 °C and lastly five minutes final extension at 72 °C. These conditions were designed by the researcher in this study.

DNA sequencing: The *S. aureus* six PCR products were dispersed into three *ica*A & *mec* A genes that were selected for further sequencing. The sequencing of each genes' reverse and forward primers was done in Macrogen, Korea outside of Iraq. While Basic Local Alignment Search Tool analysis (BLAST) led to the algorithm of BLAST by (www.ncbi.nlm.nih.gov/BLAST) site. The sequences of samples labelled as (No1, No2 and No3 for *mec* A - No1, No2, and No3 for *ica* A) were further aligned, edited & related with reference sequences by using Unweighted Pair Group Method with Arithmetic Mean (UPGMA tree) with MEGA6 software. Thus, MEGA 6.0 version was used to construct the every gene sequences' phylogenetic tree.

The PCR primers were designed online and provided by (Macrogen, Korea) using NCBI Gene Bank and primers 3 plus as follows (Table 1).

Table 1: Primer sequences of mec A and ica A genes in S. aureus.

Gene	Primer Sequences(5'-3')		Product size (bp)
mec A	*F	TGGCAGACAAATTGGGTGGT	215
	*R	TGAAGCAACCATCGTTACGGA	
ica A	F	CTTGCTGGCGCAGTCAATAC	213
	R	GCGTTGCTTCCAAAGACCTC	

*F: forwared, *R: reverse, T: thymine, C: cytosine, G: guanine, A: adenine

Results and Discussion

Phenotypic characterization of *S. aureus* isolates: Sex hundred urine samples were collected from complaints of UTI patients at AL-Hussein Teaching Hospital. The finding of the present study showed that 380 (63.67%) isolates recorded positive growth. While 220 samples (36.33%) showed no significant growth. The present results agreed with [12] who reported (57.9%) positive urine culture and (39.3%) were showed no growth. Our study was non compatible with [13], which showed (41.6%) positive culture. Specimens showed a positive culture as *S. aureus*on MSA, biochemical test and API-20 *Staph*. In addition, Vitek2 system and serological diagnosis were used in the present study to confirm the diagnosis. All isolates gave positive results for all tests which recorded a total percentage of *S. aureus* infection with 13.15%. These results of *S. aureus* agreed with the results of the study of [14] who found *S. aureus* isolate from UTI were (13.71%). The results of the present study were incompatible with [15] where was *S. aureus* accounted for only 0.5% of all isolates.

Detection of *mec* A and *ica* A genes: The present study tried to shed light on the prevalence of two of *S. aureus* virulence factors while molecularly detecting

the biofilm of *ica* A gene and of methicillin (*mec* A) gene extracted from the patients of UTI from Nassyriah City, Southern Iraq. The entire fifty *S. aureus* isolates from UTI patients were precisely recognized as per former methodologies utilized for DNA extraction while agarose gel electrophoresis was used to identify the results. Molecular detection of the two selected genes among all *S. aureus*isolates showed that 95/100 amplified *mec* A gene, having the molecular weight of roughly 215 bps (Figure 1,2). Amplification of*ica*A gene showed the positive results by all *S. aureus*isolates for the targeted gene having an approximate 213bp molecular weight (Figure 3). Despite the ongoing debate about the role of different *S. aureus* virulence factors, a lot of reports tends to believe that the resistance mechanism against methicillin includes the acquisition of the *mec* A gene, a determinant of penicillin-binding protein has lowered affinity for the β-lactams where to play a major role in *S. aureus*pathogenesis [16]. Recent results disagree with the result of [17] showing that 68 isolates 75 % of MRSA had*mec* A gene. While, it agreed with local study performed by [18] that recorded a complete percentage of the target gene 100 % in all MRSA isolates. The present results agree with the results of various research works for instance from Iran [19], Iraq [21] and Egypt [20] who revealed that all MRSA isolates had*mec*A gene. The outcomes of recent study differ with the studies showing a different percentages of *mec* A gene in *S. aureus*isolates [22,23]showed a percentage of 90.9% and 71.5%, respectively. These variations may be due to many factors, such as the sources and amount of clinical samples used, geographic distribution, and the sensitivity of different techniques used. However, the variability of this gene distribution among *S. aureus*, globally, continue to be dissimilar and this is obviously, reflected by different reports around the world. On the other hand, for identification and confirmation of biofilm producing strains, the present research subjected these strains to PCR for determination of *ica* A gene. Results confirmed that staphylococcus biofilm-producing strains showed positivity for the gene *ica* A. These result is in agreement with those of [24, 25,26,27] whom reported that all biofilm synthesizing strains contained *S. aureus* which designated a significant *ica* A genes role as virulence markers for infections of *Staphylococcus* related to the urinary tract infections. In this study, there was a highly significant association between *ica* A gene presence in *S.aureus*strains and resistance to various antibiotics. The results of our study do not agree with [26] that reported in their study that 72% of the isolated MDR *Staph*. strains carry the*ica* A. From the previous results, we can conclude the great correlation between biofilm formation and *ica* A gene presence in *S.aureus*. Furthermore, there is a great correlation between MDR *S. aureus* and *ica* A gene carriage. MDR isolates of *S. aureus*usually carry *ica* A gene has the capability for the formation of strong biofilm while giving the higher antibiotic resistance a contribution. Thus, a rapid diagnosis is significant for these strains and to administer prophylactic antibiotic and for eliminating planktonic bacteria before they can form a biofilm.

Sequencing Analysis: The PCR products of six isolates of *S. aureus* were sequestered from the urine & were further referred to the South Korean Company Macrogen to sequence the partial gene *mecA* and *icaA*. While, these were further blasted in contrast to the *S. aureus* standard strains in NCBI to record these bacteria in NCBI data to obtain the accession number of each gene of isolate in the NCBI-Genbank. Moreover, the specific selected three molecular & phenotypic methicillin isolates were exposed to the sequencing of particle DNA for *mec*A gene. To discover the potential genotypic variations, the files of FASTA format comprising of local strain sequences were utilized for evaluating the molecular association amongst the Nassyriah City isolates of Southern Iraq and Genbank submitted universal sequences. Thus, the local urine isolates No.1 and No.3 of *S. aureus* strain revealed an association with the NCBI-BLAST *S. aureus*strain MRSA 365325 (MH798858.1). The Phylogenetic tree shows that the study isolates on the *mec* A gene appeared in the tree as a single tone and the closest genetic group is (MH106551.1, and MH798858.1) from Pakistan, and Italy respectively, at total genetic changes (0.0005-0.0025%) (Figure 4). On the other hand, the present study investigate the phylogeny analysis of other three *S. aureusica* A sequences. As shown in Fig. 5, the local urine isolate of *S. aureus*Number 1 into Number 3 represented a close relation with the NCBI-BLAST. The icaA gene marker was related to the *S. aureus* local isolate which was further correlated to the *S. aureus*strain of gene Pn2301 and partial gene sequence (FJ0049901) of NCBI-BLAST as well as the *S. aureus* ATCC 6538 *S. aureus* strain (CP020020.1) from India and Germany respectively, at total genetic changes (0.2-1.0%).

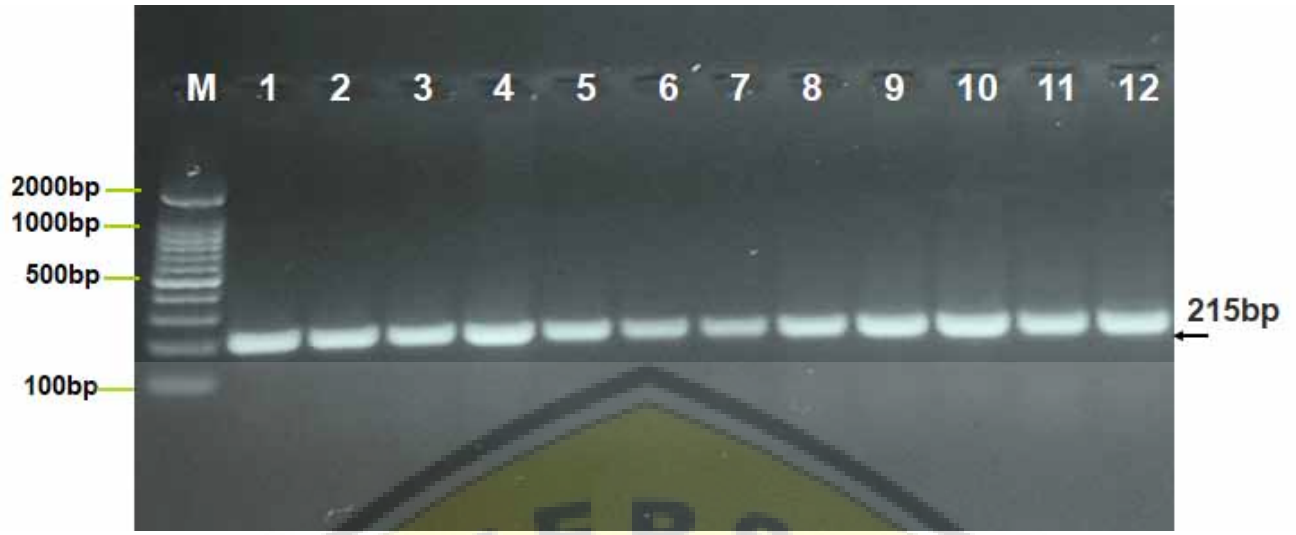

Figure (1): Agarose gel electrophoresis image that shows the PCR product analysis of methicillin antibiotics resistance *mec*A gene in positive isolates of *S. aureus*. Where M represents the marker (100-2000bp), lane (1-12) positive *S. aureusmec*A gene at (215bp) PCR product size.

Figure (2): In positive isolates of *S. aureus,* the methicillin antibiotic resistance *mecA* gene PCR product analysis has been shown in image of agarose gel electrophoresis. However, M is the Marker having 100-2000 bp while, 1-32 lanes of positive *S. aureusmec*A gene at (215bp) PCR product size. With the exception, two strain was negative for *mec* A gene (isolate 26,27).

Figure (3): The image of Agarse gel electrophorosis presented the analysis of the product of PCR in isolates of *S. aureus* for formation of *ica* A gene biofilm. M represents the Marker ladder with 100-2000bp while lane 1-12 showed positive *S. aureus* isolates with *ica* A gene having 213bp of product size.

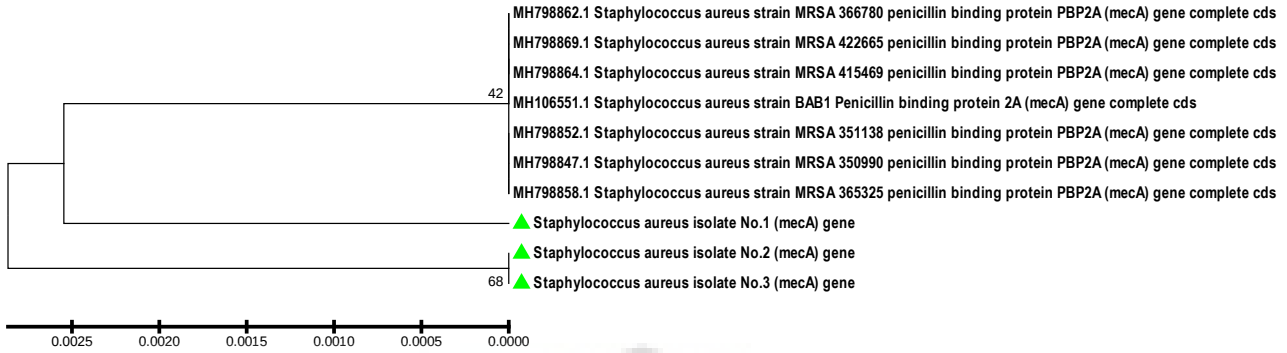

Figure (4): The sequences No. 1-No.3 of urine isolates of local *S. aureus*' phylogenetic diversity indicated a closed relatedness with the *S. aureus* NCBI-BLAST strain MRSA 365325 (MH798858.1) at total genetic changes (0.0005-0.0025%).

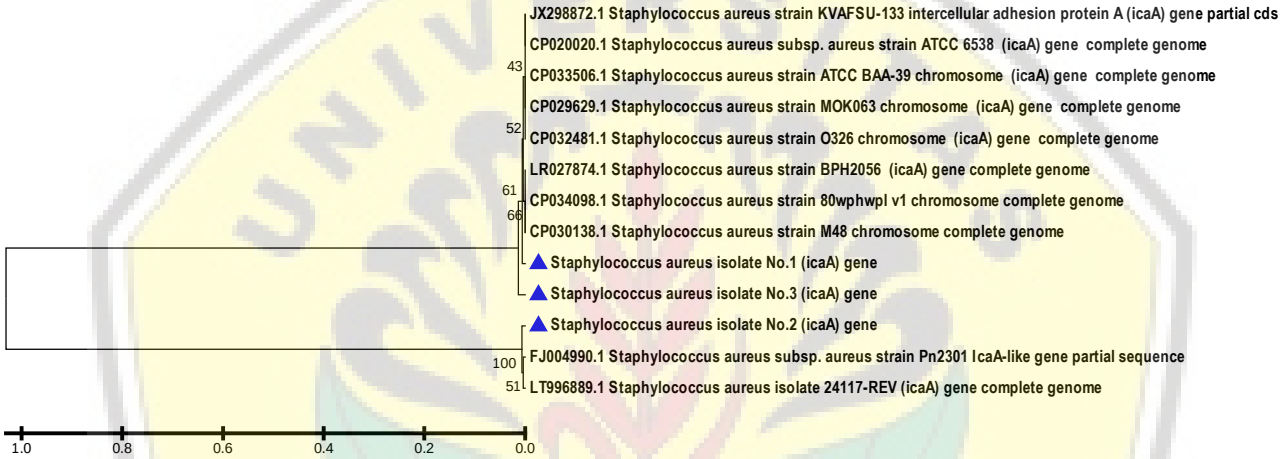

Figure (5): Phylogenetic diversity of the locally *S. aureus* urine isolate sequences (No.1 - No.3) revealed a close relationship with *S. aureus*strain Pn2301 (FJ004990.1)of NCBI-BLAST at total genetic change of (0.2-1.0%).

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Ministry of health-Thi-Qar health office, Iraq and all experiments were carried out in accordance with approved guidelines.

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Effectiveness of an Instructional Program on Quality of Bowel Cleanliness and Anxiety for Patients Undergoing Colonoscopy at Baghdad Teaching Hospitals

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Abstract

Introduction: Bowel preparation is inadequate in a large proportion of colonoscopies, leading to multiple clinical and economic harms. While most patients receive some form of education before colonoscopy, there is no consensus on the best approach.

Objectives: The aim of the study was to investigate effectiveness of instructional program on patients undergoing colonoscopy, and determine the association between demographic variables (age, sex, marital status, level of education, occupation and residence) with quality of bowel cleanliness and anxiety status.

Methodology: A quasi-experimental design study is complete through the use of pre-test and post-test methodology for the case and control groups, from the period of, 7th October 2018 to the 28th June 2019. A purposive (non- probability) sample of (60) patients who attendto endoscopy unit, at Al-Kindey Teaching hospital in Baghdad city .the sample is divided into two groups (30) patients are assigned to the case group who were exposed to the instructional program, and the remaining (30) patients as assigned to the control group who were not exposed to the instructional program. The researcher has constructed a questionnaire which composed of three parts, the first part is concerned with the self-administration related to socio-demographic characteristic, the second part is concerned with the clinical information of the patient, and the third part measure effectiveness of the instructional program through the use of the Boston Bowel Preparation Scale: (BBPS) to measure the quality of bowel preparation and Hamilton Anxiety Rating Scale (HAM-A) to measure the patient Anxiety.

Results: The study findings indicate that the implementation of the instructional program had a positive effect on patients undergoing colonoscopy procedure, through measuring the quality of bowel preparation during procedure by the Boston Bowel Preparation Scale, there are highly significant differences between the case and the control group. In addition, the result has revealed statistical significance between the case and control groups, when measuring the patient anxiety pre and post instructional program.

Keywords: *Effectiveness, Instructional Program, Quality of Bowel cleanliness, Anxiety.*

Introduction

Colonoscopy is an invasive procedure in medical practice for a variety of gastrointestinal indications, It is performed more and more frequently due to their clear diagnostic benefits and therapeutic application advantages. It is a procedure may be both diagnostic and therapeutic, also currently considered the gold standard for the investigation of large bowel pathology.[1] In a colonoscopy, uses a long, flexible, narrow tube with a light and tiny camera at one end is inserted into the rectum and slowly guided into the colon to permit visualization of the entire colon from the rectum to the lower end of the small intestines. The scope bends to allow the physician to move it around the curves in the bowel. A biopsy can be taken through a tiny instrument passed through the scope. The physician may also

pass a laser, heater probe, or electrical probe or inject medication through thevarious ways includes of the physician may prescribe a laxative for two nights before the examination and a fleet's or saline enema until the return is clear at the morning of the test. The patient maintains a clear liquid diet starting at the day before the procedure, the preparation for a colonoscopy usually involves three day sofa clear liquid diet and a laxative the night before the procedure. The patient is positioned on the left side, An IV line is started, oxygen is applied, {Bibliography}presence of comorbidities, the indication for colonoscopy and the ability to understand and follow instructions appropriately. Successful completion of the preparatory procedure according to instructions has been shown to be an independent predictor of high-quality preparation.[2,3,4,,1] Colonoscopy is the primary method for evaluating the colon, but effective diagnostic and treatment depends on the quality of the technique. Insufficient preparation reduces the quality of the procedure, increases the risk of complications, decreases the rate of detection of adenomas, extends the exploration and induces a new application for endoscopy in a shorter time than recommended in the guidelines clinical practice.[5] Patients undergoing procedures such asesophagoduodenoscopy EGD or colonoscopy are often anxious .High levels of anxiety may result in more difficult and painful procedures. In one study, patients who listened to music reduced their anxiety score statistically more than patients who did not. Music is a noninvasive nursing intervention that can decrease anxiety before GI procedures.[6-12]

Material and Method

A quasi-experimental design study was carried out to meet the objectives and goals of the study and conduct on patients undergoing colonoscopy at Baghdad Teaching Hospitals. The period of the study was initiated from, 7th October 2018, to the 28th March 2019, The sample is divided into two groups which are (30)patients as a case group who exposed to the instructional program and (30) patient as a control groupwhoshare the same criteria of selection for the study group and are not exposed to the instructional program, the instruments was constructed; the questionnaire is composed of (3) parts:

First Part: The demographic data, which as (age, gender, marital status, level of education, home address, and income).

The Second Part: The clinical information of the patient: it is including medical history, chronic diseases, treatment of the patient, number of defecations, does the patient take laxatives, history of suffering, smoking, and alcohol and others.

The Third Part: Instrument of measuring effectiveness of the instructional program.. It is composed of The Boston Bowel Preparation Scale: (BBPS).[7] To measure the quality of bowel preparation, And Hamilton Anxiety Measuring Rating Scale (HAM-A).[8] To measure the Anxiety.

The Boston Bowel Preparation Scale(BBPS) is a 9-point standardized rating scale developed at Boston University Medical Center/United States of America(USA) that has been attracting worldwide attention. The BBPS assesses bowel preparations during withdrawal of the colonoscopy, after all cleansing maneuvers have been adequately performed. The BBPS addresses (3) individual colonic segments: the right colon(RC), the transverse colon(TC), and the left colon(LC). Each segment is given a score from (0 to 3), and then the (3)individual scores are summed for a total score of (0–9) points. The BBPS has been the most thoroughly validated scale for assessing bowel preparation quality.

Results

Table (1): Distribution of the Patients Undergoing Colonoscopy (the Case and the Control Group) According to Socio- Demographic

Variables	Classification	Case Groupn=30		Control Groupn=30		χ^2 & Sig
		Freq.	%	Freq.	%	
Age	20-29	3	10.0	9	30.0	$X^2 = 14.965^a$ p value=.527 (N.S)
	30-39	11	36.7	7	23.3	
	40-49	9	30.0	7	23.3	
	50-59	3	10.0	6	20.0	
	60-69	4	13.3	1	3.3	
	$\bar{x}$ + SD	41.96±12.87		38.63±13.03		

Variables	Classification	Case Groupn=30		Control Groupn=30		χ^2 & Sig
		Freq.	%	Freq.	%	
Gender	Male	16	53.3	13	43.3	X^2 = .002[a], p value =.626, (N.S)
	Female	14	46.7	17	56.7	
Marital status	Single	5	16.7	4	13.3	X^2 =3.507[a], P.value=.941 (N.S)
	Married	18	60.0	24	80.0	
	Widowed	3	10.0	1	3.3	
	Divorced	4	13.3	1	3.3	
Level of education for patient	read & write	3	10.0	7	23.3	X^2=24.312[a]P. value=.083 (NS)
	primary school	4	13.3	10	33.3	
	secondary school	7	23.3	2	6.7	
	diploma	5	16.7	3	10.0	
	Bachelor	11	36.7	8	26.7	

n = number of patients, Frq. = frequency, % = percentage, $\bar{x}$ = Mean, SD = standard deviation, ID = Iraqi dinar χ^2 = Chi-Square test, N.S = Non Significant at P >0.05, Out of com = out of comparison

The results of table 1 revealed that high percentage (36.7%) of patients in the case group at age group (30-39) years, while the high percentage (30%) of patients in the control group at age group (20-29 years), More than half of patient (53.3%) of patients in the case group were males, and More than half of patient (56.7%) of patients in the control group were females. Related to marital status (60%) of patients in the case group and (80%) of patients in the control group were married. More than one third (36.7%) of patients in the case group had a bachelor's degree and while (26.7%) of patients in the control group had a bachelor's degree. No statistical significant differences were observed with regard to sociodemographic characteristic between two groups at (p>0.05) when analyzed by chi-square test.

Table (2): Distribution of the Patients Undergoing Colonoscopy (Case and Control Group) by Clinical Data

Variables	Classification	Case Group n = 30 patients		Control Group n = 30 patients		X^2 & Sig
		Freq	%	Fre.	%	
do you take Medication	Yes	13	43.3	9	30	X^2=2.11, value =..043 (Sig)
	No	17	56.7	21	70.0	
Type of medication	treatment of diabetes	3	10.0	1	3.3	X^2=17.353[a], p. value =.298 (N.S)
	treatment of hypertension	4	13.3	5	16.7	
	diabetes & hypertension	6	20.0	3	10	
Previous taking of laxatives	Yes	0	0.0	6	20.0	X^2=2.69, value=.012 (S)
	No	30	100.0	24	80.0	
Number of defecations	Once every 2 - 3 days	8	26.7	9	30.0	X^2=10.288[a], value=.328 (N.S)
	1-3 daily	4	13.3	11	36.7	
	4-6 daily	10	33.3	6	20.0	
	7-9 daily	8	26.7	4	13.3	
Duration of problems	1 year & less	26	86.7	27	90.0	X^2=6.923[a], p.value=.031 (S)
	2 years -4 years	4	13.3	2	6.7	
	More than 4 years	0	0.0	1	3.3	

n = number of patients, F= frequency, %= percentage, $\bar{x}$ = Mean, SD= standard deviation., χ^2= Chi-Square test, N.S = Non Significant at P >0.05, Out of com =out of comparison

Table (2) revealed that the high percentage (56.7%) of patients in the case group and (70%) of patients in the control group don't take medication. According to type od medication (20%) of patients in case group and (10%) of the control group taken medication for diabetes and hypertension. All patients in the case and (80%) of patients in the control group were don't have had laxatives. More than third (33.3%) of patients in the case group and (36.7%) of patients in the control group their number of defecations was ranges from (4-6 daily)and (1-3) daily respectively. Majority (86.7%) of patients in the case group and (90%) of patients in the control group they have been suffering from symptoms since 1 year & less, All 100% of patients in the case group and the control group they did not take any information by nurse. (73.3%) of patients in the case group and (63.3%) of the control group have chronic disease. Forty percent of patients in the case group and (33.3%) of patients in the control Smoking cigarettes, all participant in the case and the control group don't take alcohol

No statistical significant differences were observed with regard clinical characteristic between two groups at ($p>0.05$) when analyzed by chi-square test.

Table (3): Distribution of Quality of Bowel cleanliness of Patients Undergoing Colonoscopy by Boston Bowel Preparation Scale: (BBPS) Pre and Post Instructional Program for the Case and the Control group.

Boston bowel preparation scale	Case n=30	Control n=30	t-test	P. value	Sig
	Mean ± sd	Mean ± sd			
LC	3.00 ± .00	2.03± .71	7.370	.000	H.S
TC	2.86 ± .34	1.60 ± .72	8.647	.000	H.S
RC	2.50 ± .62	1.16 ± .83	6.989	.000	H.S

n=number of sample, S.d = Standard Deviation, t- test = Independent t- test,,d.f: degree of freedom, Sig.: Significance H.S. = high significant at P< 0.01,The BBPS addresses 3 individual colonic segments: TC(transverse colon), LC. (left colon), RC (the right colon), Each segment is given a score from 0 to 3, 0 = Inadequate, 1 = Poor, 2 = Good, 3 = Excellent or adequate. Prediction scale used for bowel preparation as adequate if BBPS score ≥2 in all 3 segments.

The results of table (3) revealed that the arithmetic mean for BBPS score of the case group was (3), (2.03) and (2.86) for the left colon, the transverse colon and the right colon respectively. That explains the scale for bowel preparation as excellent and good, or adequate. While the arithmetic mean for BBPS score of the control group was (1.60), (2.50) and (1.16) for the left colon, the transverse colon and the right colon respectively. That explains the scale for bowel preparation are poor for the left colon and the right colon and adequate or good for the transverse colon.

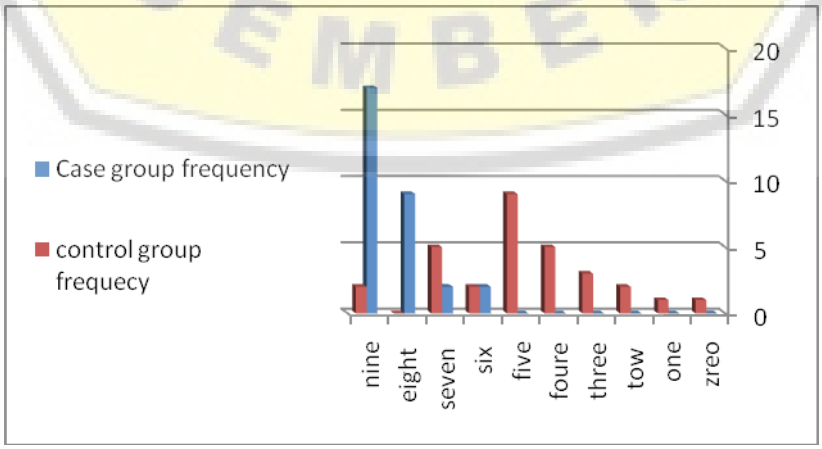

Figure (1): Patients Responses during colonoscopy procedure according to Total Score of Boston Bowel Preparation Scale to the Quality of Bowel Cleanliness for Case and Control group.

The figure shows that majority (86.7%) of the case group score was range from eight and nine score and all cases under 6 score. While the control group high percentage 21 (70%) of them their score was less than 6 score.

Table (4) Comparison Between total score of Patients Anxiety by (Hamilton Anxiety Scale (HAM-A) Pre and Post Instructional Program for the Case and the Control group.

	Period	Case group n= 30	Control group n= 30	t-test case & control pre	t-test case & control post
		Mean± S.d	Mean± S.d		
Hamilton Anxiety Scale	Pre	41.76 ± 7.62	39.96 ± 7.54	t = .919, d.f = 58, p.value = .362, sig = (N.S)	t-13.660-, d.f = 58, p.value = .000 sig = H.S
	Post	15.93±3.62	35.20 ± 6.81		
	t- test pre and post	t = 20.481, d.f = 29, p.value = .000, sig = (H.S)	t = 9.324, d.f = 29, p.value = .000, sig = (H.S)		

n=number of sample, S.d = Standard Deviation, t- test = Paired Samples t test and independent t- test,,d.f: degree of freedom, Sig.: Significance H.S. = high significant at P< 0.01, N.S: Non-Significant at p>0.05. The Hamilton score <17= mild severity, 18–24= mild to moderate severity, 25–30 =moderate to severe.

Table (4) showed an arithmetic mean for Hamilton Anxiety Rating Scale. Although a highly statistically significant difference from the pre to post procedure for both the case and the control group of Patients Undergoing. Colonoscopy, the effectiveness of instructional program was clearly observed from the table, there are such significant differences were not observed in the pre instructional program for the case and control group, p. value was (0.362). While a highly statistically significant difference from post procedure for the case and the control group the p. value is (0.000).

In the same line with the study findings, a study reported that more than half of the patients of the study sample were male. and the mean age was (59.5±13 years). Also, Shieh et al. (2013), revealed that more than half of the patients in the case group and in the control group were men. The mean age of patients in the case group was (46.1 ± 10.9) years, and in the control group was (52.8 ± 14.3 years).[13] The present study revealed that most of patients in the case group and in the control group were married This result support with finding of the study found that married adults were more likely to participate in colorectal cancer screening colonoscopy than the non-married, and inviting both members of a couple together further increases screening uptake.[14] To decrease a patient's anxiety during invasive procedures like colonoscopy, various approaches have been used to distract the patient's attention, such as instructional booklet, information, video, listening to music and encourage self-confidence, various preparatory education programs have been developed[1,17,18]

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Faculty of Dentistry, University of Babylon, Hillah city, Iraq and all experiments were carried out in accordance with approved guidelines.

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Effect of Sensory Perceptual Informational Program on Patients' Anxiety Levels Before Cardiac Catheterization

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Abstract

Informing and educating patients are important for preparing them for the medical procedures both physically and psychologically. Consultation and education before cardiac catheterization are reported to decrease patients' worries and fears, reduce the need for analgesics after the intervention by decreasing pain, prevent post-operative complications such as nausea and vomiting, and shorten hospital length of stay by enhancing recovery time after the procedure.

Objectives: To assess patients' anxiety levels before cardiac catheterization, to determine the effect of the sensory perceptual informational program on patients' anxiety levels through comparing patients' anxiety score before and after the program, and to find out the relationship between patients' anxiety levels and their demographic and clinical data.

Results: The study results indicate that the majority of the study sample are 54 years old and more (40.9 %), are male (68.2 %), within secondary school (51.5%), have barely sufficient monthly income (48.5 %), urban residents (69.7 %), married (90.9 %) and retired (42.4%). Also about (62.1%) of the patients are exhibit moderate level of anxiety before the application of the program. While (69.7%) of the patients are exhibit non or mild level of anxiety after the application of the program.

Keywords: *Informational Program, Cardiac Catheterization, Anxiety.*

Introduction

Coronary Artery Disease (CAD)considered as the most common cause of demise in both men and women. CAD happen initially due to build-up of plaque into the arteries of the heart which nourish blood to the heart muscle. When the arteries become tighten from plaque, there is a deficiency of blood circulating to the heart muscle which can cause irreversible disrupt[1]. According to World Health Organization, about 18 million deaths take place due to cardiovascular disease in 2008 and this value has been rated to extent 23 million by 2030[15]. Management of ischemic heart disease can be pharmacological, or surgical (consisting of myocardial revascularization when cardiac catheterization indicates severe obstructive lesion), or vascular (angioplasty), and this depending on the patient's clinical state and the phase of coronary artery occlusion[6]. Cardiac Catheterization (Cardiac Cath or Heart Cath) is a technique applied to checks heart functions. A long, thin, and hollow tube called a catheter is entered into a blood vessel that reaches to the heart. Cardiac Cath is a painless procedure which is utilized in the diagnosis and treatment of different cardiac defects and health problems[1]. In the United State, about 2 million heart patients undergoing cardiac catheterization every year, and this number is increasing because this diagnosis method is valid and accurate, which like other critical procedures causes stress and anxiety in patients[8]. Anxiety is distinguished by symptoms such as palpitation, perspiration, tremor, difficulty in breathing or smothering sensation, chest pain or harassment, and/or stomach pain. Anxiety stimulates the sympathetic nervous system to remarkable different physiological responses, such as tachycardia, sweating, increased oxygen exhaustion, increased blood

pressure, which can worsen the advancement of the patient. In addition, anxiety can have passive impact on patient's clinical outcomes such as refuse the patient for treatment and lack tolerance to pain before, during and after the catheterization procedure[6]. The extent of anxiety in patients with coronary artery diseases before angiography is significantly higher than those without this disease. The relationship between anxiety and cardiovascular system (CVS) is known since the first studies on individuals so called irritable cardiac disease. Tachycardia and palpitation as a consequence of severe terror and anxiety affined issues, has turn into a focus of importance in studies that study the activity of CVS[1].

Methodology

Design of the Study: A pre-experimental design (one group pretest-posttest design) used to study the effect of the sensory perceptual informational program on patients' anxiety levels before cardiac catheterization, from the period of 16th September, 2018 to 1st July 2019.

Setting of the Study: The study is conduct in Al-Najaf City/AL-Najaf Center for Cardiac Surgery and Trans Catheter Therapy.

Sample of the Study: A non-probability (purposive sample) consist of 66 patients are diagnosed with ischemic heart disease and scheduled for cardiac catheterization.

Method: The final copy consists of the following parts:

Part I: Patient's demographic data form consists of (7) items, which include age, gender, level of education, socio-economic status, residence, marital status and occupational status.

Part II: Patient's clinical data form consists of (7) subparts, which include: **a**- diagnosis: angina, myocardial infarction, ventricle septal defect, patent ductus arteriosus, atherosclerosis, and dysrhythmia. **b**- duration, **c**- type of catheterization: include diagnostic and therapeutic, **d**- due suffer from**:** (respiratory disease, renal disease, thyroid disease, stroke, and other). **e**- due suffer from psychiatric disorder, **f**-medications**,** **g**- receiving of health instructions regarding cardiac catheterization**.**

Part III: Which include from Beck Anxiety Inventory Scale that consist from 20 items.

Results

Table (1): Summery Statistics of the Study Sample Demographic Data

Demographic Data	Rating And Intervals	Frequency	Percent
Age/years	33-39	6	9.1
	47-53	26	39.4
	54-60	27	40.9
	61 And More	7	10.6
Gender	Male	45	68.2
	Female	21	31.8
Residency	Rural	20	30.3
	Urban	46	69.7
Marital status	Single	6	9.1
	Married	60	90.9
Levels of education	Does not read and write	14	21.2
	Read and write	6	9.1
	Primary school	6	9.1
	Secondary school	34	51.5
	College and more	6	9.1

Demographic Data	Rating And Intervals	Frequency	Percent
Occupational status	Governmental	7	10.6
	Free job	6	9.1
	Retired	28	42.4
	Jobless	25	37.9
Economic status	Sufficient	21	31.8
	Barely sufficient	32	48.5
	Insufficient	13	19.7

Table (1) illustrates the demographic distribution of the study sample. The study results indicate that the majority of the study sample are 54 years old and more (40.9 %), are male (68.2 %), within secondary school (51.5%), have barely sufficient monthly income (48.5 %), urban residents (69.7 %), married (90.9 %) and retired (42.4%).

Table (2) Summery Statistics of the Clinical Data for the study Sample

Clinical Data	Rating And Intervals	Frequency	Percent
Diagnosis	Angina	14	21.2
	Atherosclerosis	6	9.1
	Dysrhythmia	20	30.3
	Myocardial infarction and Angina	20	30.3
	Ventricular septal defect and patent ducts arteriosus	6	9.1
Duration/years	3 And Less	32	48.5
	4-7	14	21.2
	16 And More	20	30.3
Suffering from chronic diseases	Diabetes mellitus	15	22.7
	Hypertension	26	39.5
	Diabetes mellitus and hypertension	25	37.8
Psychiatric clinic	No	66	100.0
Psychiatric medications	No	66	100.0
Medications	None	6	9.1
	Atorvastatin, Metformin, Candesartan, and Plavix	7	10.6
	Captopril, Plavix	7	10.6
	Glibengmaid, Captopril	7	10.6
	Glibengmaid, Losartan, Aspirin, Metformin, Aspirin	6	9.1
	Inderal	7	10.6
	Insulin, Plavix	6	9.1
	Isoptin	7	10.6
	Isoptin, Verapamil	6	9.1
	Valsartan, Atorvastatin, Metoprolol, Aspirin, Cardizin, Plavix	7	10.6

Clinical Data	Rating And Intervals	Frequency	Percent
Instruction	Yes	39	59.1
	No	27	40.9
Sources	Physician	26	39.4
	Nurse	6	9.1
	Another sources	7	10.6

Table (2) illustrates the clinical data of the study sample. The study results indicate that the majority of the study sample are diagnosed with dysrhythmia (30.3%), while those with myocardial infarction and angina (30.3%). The duration of disease since diagnosis per years is 3 and less (48.5%). While the highest percentage of study sample are hypertensive (39.5%). While the study sample don't suffer from psychiatric disorder and don't taken psychiatric medications (100%). (10.6%) of patients that taken Captopril, Plavix, (10.6%) Glibenglmaid, Captopril, (10.6%) Inderal, (10.6) Isoptin, and (10.6%) Valsartan, Atorvastatin, Metoprolol, Aspirin, Cardizin, Plavix.and(59.1%) are receiving health instructions and the physician is the dominant source of the received instructions (39.4%).

Table (3) Assessment of Patients' Anxiety levels for the Study Sample before and after the Applications of the Program

Periods of measurement	Anxiety Levels	Frequency	Percentage	Mean	Overall Assessment
Pre-test	Sever	4	6.1	1.78	Moderate
	Moderate	41	62.1		
	Non or Mild	21	31.8		
	Total	66	100.0		
Post-test	Sever	0	0.0	1.54	Non or Mild
	Moderate	20	30.3		
	Non or mild	46	69.7		
	Total	66	100.0		

Table (3) shows that the (62.1%) of the patients are exhibit moderate level of anxiety before the application of the program. While (69.7%) of the patients are exhibit non or mild level of anxiety after the application of the program.

Table (4) Mean Difference (paired t-test) between the Patients' Anxiety levels before and after The Application of The Program

Main domain	Periods of measurement	Mean	N	Std. Deviation	t-value	d.f.	p-value
Patients' anxiety	Pre-test	1.7818	66	.38865	4.508	65	0.001 HS
	Post-test	1.5447	66	.22823			

Table (4) illustrate that there is a high significant differences between the patients' anxiety levels before and after the application of the program at p-value less than (0.01).

Table (5) Relationship between Patients' Anxiety Levels (post-test) and their Demographic Data

Demographic Data	Rating And Intervals	Anxiety Levels		Total	Sig.
		Moderate	Non or Mild		
Age/years	33-39	1	5	6	X^2 (5.306) d.f. (3) p-value (0.151) NS
	47-53	12	14	26	
	54-60	6	21	27	
	61 And More	1	6	7	
Total		20	46	66	
Gender	Male	14	31	45	X^2 (0.044) d.f. (1) p-value (0.84) NS
	Female	6	15	21	
Total		**20**	**46**	**66**	
Residency	Rural	8	12	20	X^2 (1.278) d.f. (1) p-value (0.258) NS
	Urban	12	34	46	
Total		20	46	66	
Marital status	Single	1	5	6	X^2 (0.581) d.f. (1) p-value (0.446) NS
	Married	19	41	60	
Total		**20**	**46**	**66**	
Levels of education	Does not read and write	1	13	14	X^2 (17.551) d.f. (4) p-value (0.002) HS
	Read and write	0	6	6	
	Primary school	1	5	6	
	Secondary school	18	16	34	
	College and more	0	6	6	
Total		**20**	**46**	**66**	
Occupation	Governmental	2	5	7	X^2 (7.370) d.f. (3) p-value (0.061) NS
	Free job	0	6	6	
	Retired	6	22	28	
	Jobless	12	13	25	
Total		**20**	**46**	**66**	
Socio-economic status	Sufficient	1	20	21	X^2 (9.647) d.f. (2) p-value (0.008) HS
	Barely sufficient	13	19	32	
	Insufficient	6	7	13	
Total		**20**	**46**	**66**	

Table (5) shows that there is a high significant relationship between patients' anxiety levels (post-test) and level of education, socio-economic status at p-value less than (0.01). While there is non-significant relationship between patients' anxiety levels and the other demographic data at p-value more than (0.05).

Table (6) Relationship between Patients' Anxiety Levels (post-test) and their Clinical Data

Clinical data	Rating and intervals	Anxiety Levels		Total	Sig.
		Moderate	Non or Mild		
Diagnosis	1	12	8	20	X^2 (18.596) d.f. (4) p-value (0.001) HS
	2	6	8	14	
	3	1	19	20	
	4	1	5	6	
	5	0	6	6	
Total		**20**	**46**	**66**	
Duration/years	3 and Less	11	21	32	X^2 (4.697) d.f. (2) p-value (0.096) NS
	4-7	1	13	14	
	16 and More	8	12	20	
Total		**20**	**46**	**66**	
Catheterization type	Diagnostic	1	12	13	X^2 (3.919) d.f. (1) p-value (0.048) NS
	Therapeutic	19	34	53	
Total		**20**	**46**	**66**	
Receiving health instructions	Yes	19	20	39	X^2 (15.307) d.f. (1) p-value (0.001) HS
	No	1	26	27	
Total		**20**	**46**	**66**	

Table (6) shows that there is a high significant relationship between patients' anxiety levels (post-test) and their diagnosis, and the receiving health instructions at p-value less than (0.01). While there is non-significant relationship with other clinical data at p-value more than (0.05).

Discussion

Anxiety is described as an uncomfortable feeling of dread that is a response to extreme or prolonged periods of stress, stress is associated with negative situations [13]. Individuals undergoing cardiac catheterization and related procedure are likely to experience elevated anxiety pre-procedurally, with highest anxiety levels occurring in the waiting period immediately prior to the procedure [7].In daily practice it is observed that patients do not understand clearly information given by the healthcare team due to stress and anxiety. In this context of waiting and anxiety, relatives are also stressed and share feelings and uncertainties with the patients, thus turning the situation more complex for the nursing team, since these experiences are mainly witnessed by nurses. In face of this situation, nurses should get the best information available to deliver a better care, thus diminishing the stressing factors to reduce patients' and relatives' anxiety [10]. Anxiety had impacts on the patients' physiological reactions, therefore, nurses need to identify anxiety in the patients and try to reduce it by using proper method[9]. The present study conducts to use the sensory perceptual informational program as non-pharmacological strategies to reduce patients' anxiety levels before cardiac catheterization. This chapter presents the discussion of the study results with an appropriate rationale and articles based support. And it organized as follow: In the present study the highest percentage of patients are at the age group of (54-60). [4] studied "the effect of age and previous surgery experience on pre-operative anxiety", their study results indicate that older patients typically would be expected to have low level of anxiety. This result may come because that the heart diseases are most common occurs among individuals with an advanced age compared with young individuals. Regarding the patients' gender, the present study results indicate that the male is the dominant gender for the study sample.[3] studied" pre-operative anxiety in patients undergoing different type of surgery", the study results indicated that the majority of the study sample are males. The heart disease most

common occurs among males compared with females and this may because that males are facing many risk factors related to heart disease such as smoking, psychological stress more than females. The current study revealed that the majority of the study sample are with secondary education level, barely sufficient economic status, are married, and retried, also the study results indicate that the majority of the study sample are urban resident. This result is supported by[14] who reported that the individual with low educational level, low economic status and married were more label to expose to accidental cardiac disorder, this results were agree with our finding which pointed on high percentage of the sample are within secondary education, majority are married and retried also the results showed that the high percentage were city resident. Also[11] studied "assessment of patients' knowledge regarding lifestyle changes after ischemic heart diseases", their study result shows that the most frequent age is 60 years old, are males, within primary school, most of the subjects are present with sufficient to some extent socio-economic status, and regarding the residency most of patients are urban resident.

Conclusion

The study concludes that the sensory perceptual informational program is an effective tool in improving the patients' anxiety levels before cardiac catheterization. And this conclusion is proved through the statistical approaches that show that there is a significant decreasing in the anxiety levels after the application the program. So, there is no enough evidences to accept the null hypothesis. Otherwise, the alternative hypothesis is accepted.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Faculty of Nursing/University of Kufaand all experiments were carried out in accordance with approved guidelines.

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Impact of Stroke on Patients' Health Status at Middle Euphrates Neuroscience Center in Al Najaf -City

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Abstract

Stroke is a major cause of mortality worldwide and commonly occurs among elderly, and between all the neurologic diseases of adult life, stroke ranks first in frequency and importance.

Methodology: A descriptive cross-sectional study was adapted to assess the impact of stroke in the current study to achieve the early stated objectives, the study started from February 10th 2019 to May 22nd 2019. A non-probability (purposive) sample of (92) patients who found in Middle Euphrates Neuroscience Center.

Results: The results show that the most of participant age groups are more than 50 years old (93.5%), and (60.9%) of them are females, also(58.7%) of the subjects are illiterate. And (69.6%) of them had barley sufficient monthly income, (72.8%) of the participants are living in urban areas. The majority of the study sample (85.9%) are married,while after stroke, the results show that the most of study sample(96.7%)have no change in their marital status. Concerning occupational status,about (53.3%) are housewives, while (50%) of the participants lost their job after stroke. The results also show that the all patients are affected by stroke, three-quarter of them arehighly affected and the fourth quarter are moderately affected, because the health institutions lack many specialist rehabilitation centers and physiotherapists.

Conclusion: The study confirmed that all patients involved were affected by the stroke .

Keywords: *Impact, Stroke, Patient, Health Status.*

Introduction

Stroke is a major cause of mortality worldwide and commonly occurs among elderly, and between all the neurologic diseases of adult life,stroke ranks first in frequency and importance ([1] .More than 13.7 million new strokes each year. Worldwide, 1/4 people over age 25 will have a stroke in their lifetime, almost 60% of all strokes each year are in people under the age of 70 years, it occur 52% of in men and 48% in women each year [2]. Someone in the US has a stroke every 40 seconds on average. In 2016, stroke accounted for about 1 of every 19 deaths in the US and died of stroke every 3 minutes 42 seconds. In 2016, there were 5.5 million deaths attributable to cerebrovascular disease worldwide (2.7million deaths from ischemic stroke and 2.8 million deaths from hemorrhagic stroke). According to 2016 data, Eastern Europe, East Asia, and parts of Southeast Asia, Central Asia, and sub-Saharan Africa had the highest rates of stroke mortality. Age-standardized prevalence rates of stroke were higher in Eastern Europe and East Asia [3]. Stroke, a leading cause of disability, is usually a major life event. The ultimate goal of stroke interventions is to improve the health-related quality of life (HRQOL) of survivors ensuring that they are enabled to fulfil their roles and purpose in life after the event[4]. Stroke is one of the main causes of death and functional inability worldwide . In the last decade, the global incidence of stroke has increased by 20% in low- and middle income countries such as Brazil . Stroke is the third most common cause of death in developed countries and the main cause of death in Latin America[5]. Unfortunately, many stroke survivors are left with a range of physical, cognitive, and behavioral deficits that limit their ability to regain premorbid functioning across a number of

lifestyle domains. Even survivors of mild stroke can be left with negative psychosocial outcomes in the form of reductions in quality of life (QOL) that extend beyond positive motor recovery outcomes. Quality of life is a multidimensional construct that consists of subjective perceptions of physical and mental functioning and associated feelings of well-being. Because stroke survivors can experience a range of impairments that differ in severity, many report significant reductions in post stroke QOL.5 Such decreases in QOL have been reported in stroke survivors as many as five years post-stroke.Reductions in QOL are associated with changes in both physical and mental functioning and well-being[7]. Worldwide, cerebrovascular accidents (stroke) are the second leading cause of death and the third leading cause of disability. Stroke, the sudden death of some brain cells due to lack of oxygen when the blood flow to the brain is lost by blockage or rupture of an artery to the brain, is also a leading cause of dementia and depression. Globally, 70% of strokes and 87% of both stroke-related deaths and disability-adjusted life years occur in low- and middle-income countries. Over the last four decades, the stroke incidence in low- and middle-income countries has more than doubled. During these decades stroke incidence has declined by 42% in high-income countries. On average, stroke occurs 15 years earlier in – and causes more deaths of – people living in low- and middle-income countries, when compared to those in high-income countries. Strokes mainly affect individuals at the peak of their productive life. Despite its enormous impact on countries' socio-economic development, this growing crisis has received very little attention to date[8].

Method and Materials

Design of the Study: A Descriptive cross-sectional study was adapted to assess the stroke impact in the current study to achieve the early stated objectives, started from February 10th 2019 to22th May 201219.

Setting of the Study: The study is conducted in Al-Najaf City/Al-Najaf Al-Ashraf Health Directorate Middle Euphrates Neuroscience Center**.**

Sample of the Study: A Non-probability (purposive) sample of (92) patients who found in the Middle Euphrates Neuroscience Center for treatment or follow up or both. The selection of sample size based on statistical power analysis with a statistical power more than 90%.

Criteria for Including the Sample within each Stratum (Ischemic and Hemorrhagic Stroke Patients):

1. All participants are medically diagnosed as (mild to moderate by stroke).
2. The age of the all participants is 20 – 60 years old.
3. All participants are from Iraqi Nationality.
4. Alert patients, free from any change in the level of consciousness.
5. Free from renal failure, or undergoing hemodialysis or peritoneal dialysis.
6. Free from cancer or undergoing chemotherapy.
7. Free from psychiatric disorders.

Study Instrument: A questionnaire was adopted by the researcher to measure the variables of interest. the final study instrument consisting three parts:

Part I: Patients' Demographic Data.

Part II: Medical History.

Part III: Impact of stroke: The third part consist of instrumental Stroke impact Scale (AHA).

Data Collection: The data were collected through the use of Arabic version of the questionnaire and by means of interview with patients inAl-Sadder Medical City, at theMiddle Euphrates Neuroscience Center**.** The data collection process lasted six weeks . The interview technique took about 15-20 minutes for each subject.

Validity of the Instrument: A content validity of the study instrument conducted through a group of experts who have more than 10 years of experience in nursing field.

Statistical Analysis: The data were analyzed through the application of the descriptive and inferential data analysis method, included:

- Frequency, percentage, and mean of scores.
- Chi-square.
- Alpha Cronbach for the reliability of questionnaire (Internal consistency).

Study Results and Findings:

Table (1) Patients' Demographic Data

Demographic data	Rating and intervals	Frequency	Percent
Age/years	35 - 39	1	1.1
	40 - 44	4	4.3
	45 - 49	1	1.1
	50+	86	93.5
Gender	Male	36	39.1
	Female	56	60.9
Level of Education	Illiterate	54	58.7
	Read and write	14	15.2
	Primary school	13	14.1
	Intermediate school	6	6.5
	Secondary school	3	3.3
	Institute or college	2	2.2
Monthly Income	Insufficient	16	17.4
	Barley sufficient	64	69.6
	Sufficient	12	13.0
Residency	Rural	25	27.2
	Urban	67	72.8
Marital Status before Stroke	Single	3	3.3
	Married	79	85.9
	Widowed	10	10.9
Marital Status after Stroke	No change	89	96.7
	Divorced	2	2.2
	Separated	1	1.1
Occupation before Stroke	Governmental employee	4	4.3
	Free job	13	14.1
	Retired	11	12.0
	Disable	1	1.1
	Housewife	49	53.3
	Jobless	14	15.2
Occupation after Stroke	No change	29	31.5
	Change the job	17	18.5
	Lost the job	46	50.0

Table (**3.1**) shows that the most of participants age groups are more than (50 years old), considered as the highest percentage (93.5%) among the study sample. Regarding gender of the study sample, the study indicate that (60.9%) are females, also this table present that the majority of the sample (58.7%) are illiterate. The results indicate that (69.6%) of the subjects had barley sufficient monthly income, (72.8%) of them are living in urban residential areas. The majority of the study sample (85.9%) are married before getting stroke,while after stroke, the results show that the most of study sample (96.7%) have no change in their marital

status. Concerning occupational status,about (53.3%) of the study sample were housewives before stroke, and after stroke(50%) of the study have change in their occupational status.

Table (2) Study Sample Past Medical History

Clinical Data	Rating and intervals	Frequency	Percent
Type of Stroke	Ischemic	74	80.4
	Hemorrhagic	18	19.6
Side of Stroke	Right	49	53.3
	Left	43	46.7
Duration of the Disease/months	6	35	38.0
	7 - 12	50	54.3
	13 - 18	1	1.1
	19 - 24	2	2.2
	25+	4	4.3
Complications	Yes	38	41.3
	No	54	58.7
Associated Diseases	DM	11	12.0
	DM and ischemic heart diseases	3	3.3
	DM, ischemic heart disease, and hypertension	1	1.1
	DM, ischemic heart diseases and heart failure	1	1.1
	DM and hypertension diseases	23	25.0
	DM, hypertension, and heart failure	2	2.2
	DM, hypertension, and renal disease	4	4.3
	DM, heart failure, and renal disease	1	1.1
	Ischemic heart disease	5	5.4
	Ischemic heart diseases and hypertension	3	3.3
	Ischemic heart disease and renal disease	2	2.2
	Hypertension	30	32.6
	Hypertension and renal disease	1	1.1
	Heart failure	1	1.1
	Other disease	4	4.3
Smoking	Yes	15	16.3
	No	77	83.7
Duration of Smoking/years	1-3	8	8.7
	4 - 6	6	6.5
	7+	1	1.1
	Total	15	16.3
Amount of Smoked Packs	1	8	53.3
	2	4	26.7
	3	1	6.7
	5	1	6.7
	6	1	6.7

Table (2) shows that the majority of the study sample (80.4%) have ischemic stroke. Regarding to the affected side of the body, the results reveal that the majority of the study subjects (53.3%) were with right side affected. In regards to duration of the disease, the results show that the majority of the participants (54.3%) have duration of disease that ranges from (7-12) months. Concerning the complications of stroke, the results show that more than half of the subjects (58.7%) have no complications. In addition, most of study sample(32.6%) has hypertension. Regarding the smoking, the results show that most of the study sample (83.6%) are not smoking.

Table (3) The Overall Assessment of the Impact of Stroke on Patients' Health Status

Main domain	Levels of effect	Frequency	Percent
Overall assessment of impact of stroke on patients' health status	Moderate Effect	23	25.0
	High Effect	69	75.0
	Total	92	100.0

Table (4) Relationship between the Patients' Health Status and their Demographic and Clinical Data

Demographic And Clinical Data	Chi-Square Value	D.F.	P-Value
Age/Years	9.054	3	.029 S
Gender	2.190	1	.139 NS
Level of Education	5.590	5	.348 NS
Monthly Income	15.000	2	.001 HS
Residency	.018	1	.892 NS
Marital Status	.249	2	.883 NS
Occupation	15.721	5	.008 HS
Type of Stroke	.829	1	.363 NS
Side of Stroke	.713	1	.398 NS
Duration of the Disease	2.811	4	.590 NS
Complications	1.494	1	.222 NS
Associated Diseases	25.942	14	.026 S
Smoking	.664	1	.415 NS

Table (4) shows that there is a significant relationship between the impact of stroke on patients' health status and their (age, monthly income, occupation and associated diseases) at p-value less than 0.05, while there is a non-significant relationship with the other demographical and clinical data at p-value more than 0.05.

Discussion

The study results show that the most frequent age group is (more than 50 years old). This result agrees with [3], they found that the (more than 50 years old) is the dominant age group of the study sample. Furthermore. there is a physical vulnerability relates to the phenomenon of age that makes the individuals risky for many diseases and health problems such as HTN, obesity, dyslipidemia, DM, and CVA. Concerning the gender, the study results reveal that the majority of the subjects are females. This result agrees with [11] in their study they found that the dominant gender is female. Regarding the level of education, the results show that the majority of the study subjects are illiterate. This result agrees with[9,11,12] in their study results which indicate that the most participants are illiterate. Concerning the socio-economic status, most of the study participants are presented with sufficient to some extent socio-economic

status. This result agrees[14], in their results which indicate that the majority of the study participants' monthly income is barley sufficient .Concerning residency, the study results indicate that the study subjects are urban residents. This result agrees with[14], in their results that indicate that the majority of the subjects are urban residents rather than the countryside or in big cities. Regarding marital status, the study results show that the majority of the study sample are married. These results agree with [15], whose results indicate that the majority of the study subjects are married. While after stroke, the results show that the most of the study sample have no change in their marital status. Regarding occupational status, the results show the highest percentage of the study subjects are housewives before stroke and after stroke half of the study subjects have change in their occupational status. These results agree with [9] whose results indicate that the majority of the study subjects are housewives. The changes in the ability of patient to working after stroke, he/she had a little improvement in health status and need long rehabilitation period. Regarding patients' clinical data, the study results reveal that the most of patients are diagnosed with ischemic stroke.

CONCLUSION

Based on the study results and discussion, the study concluded the following: The study confirmed that all patients involved were affected by the stroke. The study indicate that three-quarter of participants are severely affected, while the left quarter of them are moderately affected. There is a significant relationship between the impact of stroke and patients' age, monthly income, occupation, and associated disease.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Kufa, Faculty of Nursing, Iraq and all experiments were carried out in accordance with approved guidelines.

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The Effect of Task- Based Learning Strategy on the Achievement and Moral Competence on the Ecology and Pollution text book for Biology Department

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Abstract

The aim of this study is to identify the impact of the task-based learning strategy on the Achievement and Moral Competence on the Ecology and Pollution text book for Biology Department. To achieve the objectives of the research, the experimental design of two groups (experimental and control) was used. The research also identified the students of the third stage in the Department of Life Sciences/College of Education for Girls/University of Kufa for the academic year 2018-2019. The sample of the research was 46 students with 23 students In the experimental group and (23) students in the control group, the two research groups were statistically compensated in the variables (the end grades of the first course of the environment and the practical pollution, the age of time, intelligence test,ethical efficiency scale). The results showed positive impact of the task-based learning strategy on moral competence and achievement. Therefore, the researcher recommends using task-based learning to teach environmental and practical pollution. The researcher suggests conducting studies of various stages and subjects to determine the impact of the task-based learning strategy in motivation, multiple intelligences and others.

Keywords: *Achievement, Moral Competence, Pollution.*

Introduction

University stage has its own features in which the person reaches to mental, psychological maturity that enable him/her to learn skills and acquire information in a better way. In this stage, moral concepts of evil and good are formed, tendency to discussion and self- confirmation. As a result of what the researchers note during teaching the third stage, the students are careless for the scientific materials and lack of interaction. The students think that the scientific materials are merely information that should be memorized to pass the test. Consequently, this leads to clear decrease of apprehending the materials and moral commitment towards environment and disregard of this information in their daily life. The main reason of such case is the method of teaching that depend on dictation and memorization and do not give students the chance to practice and apply what they learnt. Moreover, the inability to apply such ideas is due to unavailability of materials or limited time and does not develop thinking skills, discussion, decisions- taking and develop moral behaviors to deal with environment and preserve it[16]. So, it is necessary to search for modern strategies that we could use to overcome such difficulties. When we use task- based learning strategy, it will help students to express their views, overcome the inability to use discussion because they think that learning process is a positive interaction between the learners on one side, and between scientific content on the other side. In addition to offer educational assignments that help discussion and cooperation in the learning environment and human's relation to environment surrounding especially awakening the student's moral responsibility towards environment and identify their tasks.To the researchers'

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knowledge, the study of the effect of task- based learning strategy on the achievement and moral competence has not been tackled before in Iraq. So, the study problem is: Active learning has a social and cooperative aspect that it allows to divide students into small groups during events and activities. As a result of such activities, the students will have a system of values that support them to deal with others or surrounding environment in a way to create people who are able to challenge mistaken concepts regarding dealing with environment[42] Modern education is responsible of preparing an educated student who has the ability to take right decisions in all fields of life in a changeable society. The educational system seeks to develop the student's balanced personality in respect to mental, physical, social and moral aspects to cope with the modern trends of teaching method. These method stress the importance of active learning, develop teaching method at the university, where interactive learning is the alternative for learning through listening. Interaction and dialogue are necessary for learning in which tasks require concentration on the concepts. The increase of student's achievement is important as a result of understanding the information through interaction and cooperation among small groups and the ability to solve problems and decision- taking. The results of previous studies have referred to the efficiency of task- based learning on building up learning environment depends on interaction and enable learners to communicate between themselves. The importance of task- based learning strategy is evident since it is one of the most effective method of teaching that focuses on the learner. The learner is the hub of educational process. The task given for the student is a kind of chance for him based on his/her abilities and understanding of information and he/she will be able to express his/her ideas and views towards the class to avoid intellectual stagnation that inflicts students when taught by dictating the learners [6].

Methodology

First: experimental design and the study methodology: The experimental design is "a scheme and work programmer of how to implement the experiment" (Kirk, 2012, p. 24). Also, it is " the basis of experiment structure, which depends on the experimental elements that define the experiment touchstones and reflect its variables"[40] Since the study includes two dependent variables and one independent variable, the experimental approach of partial control (experimental group and control group) of posttest is chosen.

Population and sample of the study: The study population consists of all the students of 3rd stage, dept. of biology, university of kufa for the academic year 2018-2019. The sample consists of (127) students distributed on five groups (A, B, C, D and E). The researcher identifies randomly two groups (B and C) that include (46) students to be the study sample. Group (B0 is selected randomly to represent experimental group that is taught according to (task-based learning strategy) and group (C) is the control group that is taught according to the regular method.

Control of experiment Equivalence: It means to test two groups in the same conditions and surrounding circumstances of the experiment except the effect of independent variable that is wanted to test its effect.

Though the researchers have chosen the two groups randomly, the possibility of non- equivalency of the two groups is something probable. So, they have made some equivalence procedures that emerged due to the properties of the sample. The affected variable may be influenced by the individuals' features, and the researchers supposedly to conduct their experiment without any differences between experimental and control groups except the use of independent variable with the experimental and control groups; the two equivalent groups[18].

The two groups have equivalence in age, intelligence, previous achievement in practical pollution and environment, and moral competence of environment.

The Study Requirement

Identify Scientific Materials: The scientific material is of the second semester that the researcher will teach in the textbook of practical pollution and environment in cooperation with the teachers of the subject[1] at the department of biology, college of education, Kufauniversity. The material is limited to ten topics each one includes an experiment. The topics are: environmental pollution, dust pollution, insecticide pollution, oxygen, pollution by alga, water treatment, water acidity, soil texture, size of space of soil and soil color.

Educational aids, Equipment, Tools and Materials: Several educational aids are used to help researchers teaching their materials, which depend on modern teaching method. Laboratory in particular depends on many aids and tools that the students use

to implement experiments. The tools include: (LCD, test tubes, fungicide and chemical pesticides, optical microscope, filter paper, sensitive balance, petri dishes, one-liter beaker, seeds of some plants, O_2 meter, PH meter and water samples).

Preparation of teaching plans: The researchers have prepared (10) teaching plans for the experimental group that is taught according to task- based learning strategy and (10) teaching plans for the control group that taught according to the regular method (lecture and discussion method). Then, the plans are presented for a group of arbitrators and method of teaching science and teachers of biology. In light of their remarks, the plans become applicable for the study.

Preparing Study Tool: The present study requires preparation of dependent variables including achievement test, which consists of (47) items. Item difficulty, discrimination items, effectiveness of destruction for the objective item and reliability of the test are applied.

The two researchers depend on all the required characteristics to build up tests to measure educational and psychological sciences.

Procedures of experiment procedures: The two researchers started the experiment on 19th Feb., 2019 and ended on 14th May 2019. The experiment takes (10) weeks during the second semester. The researcher follows the following:

Teaching Study Groups: The experimental and control groups are taught according to the designated method, and one of the researchers teaches the groups for two hours per week for each group.

Applying the study tools:

After teaching the experiments in the lab., the researcher applies the following:

- Moral competence scale: applied on Tuesday 7th May 2019 on two groups, the first includes B2 group and the second consists of C2 group.
- Achievement test: applied on Sunday 14th May 2019. The students are informed about the test before two weeks. The researcher receives assistance from the teacher of science, an instructor of the dept. of education and psychology in addition to two readers.

Results and Discussion

Results of achievement variable: To ensure the first null hypothesis "there are no differences of statistical significance at the level (0.05) among the mean of the scores of experimental group who studied according to regular method in the test of the Ecology and Pollution text book," the mean of the scores of the two groups is got as shown in the table (1).

Table (1) Means of the two groups in the achievement test

Group	Class	Students No.	Mean	Standard deviation	Freedom degree	T- value		Significance at (0.05)
						Calculated	Tabular	
Experimental	B	23	59. 26	9. 18	44	2.71	2.021	Significant
Control	C	23	52.04	8.9				

It is shown in the table that the mean of the scores of the experimental group is (59. 26) and standard deviation is (9.18) while the mean of the control group scores is (52.04) and standard deviation (8.9). By using two equal independent samples T- test, the calculated T- value is (2.71) and it is higher than the tabular value (2.021) at the level (0.05) and freedom degree (44). Based on this result, null hypothesis is not accepted since there are differences of statistical significance at the level (0.05) among the mean of the first group scores who studied the Ecology and Pollution text book by using task-based learning strategy and the scores of the second group who studies according to the regular method in the achievement test in favor for the experimental group. So, alternative hypothesis is accepted.

The results show that there are differences of statistical significance in this variable between the two groups in favor for the experimental group. The researcher explains the result as the following:

- The effect of task- based learning strategy on teaching the Ecology and Pollution text book to acquire and understand information through active learning environment.
- Discussion and dialogue among the students to understand scientifically the components of scientific content, realize the relations between information then link them especially for the students of weaker level or who feel shy to ask questions.
- Create a healthy atmosphere of discussion to find out a solution of a problem for the group members during the task stage and suggest solutions, cooperate with students to evaluate proposed solutions and amend them to acquire scientific materials.
- The continuous feedback has contributed to develop achievement in the subject of practical course of environment and pollution.
- Each student has a file to keep what she has done and her results to identify the basic elements for each subject, which increase achievement.

[21]study shows the effect of active- based learning strategies on developing achievement and performance of science teachers and newly graduated teachers.[21]

[14]study shows that the use of task- based learning is effective in achievement and the tendency towards collective work among students of secondary stage.[1]

Results

To ensure the second null hypothesis "there are no differences of statistical significance at the level (0.05) among the mean of the scores of the post scale of the students of the experimental group who studied according to task- based learning strategy and the students of the control group who studied moral competence according to regular method"

The researchers have calculated the mean of the score of the two groups on the scale of the moral competence as shown in table (2).

Table (2) Means of the two study groups of moral competence

Group	Class	Students No.	Mean	Standard deviation	T- value		Significance at (0.05)
					Calculated	Tabular	
Experimental	B	23	192.08	12.4	3.07	2.021	significant
Control	C	23	181.73	10.4			

Conclusion

Task- based learning strategy has an effect on achievement when compared with the regular method. Task- based learning strategy has an effect on increasing efficient moral performance to deal with the environment. Planed teaching within task- based learning strategy of the practical materials in the laboratories contribute to raise understanding and efficient behavioral and moral performance to deal with the environment. The possibility to apply task- based learning on teaching different sciences during the university stage and use similar strategies of active learning.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Education and Psychology Sciences, College of Education, University of Al-Qadisiyah – Iraq and all experiments were carried out in accordance with approved guidelines.

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Phylogenetic Analysis of *oprL* and *oprIgenes* in Pseudomonas Aeruginosa Isolated from Otitis Media Patients

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Abstract

The present study aimed to detect *oprL* and *oprI* genes in *Pseudomonas aeruginosa* that isolated from Otitis media patients whom consulting the Ear, Nose, and Throat (ENT) Department in AL-Habboubi Teaching Hospital in Nassyriah City, Southern Iraq. During the period from August 2018 to January 2019 and drawing the comprehensive phylogenetic tree to know the evolutionary history of these genes. The molecular study, which used the Polymerase chain reaction technique revealed the existence of *oprL* and *oprI* genes in 58/65 (89.23%) and 61/65 isolates (93.85%), respectively. Five samples for every gene were sent to performing DNA sequencing. The DNA sequence analysis shown some variants distributed in several samples, this lead to occupied several positions on the comprehensive phylogenetic tree. The ten isolates of *P. aeruginosa* (assigned five isolates for every gene of *oprL* and *oprI*) which they granted the recording numbers in the NCBI databases (MN022280, MN022281, MN022282, MN022283, MN022284 for *oprL* gene and MN022290, MN022291, MN022292, MN022293, MN022294 for *oprI* gene).The phylogenetic tree was constructed by using the Clustal Omega tool and the Clustal output data were visualized by using Figtree tool.

Keywords: *Pseudomonas aeruginosa, oprL, oprI, DNA sequencing, phylogenetic tree.*

Introduction

Otitis media (OM) is a term for inflammation of the middle ear and the tympanic membrane that often follows acute upper respiratory tract inflammation [1]. The pathogenesis andtheetiology of Otitis media are multiple including infections, allergy, genetic, racial, environmental, social factors, and eustachian tube dysfunction [2]. Clinically, Otitis media (OM) covering a broader range of illnesses including acute otitis media (AOM), chronic suppurative Otitis media (CSOM), and Otitis media with effusion (OME)[3]. Otitis media are highly prevalent worldwide, and resulting in complications often continued in the next stages of age[4]. The middle ear is the most part of the ear exposed to infection because it is open through the auditory canal that reaches the pharynx, Which provides access air to the middle ear, and achieves the balanced pressure on the tympanic membrane, so the infectious factors coming from the nasal cavity and larynx via the Eustachian tube to reach the middle ear[5]. *Pseudomonas aeruginosa* is an opportunistic pathogen that causes clinically important infections in immunocompromised patients like cancer or AIDS patients. It also implicated with ear infections, cystic fibrosis patients, eye infections and urinary tract infections[6]. *P. aeruginosa* is causing deep-seated and gradual devastation of the middle ear and mastoid structures through producing toxins and enzymes.[7] This bacterium often causes acute otitis media in patients that have tympanostomy tube otorrhea and also it is often more detected in sub-acute cases than acute otorrhea[8,9]. It is the most bacteria isolated from Chronicsuppurative Otitis media[10]. Peptidoglycan-associated lipoprotein (*oprL*) and Outer membrane lipoprotein I (*oprI*) are peptidoglycan (secretory pumps) linked to the outer membrane protein in *P. aeruginosa*. The two genes are responsible for the intrinsic resistance to the antibiotics in *P.aeruginosa*[11,12]. *oprL* mass (17.898 Da) is Part of the Tol-Pal system has an important role in the outer membrane invagination during the cell division and is significant for preserving the outer membrane integrity. Tol-Pal system consists of five core proteins are inner membrane proteins (TolA, TolQ, and TolR), periplasmic protein TolB and outer membrane protein Pal. These proteins form a network linked the outer and

inner membranes and the peptidoglycan[13]. With regard to *oprI* has mass (8.835 Da)[14].

Materials and Method

Samples Collection: A total of 210 of middle ear swab samples were collected from (OM) patients attending to the ENT Department in AL-Habboubi Teaching Hospital in Thi-Qar province, Iraq. Which includes both males and females of different ages. During the period from August 2018 to January 2019. These samples were taken by the ENT physicians via using a sterile cotton swab. It was ascertained that the patient did not take antibiotics for three days before taking the sample.

Isolation and Identification: Only 65 samples were a positive culture of *P. aeruginosa*. These samples culturing on blood agar, MacConkey agar, and Cetrimide agar. Also diagnosed with different biochemical tests, including Oxidase test, Catalase test, Gram staining, IMVIC tests, hemolysis in blood agar, smelling, and phenotypic characteristics and confirmed by API-20 NE system and Vitek-2 compact[15].

Polymerase Chain Reaction: All *P. aeruginosa* isolates grew in Brain-heart infusion broth and incubated at (37°C) for 24 hours. The genomic DNA was extracted according to the manufacturer's company instruction (Sintol, Russia). Gel electrophoresis was performed under 1% and 2% agarose concentration and 100 volts for one hour. The primers used in this study (Table1). The amplification temperature for initial denaturation at 94°C for 5 min. followed by 35 cycles of denaturation 94°C for 30 sec., annealing 56°C for 30 sec., and elongation step 72°C for 1min., and final extension with 5 min. at 72°C. PCR mixture consists of (8 µl) of Master mix, (1 µl) Forward primer, (1 µl) Reverse primer, (7.5 µl) dd H_2O, (2 µl) DNA template, and (0.5 µl) $Mgcl_2$. The total volume of the PCR mixture was (20µl).

Table 1: Sequences of PCR primers and the molecular size of the PCR product.

Reference	Product (bp)	Sequences of Primers	Gene	
(16)	860	CGCGTCGAGCTGAAGAAGTA	F	oprL
		CGGGATCAGCGAAGGTTCTT	R	
	312	TGCAGCAACTCTACCCAAGG	F	oprI
		GGTTTCTTTGGAGTGGCTGC	R	

DNA Sequencing: The PCR product for five samples for each gene (Named S1, S2, S3, S4, and S5) were sequenced for (forward and reverse) primers based on the instruction manuals of the sequencing company (Macrogen, Korea). Only clear Chromatographs that obtained from ABI sequence files were further analyzed, ensuring the annotation and variations are not because of PCR or sequencing artifacts. By comparing observed DNA sequences of local bacterial isolates with the retrieved neighboring DNA sequences of the NCBI Blastn engine.

After that, the sequencing results of PCR products for each sample were submitted for further analysis. Edited, aligned, and analyzed as long as with the sequences in the reference database using BioEdit Sequence Alignment Editor Software Version 7.1 (DNASTAR, USA). The observed variations in every isolate sequence were numbered in PCR amplicons and in its corresponding position in the reference genome.

The Comprehensive phylogenetic analysis

In the present study, A specific comprehensive bacterial tree was generated based on the protocol done by [17]. The bacterial variants that observed were compared with their neighbor homologous reference sequences, by using NCBI-BLASTn server [18]. After that, the blast results of the observed variants were combined and aligned together by using a (Clustal Omega based tool). A full comprehensive tree, including the observed variants in our study, was visualized as a polar cladogram by using Figtree tool, (http://tree.bio.ed.ac.uk/software/figtree/). Lastly, bacterial sequences for every classified phylogenetic species-group in the inclusive tree were colored appropriately.

Results

PCR amplification results showed the existence of the *oprL* in 58/65 (89.23%) isolates. Whereas, *oprI* found in 61/65 isolates (93.85%) (Figure 1 & Figure 2).

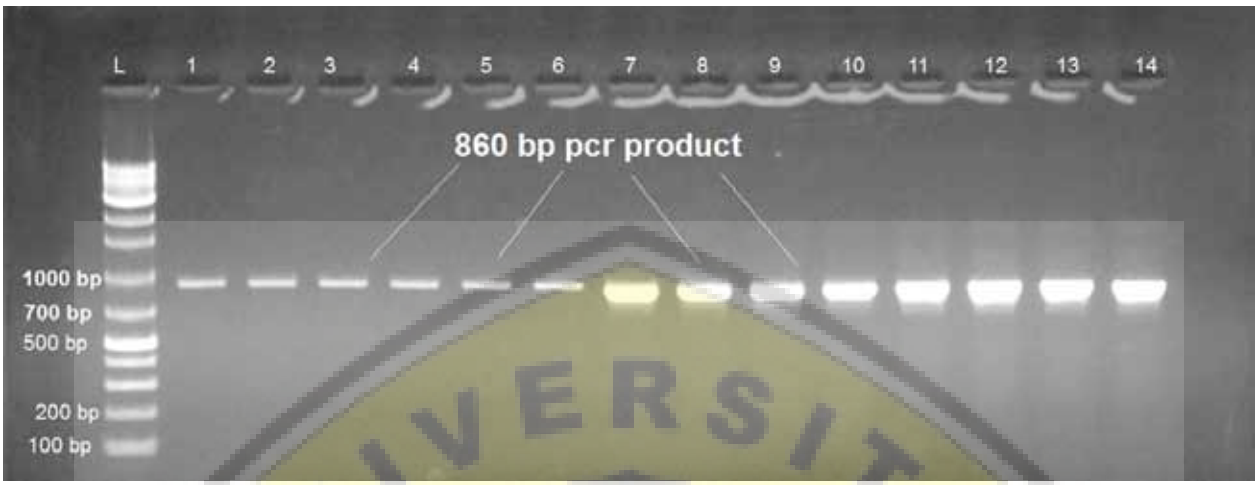

Figure 1: Agarose gel Electrophoresis of *oprL* gene 860 bp of PCR Product (L: DNA Ladder10000 bp, Agarose:1%, volt: 100v, Lanes 1-14 represent bands of *Pseudomonas aeruginosa* isolates).

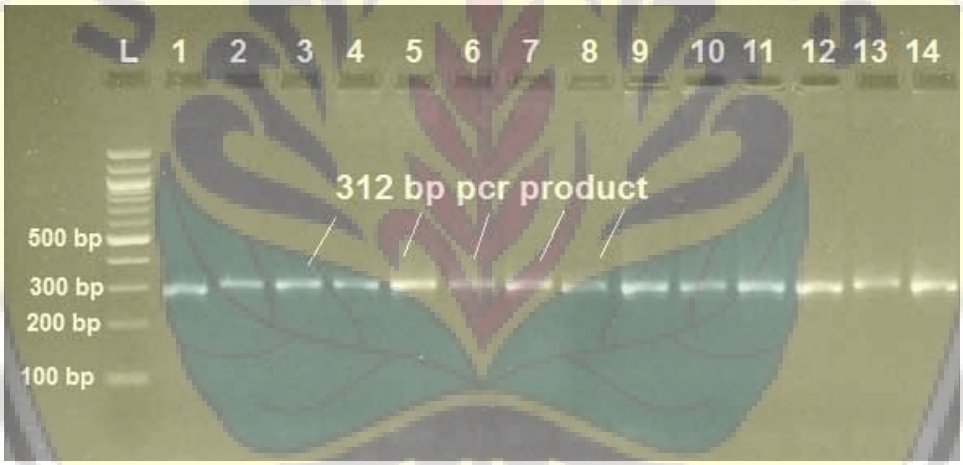

Figure 2: Agarose gel Electrophoresis of *oprI* gene 312 bp of PCR Product (L: DNA Ladder 100 bp, Agarose: 2%, volt: 100v, Lanes 1-14 represent bands of *Pseudomonas aeruginosa* isolates).

DNA Sequencing Results: In the present study, five samples were included that had shown to amplify approximately 860 bp and 312 bp genetic sequences in *P. aeruginosa* genome. The sequencing results revealed that the exact identity after performing NCBI blastn for these PCR products. NCBI BLASTn engine shown about 99% sequences of similarities between thelocal samples sequence and the reference sequences. The DNA sequences of *oprL* gene and *oprI* were compared with the retrieved DNA sequences (GenBank acc. no. CP032541.1, CP039749.1), respectively. The alignment results of the *oprL*(860 bp) samples showed the presence of twelve variants occurred in this position distributed in several samples in comparison with the referring reference DNA sequences. While the alignment results of the *oprI* gene revealed the presence of one variant in this position in comparison with the referring reference DNA sequences.

Discussion

A phylogenetic tree can be constructed to demonstrate the bacterium's situation in the evolutionary order dependent on base contrasts between species. This method is rapid and extremely exact and analysis of a

countless number of available programs and databases[19]. The current study revealed the prevalence *oprL* gene in 58 isolates and *oprI* gene in 61 isolates (89.23%), (93.85%) respectively. A previous study showed *oprL* gene *oprI* gene found at the same percentage (54.5%) in Otitis media [16]. A previous study found the *oprI* gene prevalence was (47.4%) in samples that isolated from active chronic otitis media [20]. These results came very differently from our results. The existence of these genes in bacteria enhances resistance to different environmental condition and antibiotics.A result of finding these genes in most isolates in our study can be used in rapid diagnosis of *P. aeruginosa*. But some studies referring to although the sequencing of the entire genome of *P. aeruginosa* has been completed, the diagnosis by using these genes, high sensitivity, and low specificity because the genomes of the closest relatives organisms have not completed. The presence of false-positive reactions among other species during PCR assay of these genes refers that they may contain some similar sequences of these in their genomes [21]. Thus, the use of a single gene in the molecular diagnosis of *P. aeruginosa* may contain the same polymorphisms that making the biochemical identification of this organism complicated [22].With respect to the phylogenetic tree of *oprL*gene,Though the five studied bacterial isolates had located in four distinctive positions within this tree, with concerning all phylogenetically analyzed isolates, no deviation from *P. aeruginosa* species was observed within this comprehensive tree. This fact is observed in a currently generated comprehensive phylogenetic tree almost all the observed sequence-related species have belonged to *P. aeruginosa* species. However, the currently constructed tree has one exception represented by the presence of other species within the same genus (*Pseudomonas* genus) which is *Pseudomonas flourescens*. The phylogenetic profile results revealed the five local isolates occupied several locations in the tree. S1, S2 occupied a neighboring position beside CP032541.1 and similar to sequence this strain. CP032541.1 (PGN5) strain isolated in Huntington, West Virginia (WV), USA., With concern S3 located between CP037925.1 (AES1M) and CP030861.1 (HS9) strain. CP037925.1 strain isolated from the sputum of cystic fibrosis patients in Melbourne, Australia. CP030861.1strain isolate in Shanghai, China. While S4 located between CP012001.1 (DSM 50071) and CP008749.1 (PAO1H2O) strain. CP008749.1 strain isolated from water in Bluefield, WV, USA.. With respect to S5 taken position near CP029097.1 (AR439) strain and CP015648.1. CP015648.1 (M8A4) strain isolated from crude oil residual water in Colombia. This *oprL*-based comprehensive tree provided additional inclusive tool about the high ability of *oprL* fragment to efficiently identify *P. aeruginosa* isolates. Our phylogenetic results showed a very high specificity of *P. aeruginosa* identification with *oprL*- based PCR - phylogenetic protocols. In the present study, with concerning to the *oprI* amplicons all the five studied bacterial variants had occupied two distinctive positions in this tree. The noteworthy, the construction of *oprI*–based comprehensive tree had detected a powerful ability of this amplicon to precisely identify of analyzing *P. aeruginosa* samples. S1 occupied position different from other local samples. It is located beside CP038661.1 (AJ D 2) strain. This strain isolated from the rhizosphere of cotton in India. With regard to other isolates (S2, S3, S4, and S5) located on one level on the comprehensive tree. That occupied position between CP022001.1 (Pa1207) and CP017293.1 (PA83) strain. CP022001.1strain isolated from blood children with bacteremia in Mexico city. With respect to CP017293.1 strain PA83 isolated from a human in Germany.

Conclusions

The present study highlighted the role of *Pseudomonas aeruginosa* resistance factors in Otitis media patients in Nassyriah City, southern Iraq. Moreover, the importance of the Phylogenetic analysis in the epidemiology and finding the relationship and similarity between the local isolates and other global isolates in Genbank.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Pathological analysis Department, Science College, Thi-Qar University, Iraq and all experiments were carried out in accordance with approved guidelines.

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Effect of Bio-Fertilization and Foliar Spraying in the Mustard Seed Content Brassica Alba L. from Some Fatty Acids

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Abstract

The field experiment was carried out in the fields of one of the agricultural in the district of Mahaweel in the province of Babylon during the agricultural season 2016-2017 to study the effect of bio-fertilization and foliar spraying in the content of mustard seeds from some fatty acids. The factorial experiment was applied in accordance with the randomized complete blocls design (RCBD) with three replicates. The experiment included two factors: the first factor is the bio-fertilization of the mycorraiza fungi (without addition, addition of the mycorraiza) and the second factor is the foliar spray with PRO.SOL solution in three concentrations (0, 5, 10) Ml/l.Fatty acids were estimated (Eruic acid,Oleic acid, Linoleic acid, Palmitic acid, Stearic acid α-Linolenic (Using HPLC, the results showed that bio-fertilization and foliar spraying increased the seed content of fatty acids by the superiority of treatment T 5 on all other treatments and gave the highest rates of Palmitic (179.21) µg/ml, Stearic (132.01) ug/ml and Eruic (225.19) ug/ml and Oleic (140.03) ug/ml and linoleic (77.20) ug/ml and α-linolenic (178.95) ug/ml.

Keywords: *Mustard, Bio fertilization, foliar spraying, fatty acids HPLC.*

Introduction

Brassica alba L. is one of the most important medicinal and oil crops in the world. It belongs to the Brassicaceae family, which contains about 350 genus and 3500 species and is one of ten important economic families.[1] Ranks fifth among the world's most important oil crops after soybeans, sunflowers, and field pistachios and cotton[2]. Mustard has great medicinal importance as there are many chemical studies on the seeds of white mustard seed, which included clinical studies to support the medical application of mustard oil, and formed derivatives (allylisothiocyanate)Which amounts to 60-92%, which is an important component in stopping cancer and is considered an antioxidant compounds (Antioxidant),White mustard is used medicinally in the pharmaceutical industry and for treatment of many diseases such as rheumatism treatment and tranquility, as well as its use as a laxative, analgesic for angina, cough, abdominal and chest pain, prevents atherosclerosis and hypertension, treats gout, It has been proven to treat cerebral palsy, headache, dizziness, tonsillitis, narrowing of the respiratory tract, used as a neurosurgery, treatment of stomach pain, lung congestion, cracking of hands, fear and enlargement of lymph nodes. As well as to improve appetite and digestion, softens the intestines, expels the gases, and the saliva of the saliva and the skin and numb the nerves of the skin to remove the feeling of pain in its place [3,4]. The importance of bio-fertilizers has been increased as a supplement to agricultural operations, the widespread use of which has reduced the collateral damage resulting from the use of fertilizers and chemical pesticides. Bio-fertilizers have received widespread attention in recent years due to cheap prices and environmentally friendly fertilizers,It works to improve plant growth by releasing growth-promoting substances and increasing the readiness of some major elements such as phosphorus and micronutrients, thereby

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increasing plant growth rather than maintaining soil fertility. The protection of certain pathogens as well as their role in improving water relations and increasing the tolerance of the host to drought. It also works to improve the soil building through the release of chlorine, which works to maintain soil and increase the soil's ability to retain water [5,6]. The importance of foliar spraying is that it provides the plant with its various nutrient requirements during the various stages of growth[7] and from the common foliar fertilizers, which contains the major nutrients (N, P, K), as well as containing many elements The addition of these elements to the soil lead to sedimentation and lack of use, especially in the soils of our country Iraq[8].

The objective to study the effect of bio-fertilization and foliar spraying in the content of mustard seeds from some fatty acids and their estimation using HPLC.

Materials and Method

The field experiment was carried out in the fields of one of the agricultural in the district of Mahaweel in the province of Babylon during the agricultural season 2016-2017 to study the effect of bio-fertilization and foliar spraying in the content of mustard seeds from some fatty acids and their estimation using HPLC. The factorial experiment was applied in accordance with the randomized complete block design (RCBD) with three replicates. The experiment included two factors: the first factor is the bio-fertilization of the mycorraiza fungi (without addition, the addition of the mycorrhiza) and the second factor is the foliar spray with PRO.SOL solution in three concentrations (0, 5, 10) Ml/l.Random samples were taken from the soil before planting in depth (0-30 cm) for the purpose of knowing the physical and chemical soil properties (Table 1), which shows the soil characteristics. The soil was prepared and its plowing was orthogonal plowing and was cleaned and settled and then divided into three replicates each of 6 experimental units with an area of(2 x 3) m^2. The seeds were planted on 5/11/2018 by placing three seeds in each seedbed, 10 cm between seeds bed and 2 cm deep For small size seeds,After that, all the soil and crop service operations were carried out, such as spawning, weeding, irrigation, fighting, and others. The mycorrhiza *Glucusmosseae*, which is produced in the laboratories of the Agricultural Research Department of the Ministry of Science and Technology, was added to a mushroom vaccine of 35 g per jour in the treatment along the lines of cultivation foliarspraying ProSol is produced by ProSol International and is a fully soluble fertilizer containing a balanced ratio of major nutrients and an important group of micronutrients such as zinc, manganese, boron, and others. Spray paper fertilizer on vegetative parts in the early morning and in three installments after the first month Of agriculture and repeated spraying every month. The mixture of fatty acid were separated on m FLC(Fast Liquid Chromatographic) on reversed phase 3 µm particle size, (50 x 2.0 mm I.D) C-18DB column, separation occurred on liquid chromatography Shimadzu 10AV-LC equipped with binary delivery pump model LC-10A Shimadzu, the eluted peaks were monitored by Shimadzu SPD 10A vp Detector at 215 nm,the data were recorded on shimpack C-R8A integrator (Shimadzu,koyota, Japan). The optimum separation condition as follow

Column: FLC (Fast Liquid Chromatographic) column, 3 µm particle size, (50 x 2.0 mm I.D) C-8DB column

The mobile phase was: acetonitrile: tetrahydrofuran (THF):,0.1 % phosphoric acid in THF (50.4:11.6: 38, V/V) detection: UV set at 215 nm the flowrate of 1.5 ml/ min. temp: 40 C.

The sequences of the eluted fatty acids standard were as follow, each standard was 25ug/ml

The HPLC separation profile revealed the presence of various chromatographic peaks in the studied mustard seeds sample extract. The assayed of the separated compounds representing the major detected peaks and summarizing the obtained data for each of the detected chromatographic peak are discussed below. Quantitative determination of fatty acids was done by comparison the peak area of authentic standard with that of sample peaks under the same optimum separation condition, by using the following equation:

Concentration of sample µg/ml = [(Area of sample / Area of standard) × conc. of standard x dilution Factor]

Results and Discusion

The results of Table (4) show that bio-fertilization and foliar spraying resulted in an increase in the content of mustard seeds of fatty acids. The bio-fertilization of the Mycorraizafungi led to increased fatty acids in mustard seeds. The treatment of T1 gave the highest rates of all measured fatty acids is Palmitic acid (*(166.93* µg/ ml, Stearic (121.14) ug/ml,Eruic (219.63) ug/ml, Oleic

(128.21) ug/ml and Linoleic (68.94).While the control treatment was given to the lowest of all measured fatty acids. This may be due to the fact that bio-fertilization increases the efficiency of nutrient absorption due to the infection of Mycorrhizaby means of fungus that extends far deeper into the soil than the root hairs, and its absorption efficiency is better than root hairs, The fungal infection leads to increased chlorophyll, plastids, activity and mitochondria, improving the nutritional status of the plant and thus increasing the active substance. These results were consistent with the results(10) and what he found (11).As for the effect of foliar spraying it has led spraying a concentration of T3 10 ml/letter higher rates of acid oils measured compared not spray To treatment T1, as given treatment T3 higher rates which Palmitic reached (169.25) µg/ml and Stearic (119.86) ug/ml and Eruic (217.93) ug/ml and Oleic (123.52) ug/ml and Linoleic (63.10) ug/ml and α - linolenic (161.67), ug/ml and may be attributed largely to foliar spraying content of major nutrients and micro led to increased vegetative growth and reflected this positively increase metabolic outcomes and outputs of the secondary active compounds including fatty acids, these results agreed with his findings (12)(13)(14)interaction between bio-fertilization and foliar spraying increased the content of mustard seeds from fatty acids, if treatment T 5 was highest compared to all other treatments, Palmitic was 179.21 µg/ml, Stearic (132.01) ug/ml, Eruic (225.19) ug/ml and Oleic (140.03) ug/ml and linoleic (77.20) ug/ml and α-linolenic (178.95) ug/ml.

Table (1) Physical and chemical properties of soil

Character	pH	Ec	N Mg.kg-1	P Mg.kg-1	K Mg.kg-1	Organic Matter (%)	Soil separators			Texture
							Sand gm.kg-1 soil	Loamy gm.kg-1 soil	Clay gm.kg-1 soil	
Value	7.6	2.5	35	14.28	16.2	0.75	446	403	151	Sand loamy

Table(2): The Retention Time and the area of fatty acids

Seq	Subjects	Retention time minute	Area	Concentration
1	Palmetic C16:1	2.67	148513	25ug/ml
2	Stearic acid C18:0	3.48	215419	25ug/ml
3	Erucic acid	4.83	182735	25ug/ml
4	Oleic C18:1 omega 9	5.74	190503	25ug/ml
5	Linolenic C18:2 omega 6	6.04	166361	25ug/ml
6	α -Linolenic C18:2 omega 3	8.0	165643	25ug/ml

Table(3): Treatments used through the study

Treatments	Type of Treatments
Control To	Without Treatments
T1	addition of the mycorrhiza
T2	foliar PRO.SOL 5 ml/letter
T3	foliar PRO.SOL 10 ml/letter
T4	Mycorraiza + foliar PRO.SOL 5 ml/letter
T5	Mycorraiza + foliar PRO.SOL 10 ml/letter

Table (4): Concentration of fatty acid extracted from mustard seeds oils in µg/ml in different samples

Treatments	Palmitic acid	Stearic acid	Erucic acid	Oleic acid	Linolic acid	α -linolenic acid
Control To	161.30	110.30	213.59	115.90	55.03	152.45
T1	171.51	121.14	219.63	128.21	68.94	165.23
T 2	166.93	114.60	215.07	119.12	59.12	157.44
T3	169.25	119.86	217.93	123.52	63.10	161.67
T 4	176.18.	128.15	222.84	135.98	72.91	172.13
T 5	179.21	132.01	225.19	140.03	77.20	178.95

Conclusion

In light of the results of the study obtained, we can conclude that the bio-fertilization of the Mycorrhiza and foliar spraying by PRO.SOL has had an effect in increasing the content of mustard seeds of fatty acids.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Pharmacy, Medical Institute Tech. Mansour/Middle Tech. University, Iraq and all experiments were carried out in accordance with approved guidelines.

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Evaluation of the Performance of Language Students Applied in the Use of Communication Skills

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Abstract

This study was conducted at the University of Babylon – college of Basic Education, the aim of evaluating the performance of the Arabic language studnetses in the faculties of basic education was to use communication skills in body language. The researcher adopted the descriptive approach to achieve the objective of the study, the sample of the study was randomly selected from the applied students as it reached (40) applied and applied, distributed to (34) schools, prepared researcher research tool (note form) with the skills of body language consists of (8) key skills, and derived from (20) sub-skill, and then presented to a group of arbitrators agreed to (17) skill, the researcher applied the tool to the research sample himself and then the data were treated statistically by using Pearson correlation coefficient, weighted mean, square (Ka 2), and centimeter weight. The study found that the performance of Arabic language proficiency in communication skills non-verbal in varying proportions, and lack of interest in the application of the Arabic language in practical application.

Keywords: *Calendar, performance, applied, Arabic language, communication skills, body language.*

Introduction

The task that has emerged from other languages with its long history, and its intellectual and literary wealth, and its civilization, which brought the old humanity with its modernity [1], this language has been linked to the Arabism's life as a link closely related to the roles of its ancient and modern history. [2]as the teacher is the key to the educational process, and the leader of the society on which he depends on the upbringing of his children, the teacher is no longer a mere communicator of knowledge, but the education of generations is a mental, moral and physical education [3]. The teacher is no longer just a teacher but a learner of knowledge and learner has an important role in the process of education and directing these processes[4]. The evaluation has an important role in all educational process, because it includes students, teachers and curricula teaching aids, and the evaluation process is based on collecting information under which decisions are made [5] and that the process of communication is of great importance in the educational process . It is based mainly on what is going on between the teacher and the pupils in educational situations [6], the communication either be verbal or non-verbal, verbal communication refers to words that are used in communication, while nonverbal refers to the communication that is produced by other means of words such as (eye, hand, facial expressions, head movement, distance or acoustic stimuli, and silence), the language of the body as a non-verbal communication means to show the person feelings, ideas and attitudes towards others through physical movements, so we find teachers practice the body language on a large scale and routinely according to the situation, It is widely known signals, put the finger on the lips to ask for silence, raise the hand shoulder level to understand it stops, and winking means a signal for something common to the two persons, the use of eyes that can communicate effectively[6], and the smile to indicate the approval of something, the use of body language does not only affect students' study

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of educational materials but also in their imagination and feelings. One of the objectives of colleges of basic education is that prepare teachers who are teaching tasks for future generations, in three aspects according to their programs; These aspects are the exact specialist aspect, the general cultural aspect, and the professional educational aspect. The application material falls within the qualification of the teacher in the professional side, this is the material through which the student's success can be measured in all aspects of qualification in the institution of his preparation[7], However, this article did not take its right in the programs of teacher preparation, noting the existence of weakness in the importance of implementation, duties and concept of students applied, As well as lack of experience in this area, and weak scientific and professional preparation of students applied in the light of the current program, and shorten the time allotted for practical application as it is not sufficient to apply the principles and educational foundations received by the student applied and learned through scientific and educational courses. As well as their lack of sufficient verbal and motor communication during classroom performance[8]. Some specialists and educational supervisors noticed it closely through their frequent visits to students from the College of Basic Education, there is a clear weakness in their level in general and in communication skills in particular [9], and based on the above the problem of research crystallized through the researcher's sense in the presence of a need to undertake a scientific study assessment of the skills of communication in the body language of the applied students.

Study Questions and Objectives:

1. What communication skills in body language are required for the students of the Department of Arabic Language at the Faculty of Basic Education?
2. What is the level of performance of the Arabic language faculty of basic education in the use of communication skills in body language?

The Importance of Studying:

1. The theoretical side: The fortification of cognitive balance study contribute to providing information on body language and use in educational institutions, and therefore its importance for students applied, and an incentive to them should be known and used in educational institutions, to transform into a scientific and systematic practices.
2. The applied importance: The importance of this study stems from the importance of teacher performance and the conduct of educational behavior and educational role interactive within the educational attitudes and paid students to the positive interaction, and all this requires development and innovation in the number of teachers' program academically, educationally and professionally, and this study on the subject of skills communication in body language in Arabic was few.

1. **Evaluation:** "An organized process to collect and analyze information, and it involves a valuable judgment, requires prior identification of educational goals, and achieves the fundamental purpose of providing important and useful information to educational decision makers." (Makhail, 2017, p. 153)
2. **The Performance:** "A work, or an act or the behavior of the author, which is the result of collection processes practiced by the teacher, which are related to specific knowledge, skills, concepts, attitudes and values, and differ from teacher to teacher depending on the different background.

Definition of Performance Procedural: It is what the student applied from the Department of Arabic language in the colleges of basic education, as communication skills in the sub-body language, contained in the observation form which was organized by the researcher, while teaching Arabic language branches during the period of practical application in primary schools.

3. **Non-verbal communication skills:** "It is a communication that does not use words or words, but through other method such as the use of the signal in multiple areas, and may be the most famous use in the body language and its various expressions.

Define non-verbal communication skills procedurally: All that is related to gestures, signals and body language, which is intended to convey the meanings, facts and ideas and explain them to the students of the primary stage without the use of words and words**.**

The theoretical framework of the study:

The concept of the evaluation: The concept of the evaluation depends on improvement, modification and development. Evaluation means judging objects

or individuals to show the pros and cons and to review the validity of the basic assumptions on which the organization of work is based and developed.

Performance Evaluation: Since assessment means making a diagnostic judgment to identify and strengthen points, and identify the difficulties faced by the teacher and help him to overcome, it is a continuous process, Therefore, the teacher needs a continuous assessment to improve the level of performance, by establishing consistent criteria for that evaluation, to develop all the potential of teachers to provide many opportunities for continuous learning and achievement of excellence and excellence in the performance of the individual teacher and performance through the school, and aims to evaluate teacher performance to the insight of the teacher's status, and clarify the aspects of his superiority and weakness, to be fully aware of his condition, as well as to recognize the extent of his competence in explaining the article or the course he is studying, and his ability to communicate information to his students.

Non-verbal communication skills (body language): The education in the classroom is based not only on verbal communication skills, but there are non-verbal skills of communication has importance, they are frequent as verbal skills and are often associated with them too. these skills are used extensively in the classroom, it is one of the important method in the behavior of classroom management, communication skills in body language are spoken in the classroom through facial expressions, vocal gestures, body movements, gestures, signals, touch, time, lips, head movement, spatial distance, and dress [11],these non-verbal expressions are factors that help to focus the attention of students, and works to increase the clarity of the message that comes to the students through the words spoken.

Data Analysis Method: The researcher used statistical means that employ the statistical package spss, to display data and analysis, including Pearson correlation coefficient and percentage and weighted mean and the square Ka (Ka 2) and the equation Cooper.

Results and Discusion

This part of the research shows the use of nonverbal communication skills through the behavior of students in the educational situation, based on the data obtained by the researcher through the observation form to monitor these skills by the study sample. The results were presented through the frequency and percentage of the response for the following questions:

What are the communication skills in body language required for the students of the Department of Arabic Language in the colleges of Basic Education.

In order to answer this question, the skills of communication in body language were monitored in the daily learning quotas in the educational situation of the Arabic language. In order to answer this question, communication skills were monitored in the daily learning quotas in the educational situation of the Arabic language. The duration of registration in each study session (45) minutes, the researcher observed the direct behavior in the language of the body performed by the application in the educational situation, and then the data was unloaded from the observation form to be calculated repetitions and percentages of each behavioral paragraph in body language in the educational session.

Table 1. Calculate repetitions and percentages of each behavioral paragraph in body language in the educational session

Main Skills	No.	Sub Skills	Duplicates at sample	Percentage
Using the hand	1	Indicates the spruce to involve the student in something.	37	8%
	2	He moves his hand in a round shape as an expression to encourage the pupil to keep talking.	30	6%
	3	Shaking the index finger to the right and left is an expression of disapproval of something.	1	0%
Facial expressions	1	Smiling to the student who provides a valid idea for the purpose of notification of approval.	38	10%
	2	He uses the gestures of frown and eyebrows and look at the students for their feelings of dissatisfaction with what comes out of them.	11	3%

Main Skills	No.	Sub Skills	Duplicates at sample	Percentage
Head usage	1	Shaking his head to the bottom as an expression of approval and continuation.	37	8%
	2	He points his head down to ask his student to sit down	20	4%
Usage the eye	1	He opens his eyes strongly to show the exclamation point.	20	4%
	2	He distributes his insights among the students to attract their attention.	39	12%
The body movement	1	Improves the selection of the places in which they move among the students, and select the appropriate places to stand before them.	37	9%
	2	He approaches some unobserved students with the intention of drawing their attention and adjusting their behavior.	25	4%
Parallel language	1	Raise sound and reduce it according to the needs of educational situations and classroom management.	26	5%
	2	Improves the organization of the appearance and show his elegance in order to achieve better interaction with students.	39	12%
Time Management	1	Improves the distribution of the lesson time between the paragraphs of the lesson and its procedures.	20	3%
	2	Refers to the importance of a topic or point, detailing the explanation about it.	30	6%
Silence	1	Improves the use of silence in places that attract students' attention.	5	2%
	2	Silent to give the student an opportunity to think about the answer and to express opinion about it, and does not interrupt during the answer.	20	4%
Total Duplicates			**435**	**100%**

Interpreting Skill Results (Hand Use): The main skill included three sub-skills (ie, the sphincter to involve the pupil in a particular order), with a percentage (37%), while the percentage of skill (moving his hand in circular form to encourage the pupil to continue talking), And the percentage of skill (shaking the index finger to the right and the left as an expression of disapproval) (1%). This result indicates that the Arabic language users used these skills in a varied and acceptable manner.

Conclusion

The study found that the performance of Arabic language proficiency in communication skills non-verbal in varying proportions, and lack of interest in the application of the Arabic language in practical application.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon – college of Basic Education**,** Iraq and all experiments were carried out in accordance with approved guidelines.

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The Effectiveness of (Hands and Minds) Model in the High-Level Thinking Skills among Fourth-Grade Students in Biology

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Abstract

The research aims to identify the effectiveness of (hands and minds) the model in the high-level thinking skills of students in the fourth grade of biology material, to verify the objective, the researcher put the zero hypothesis that states: There was no statistically significant difference at the significance level (0.05) between the average scores of the experimental group students who will study according to the (hands and minds) model and the average score of students of the control group who will study based on the standard method of testing high-level thinking skills, in order to achieve this, her experience was applied in the second half of the academic year (2018-2019), The research sample consisted of (60) female students of the fourth grade of science in Al-Khansaa secondary school, and it has been randomly distributed to two groups (30) students in each group, the two groups were equivalent in the following variables: temporal age, IQ test, the previous test information, test of high-level thinking skills in view of the behavioral objectives and the relative importance of the content, it has been prepared An achievement test consisting of (50) paragraphs of multiple choice.

Keywords: *Model (hands and minds), high-level thinking skills.*

Introduction

What is really unfortunate in the educational process is the low level of achievement of students in scientific subjects, especially biology, and this is due to the actual reality of their teaching which is still stagnant, as it is based on diction, tutoring and conservation, the memorization of the student, resulting in the neglect of educational activities, lack of student interaction, and reduction[1] of participation within the classroom and this affects negatively[4] on the student's thinking as he does not grow and does not stimulate his higher thinking skills, thus, his educational achievement is reduced in biology, which is a natural science and the old that teaches everything related to living organisms, as it is interested in studying the stages of life organisms from birth until the end of their lives, are directly related in various fields of life, as well as the science that is combined with other sciences, such as pharmacy,[2] medicine, chemistry in the pharmaceutical industry, and determine the source of vegetarian or animal or other, and to pay this medication in proportion with the biological and functional makeup of this object. Diwan (2018) has noted that is one of the sciences that we need in our daily lives it is an important and necessary science which defines our bodies as organs, cells and vital functions, it also identifies us with living things and plants and what is around us in the surrounding environment, the origin of the word "Biology" Greek consists of two sections (I) and Bio which means life and the second (logy) meaning science or study. This must be the biology teacher is very knowledgeable about the subject and has a high teaching ability to deliver the material to the minds of learners, as well as possess the ability to develop stimulate skills and

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grasp the principles and biological concepts, because the process of teaching biology is not an easy task, it is a complex need to employ mental and manual skills in the way in which both the teacher and the learner play an important role, the fact that biology is the most applied concepts, which requires a manual effort and my mind, and this requires the method and models of teaching to meet their requirements, the dimensions of this problem must be worked out by reviewing the strategies and models of teaching used in the educational situation, and looking forward to the use of strategies and models of alternative teaching and modern development of high-level thinking skills in the student and change the cycle from the passive recipient to the active interaction, and hence the present study in the experiment of a modern model (the model of hands and minds), which belongs to the structural theory, which depends on the interaction of students with others a and that the role of the teacher is guidance and guidance, and depends on the idea that learning is a positive process, and accordingly the students should be active learners, and demonstrate their understanding rather than treat them as empty vessels that hurt the teacher knowledge within, it is based on the activation of a specimen the five senses of the student by thinking and working and appeared this model by French physicist Georges Charpak in 1996 as a project for the development of science and technology through the scientific method of inquiry. The study aimed to identify the effect of the use of the model (hands and minds) in the development of academic achievement and the trend toward science in intermediate school students. The study was applied to (126) students and the experimental method was adopted with partial control of two equal groups. They divided the students into two groups, According to the model (hands and minds)[6], and another officer studied in the traditional presentation method, and the researcher to find the equivalence between the two groups and used the researcher in the study of achievement and a measure of the trend, the researcher found a difference of statistical significance between the average scores of students of the two groups of research and for the total Experimental.

Methodology

Experimental design for research: The researcher used experimental design with partial control of two equal groups, one experimental and the other control.

Table 1. Experimental design with partial control of two equal groups, one experimental and the other control.

Groups	Equivalence	Independent Variable	The Variable Dependent	The Test
Experimental	1- Age is calculated by months 2 - The test of intelligence (Otis Lennon) 3 - Previous achievement in biology 4. Test previous information	(hands and minds) Model	Achievement	The test of achievement
Control		The ordinary method		

The research community and its sample: The research community represents all fourth grade students in schools (secondary and high school) official government day of the Directorate General of Education in the province of Babylon for the academic year (2018 - 2019), which its fourth grade scientific classrooms are not less than two divisions, and the sample of the research the researcher chose (Al-Khansaa secondary) In the center of the province of Babylon randomly to conduct the research, and after selecting the researcher (Al-Khansaa mix secondary school) to apply the experiment, she found that it includes three divisions of fourth scientific grade (A, B, C), the researcher selected a (30) female students who will study in accordance with (model of hands and minds) in the same way, the researcher randomly selected division (B)to represent the control group and the number of female students (30) who study according to (the normal method).

Equivalence of the two research groups: The researcher conducted a statistical equivalence between the experimental and control groups in some variables that affect the results of the experiment although the researcher chose the two groups in the random drawing

method, and that the students of the research sample from the social and economic center are very similar and they study in one school, but she made sure to parity with the following variables : The chronological age calculated by months, grades of the first semester, the intelligence test, test previous information in biology), the researchers compared the two groups in the above variables the results are as follows:

Table (2). Results of the T-test for the grades of the students of the two research groups

Variable	Group	Size of the sample	SMA	Standard deviation	The degree of freedom	Absolute Value		Level of significance at 0.05
						Calculated	Scheduled	
Age calculated by months	Experimental	30	166.66	18.16	58	1.34	1.67	Not statistically significant
	Control	30	165.30	17.80				
Marks of the first semester	Experimental	30	53.60	245.62	58	0.57	1.67	Not statistically significant
	Control	30	51.30	180.36				
IQ test	Experimental	30	40.76	42.38	58	0.33	1.67	Not statistically significant
	Control	30	41.30	37.45				
Achievement test for high level thinking skills	Experimental	30	5.03	4.24	58	0.13	1.67	Not statistically significant
	Control	30	4.96	3.13	58			

Adjusting Exotic Variables: Although the researcher investigated the equivalence of the two sets of research in some variables that are believed to affect the course of the experiment, they tried to avoid the effect of some extraneous variables in the course of the experiment. Some variables and how to control them are as follows: Accidents Accompanying Experience: Search for any emergency condition or accident obstruction, Experimental Extermination: No case of interruption or transfer of any student throughout the experiment, Sample selection: The two groups were randomly selected and the two groups were confirmed. The maturity factor: My research groups are also close to mine The effect of the experimental procedures: The researcher worked to limit the effect of experimental procedures that could affect the dependent variable during the course of the experiment.

The explorative application for the achievement test :It includes the following:

The first survey application: It was applied to a group of fourth grade students who were not in the research sample. The number of female students was 30 students. The purpose of this study was to know the clarity of the instructions and the guidance of the test and the comprehension and clarity of the test paragraphs for the students and to calculate the time required for the test. Out of each student, by calculating the arithmetic mean of time, it was found that the time needed to answer all the test paragraphs was (47) minutes.

Second survey application: It was applied to a sample of (100) female students in the fourth grade of scientific non-research sample, and the purpose of the analysis of the statistical achievement test paragraphs, namely the difficulty of paragraph, discrimination paragraph, the effectiveness of the wrong alternatives.

The statistical analysis of the test scores: The test scores were analyzed as follows:

The difficulty of the paragraph: The statistical analysis of the test paragraphs found that the coefficient of difficulty of paragraphs ranged from (0.35 to 0.54), so the test paragraphs are all good and difficult to appropriate.

The discrimination of paragraph: Means the possibility of items or paragraphs to detect individual differences of students and the test items are valid if the coefficient of discrimination of items is (0,20) and above, and the value of the coefficient of discrimination of the test scores between 0,26 0, 63). Thus, the test scores are characterized by a good and appropriate discrimination coefficient.

The effectiveness of wrong alternatives: The researcher conducted a statistical analysis (27% higher and 27% lower) to find the effectiveness of the alternatives ranging from (-0.37 to -0.51).

Test stability: Means that the test scores match once again, that is, it indicates the balance and stability of the students' grades in the test.

Method of finding the stability of the test:

The method of half-fragmentation: This method is one of the most used method, because it avoids the disadvantages of some other method in order to obtain two images of the test, the researcher divided the paragraphs of the test into individual, even paragraphs, choose the answers of students sample exploratory and adult (100), by extracting Pearson correlation coefficient between the scores of individual and even matrices, the stability coefficient was obtained by (0.87). Since the half-stability coefficient of the test does not measure the total homogeneity of the test (because it is only half constant) correction using the Spearman coefficient, whereas amounting to (0.93) and is a good stability coefficient from the point of view specialists.

The Keord -Richardson Method: The **Keord-Richardson** equation was applied according to the grades of the female students. The researcher found that the test stability value is (0.85) and thus is a good value and suitable so the test is constant.

The application of the testing tool: The experimental and control groups were informed of the date of application of the test before a week of its implementation. It was applied after the completion of teaching the specific material for the two research groups at one time and the researcher supervised the application of the test.

The statistical means: The researcher used the T-test equation for two independent samples to make the parity between the experimental and control groups in the following variables: (the age of time calculated by months, the students' half-year achievement in biology, the intelligence test (Otis Lennon, the previous information test) Pearson correlation equation The researcher used the equation to correct the correlation coefficient between the test parts (individual and even vertebrates) after being extracted by the Pearson correlation coefficient.

Results and Discusion

Table 3. The superiority of the experimental group on the control.

Groups	No. of students	SMA	Standard deviation	The degree of freedom	T-Value		The level of significance at 0,05
					Accounted	Scheduled	
Experimental	30	32.80	28.23	58	4.31	2	Statistical function
Control	30	27.06	24.68				

It is clear from the previous table that the experimental group is superior to the control group in the achievement test for high level thinking skills, so there is a statistically significant difference between the mean scores of the experimental group who study biology according to the model (hands and minds) . The study, which studies the same subject in the usual way in the collection test in favor of the experimental group, is consistent with the previous studies, which confirmed the superiority of the experimental group studied according to the (hands and minds) model on the control group, studied based on usual way, and this is what is clear to us that the teaching on the specimen (hands and minds) had a positive impact in understanding the information and scientific facts and solve the problems they experience the students and this will raise their grades. The results

showed the superiority of the experimental group that studied the biology according to the (hands and minds) model, as it had a positive effect in raising the level of achievement among the students, and attributed the reason to: Teaching using the (hands and minds) model raised the interest of students and gave them the opportunity to participate and exchange views and easy to learn what is given to them with the help of their colleagues, and this has reflected positively on the level of achievement. Teaching according to the (hands and minds) model make students more active and vital in the classroom as a result of the involvement of the five senses and thinking, ie, activating hands and minds in the form of activities and practical experiences. Teaching according to the (hands and minds) model on the role of the student from the recipient of the information to the actor, participation and productive, ie, make the student the focus of the learning process after it was centered teacher. Teaching the use of the (hands and minds) model increased the confidence of students themselves and their views, through the generation of ideas and discuss them, which enabled them to understand deeply and retain information and reduced the process of forgetting, which reflected the level of student achievement in a positive manner. Teaching using the (hands and minds) model stimulated the thinking skills of students and helped them to research, discovery and investigation, in addition to adding to the lesson a kind of fun and suspense, because it encouraged collective participation and cooperation between students and information biology from theory to practical applied and this makes the studying more attractive to students and this raises the level of achievement of them.

Conclusion

In the light of the results of the research, the following conclusion was reached: The effectiveness of the model (hands and minds) in the high level of achievement compared to the normal way.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon, College of Basic Education, Babylon, Iraq and all experiments were carried out in accordance with approved guidelines.

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The Impact of the Representation Strategy for Development of the Concepts and its Effects on the Mental and Emotional Aspects of the Students

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Abstract

The aim of this study was to find out the effect of the documentary representation strategy in acquisition the study relied on the experimental approach as a methodology for conducting research which includes an independent variable (the representation strategy, the usual method) and a dependent variable (acquisition of concepts), a partial experimental design was adopted to set the search variables, before starting the experiment, reward the researcher with the two research groups for the purpose of obtaining close and objective results with the following variables (The chronological age calculated by months, the first grade grades in the rules, parental achievement, former teacher test), the researcher prepared the implementation requirements of plans, objectives and tests for the two research groups, after completing the experiment, the researcher applied the research tools to the two research groups, after correcting the students' answers, each student received data for the experimental group and the control, if the data were processed statistically by two independent samples and showed, the experimental group, which was studied according to the DTP strategy, surpassed the control group which were studied in the usual way in the variable concept acquisition.

Keywords: *The strategy of documentary representation, acquisition of concepts, grammar of the Arabic language.*

Introduction

The world today is witnessing remarkable progress in all fields the follower of the educational process finds that there has been a remarkable transformation has emerged in the last quarter of the twentieth century on studies related to learning and education[1], after psychologists and educators focused on the principles of behavioral theory in their interpretation of the processes of learning and education became in the early seventies that they focus on the principles of (the cognitive constructivism theories)[2]. The behavioral theory interprets the learning process as measurable observation responses, strengthened through practice and promotion, in which cognitive constructivism views this process as internal mental processes, it is expressed by the ability of the learner to visualize, understand, absorb, retrieve and use the information presented in similar situations. In other words, knowledge remains in the mind through mental processes[3]. Therefore, the rules have an importance and a preference for the language and it features the evaluation of its validity, its pillars, the axis of its linguistic systems, and the wall that protects the Holy Quran and Sunnah from any attempt. Where the researcher believes that today we need to codify our science and ideas in Arabic language [4] is empty from the grammatical mistakes of the past and the present in the future, this will be achieved only by learning Arabic grammar based on this, the researcher believes that there is a need to activate the teaching method of Arabic grammar by using modern strategies that take into account the student's positive participation in the educational situation and make it the center of education in keeping with the basics of

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active learning within the classroom without ignoring the role of the teacher, as a key to the success of the educational process. Therefore, the educational system becomes more positive when it focuses on a range of modern strategies such as a prototyping strategy as this strategy helps the student in the acquisition of grammatical concepts using the structural plan and this is confirmed by Ozil in his cognitive theory of information, ideas, concepts and facts, except from the educational or social medium, provided that education is meaningful so that it is stored in memory[5], it is logical that the researcher used this strategy to help students to acquire grammatical concepts and retention because grammatical concepts are one of the most important bases for the construction of grammatical rules, so we find men of education emphasize the importance of learning and teaching concepts whereas Gagne and Bissis (1974) believed that the acquisition of the concept makes learning possible because it frees the learner from adhering to a particular emotion as well as helping him to think at a higher level of sensory perception. The teacher must rely on several method and method to measure the acquisition of the concept through the application acquisitions of concept such as distinction between positive and negative examples of the concept and the ability of the learner to determine the verbal[6] significance of the concept (definition) and its application in educational situations The present research aims at finding out the effect of the strategy of representation in the acquisition of grammatical concepts among middle school students. The structural approach is the latest in the teaching of science and knowledge. This trend has emerged as a result of the transformation of a president in the educational research during the past two decades of time. The researchers in education have shown this transformation significantly[7]. They focused on how the meanings of concepts in the learner are formed in a cognitive structure that integrates with the previous. The constructivism of the intellectual doctrines that formed a revolution in research and application within the framework of human studies and method of dealing with knowledge and acquisition[8].

Steps of teaching the strategy of documentary representation: Through the researcher acquainted with the literature and educational studies, which talk about the strategy of representation of the documentary that is centered around three levels and was defined as procedural: -

- **The virtual level:** It is all that can be seen by the naked eye of scientific phenomena through conducting a practical experience or watching a video or the presentation of images and therefore depends on the interpretation of physical characteristics in terms of shape, color, size and other characteristics.
- **The symbolic level:** It is the conversion of what was seen at the virtual level, ie, the use of this information by summarizing the subject and installed on the blackboard.
- **The partial level:** It is to conduct the evaluation process in general and then make a final editorial summary in a short way to match the time in the classroom.

The advantages of the digital representation strategy:

Through the researcher's application of the strategy, he found several advantages of this strategy:

1. Encouraging the student enthusiasm to learn for practical applications and the possibility of being represented in minutes.
2. The student can move between the thinking levels of Johnston.
3. Developing the student's ability to build accurate and scientifically sound concepts.
4. Expand the new concept of students by applying the concept in new positions in the life of the learner daily.
5. Encourage students to go beyond the concept by offering additional examples or problems related to the concept.
6. Increase the skills of students and their abilities to self-learning and investigation and problem solving and decision-making and to reach a stage where they feel that learning them meaningful and not just memorization and memorization of information.

Methodology

It includes a presentation of the procedures followed to achieve the objectives of this research in terms of adopting the appropriate method, the appropriate design, the research community, the method of selection of the sample and the method of parity of the two groups and a presentation of the research requirements, tools and how to apply them.

Experimental Design: Since the aim of the research was to identify the effect of teaching on the strategy of (representation) as an independent variable in the acquisition of grammatical concepts for students as a dependent variable, the researcher adopted experimental design with partial control in two equal groups (experimental study according to the strategy of representation and a female examiner according to the usual method).

The Research Community: The current research community includes students of the second grade intermediate of Day school of the General Directorate of Education in Babil Governorate / Hashemia Sub-Department of Education for the academic year (2018-2019).

The Research Sample: The researcher chose the random sample of the study. Al-Rahman School which consisted of four divisions. Two random groups were also chosen to represent the experimental group and the control group. To achieve the objectives of the study, as in Table (1).

Table (1) Represents the number of students in the experimental and control groups before and after exclusion:

Division	Groups	Before exclusion	Excluded	After exclusion
A	Experimental	43	3	40
G	Control	46	4	42
Total		**89**	**7**	**82**

The researcher ruled out the students who have failed as they have previous educational experience in the subjects to be studied during the experiment and this affects the accuracy of the results of the experiment, although the researcher has excluded them from the results only.

The equivalence of the two research groups :

Prior to actual teaching, the researcher conducted an equalization of the students of the two research groups statistically in a number of variables that would affect the safety of the experiment, the accuracy of its results is as follows:

The students' chronological age is calculated in months, the academic achievement of parents, the achievement of mothers, the grades of students in the first semester of the academic year 2018/2019 in the grammar of the Arabic language.

Adjusting the extraneous variables: Despite parity procedures by the researcher between the two research groups, the researcher tried as much as possible to avoid the effect of some extraneous variables in the confidentiality of the experiment, and then in its results here are some of these variables and how to adjust them .

Experimental Extermination: There was no interruption of students in the two current research groups throughout the trial period.

Experiment and Accident Attempts: Experiences may be experienced natural or abnormal accidents during experimentation cause obstruction of the experiment . It will have an effect on the dependent variable next to the independent variable, and no experiment has been experienced . The current research into any incident impeding its progress so the effect of this factor could be avoided.

The Sample Selection: Randomly selected and both groups were checked.

The process related to the maturation: This factor had little effect in the current research, because the duration of the experiment was unified between the two research groups, as well as experimental design adopted by the researcher experimental design with partial adjustment, and on this basis, the resulting maturity and growth will return to students of my group search, effect of experimental procedures: The researcher worked to limit the effect of experimental procedures that can affect the dependent variable during the course of the experiment.

Setting Up Search Tools: The research materials are basic and according to which the research procedures are carried out, which is: (The educational material: The teaching material that the researcher is teaching was determined for the students of the research groups during the period of the experiment (the second semester) of the academic year (2018-2019) The first seven topics of grammar in the Arabic language book included the part to be taught to the second grade of intermediate school students.

The Behavioral Goals: The researcher formulated (69) goals in light of the general objectives of the content of the material to be taught during the duration of the experiment is distributed among the five levels of knowledge in the Bloom classification (recall, understanding, application, analysis, synthesis) . The researcher has presented a list of behavioral goals to selected experts of language specialists and teaching method, and in educational sciences to take their views and their suggestions regarding the validity of the formulation of the objectives and the extent to which they represent the subjects of the study content covered by the experience, Preparation of teaching plans: The researcher prepared a set of teaching plans for the experimental and control groups in the light of the subjects of the book to be taught to students, the number of teaching plans (7) plans for the experimental group according to the strategy of documentary representation and similar to the control group according to the usual method).

Research Tools: The current research requirements have a unified tool to measure the acquisition of concepts for intermediate second grade students in the Arabic Grammar for the experimental and control groups. Therefore, the researcher prepared a test to acquire the grammatical concepts of dimension (30) verbs.

The honesty of the test: The researcher was keen to be a true instrument, and to achieve the objectives of the research so I have used two types of honesty: honesty and virtual content validity, as the results showed that the apparent honesty obtained the proportion of agreement (80%) by arbitrators and specialists, The results showed that all the tests in the acquisition of grammatical concepts were statistically significant.

The stability of the test: midterm fragmentation The researcher used the Pearson correlation coefficient to extract the correlation coefficient between the individual and marital vertebrae for the testIt was corrected by Spearman-Brown equation, To calculate consistency in this method, the researcher adopted the sample of the survey sample which reached (100) answer sheets and then collected the individual paragraphs of each student on one hand And the matrimonial vertebrae on the other hand, the stability of the Pearson correlation coefficient (0.86) and the Spearman-Brown equation (0.93).

Test Stability:Midterm Retail: The researcher used the Pearson correlation coefficient to extract the coefficient of correlation between the individual and marital vertebrates for the test and was corrected with Spearman-Brown equation. To calculate stability in this method, the researcher adopted the sample of the survey sample which reached (100) answer sheets and then collected the individual paragraphs for each student on one side and the marital clauses on the other hand, Stability was obtained using Pearson correlation coefficient (0.86) and corrected by Spearman-Brown equation (0.93).

Application of the acquisition test: Before the end of the experiment by a week the researcher tested the students of the two research groups that there is a test to be conducted in the seven subjects studied for them, and supervised the researcher with the Arabic language teacher on the course of the test, and explained the researcher how to answer the paragraphs of the test before the students begin to answer.

The statistical means // The researcher used the T-Test for two independent samples: The researcher used the end-tit test for two independent samples in the parity between the experimental and control groups in the following variables: (students' age, grades of Arabic grammar in the half year of the current year, the final acquisition testing concepts)

The research Results and Discussion:

The hypothesis of the research: "There is no statistically significant difference at the level of (0.05) between the average score of students of the experimental group who study the Arabic grammar using the strategy of representation and the average score of students of the control group who study the same article in the usual way.

To examine the hypothesis of the research, the statistical averages and the standard deviations of the scores of the students of the two groups were extracted

in the test. Acquisition of the post-concepts in the Arabic grammar, and the results of the T-Test were extracted to reveal the significance of the differences between the averages. 0.05) between the experimental and control groups in the test of the acquisition of the grammatical concepts in the Arabic grammar and by reference to the arithmetic averages, note that these differences in favor of the experimental group. In this way, we reject the null hypothesis and accept the alternative hypothesis, which means that the strategy of documentary representation positively affects student achievement.

Conclusion

The researcher applied the research tools to the two research groups, after correcting the students' answers, each student received data for the experimental group and the control, if the data were processed statistically by two independent samples and showed, the experimental group, which was studied according to the DTP strategy, surpassed the control group which were studied in the usual way in the variable concept acquisition.

Financial Disclosure: There is no financial disclosure.

Conflict of interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the University of Babylon – college of Basic Education and all experiments were carried out in accordance with approved guidelines.

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Evaluation of TSH, T3, T4 and Testosterone Concentrations in Women with Poly Cystic Ovary Syndrome (PCOS) in Babylon City-IRAQ

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Abstract

Estimation of hormone concentrations TSH, T3, T4, and testosterone in women with polycystic ovary syndrome in Babylon city were carried out in this study. There was significant difference in body mass index (BMI) and age group distribution between cases and controls. P<0.05, while there was a statistical differences in fertility status between two studied groups. P<0.05. According to statistical analysis could been concluded that the level of T3, T4, TSH and testosterone were increased in polycystic ovary in comparison with healthy control group and there are a differences between patient and control group P<0.05.

Keywords: *TSH, T3, T4 and Testosterone, poly cystic ovary women.*

Introduction

PolyCystic Ovary Syndrome PCOS considered as one of the commonest endocrinopathies among women in reproductive period, which start from menarche till the menopause and commonly caused infertility around the world[1]. It can be considered as a syndrome involves reproductive, metabolic, and cardiovascular components leading to a lifelong health implications [2]This syndrome was initially mentioned in 1935, by Stein and Leventhal and since that it was considered as one of the most common cause of menstrual disturbance such asun-ovulation, oligo-menorrhea, menorrhagia, and common cause of infertility [3]. Despite PCOS being considered the most common endocrine disorder, the estimation of its prevalence is highly variable due to differences in the presentation of PCOS phenotypes [4]. Infertility is a recognizable feature of PCOS because of failure of ovulation accompanied by presence of multiple small follicles without effective ovulation. Polycystic ovaries are diagnosed on ultrasound by the presence of 12 or more follicular cysts which are less than 10 mm in size with enlargement of ovarian stroma. These changes may be present in women without endocrine abnormality [5]. So, these morphological changes of the ovaries must be distinguished from the other endocrines abnormality of hyperandrogenism and anovulation.[7,8,9]

Women with PCOS regularly require treatment for menstrual abnormality, clinical signs of hyperandrogenism, and inability to get pregnancy. [10] Menstrual abnormality commonly seen in PCOS include oligo-menorrhea, amenorrhea, or menorrhagia. 30% of women with PCOS will have typical menses and roughly 85–90 % of women with oligo-menorrhea have PCOS, also 30%–40% of women with complete amenorrhea will have PCOS[11]. The most common presentations of hyperandrogenism are acne and hirsutism, androgenic alopecia and voice hoarseness[12.13,14]. Huang reported hyperandrogenism to be present in approximately 75% of women with PCOS[15]. The other most important clinical presentation in PCOS is insulin resistance (IR), which supposed to be a vital part in the pathogenesis and long term sequelae of the condition. There is strong epidemiological proof that insulin resistance presence would increase the danger of CVD in PCOS women

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independence of other cardiovascular aggravating factors[16]. About 35-50% of women with PCOS are obese [17] .Insulin resistance found in about 65–70% of women with PCOS, in 70–80% of obese (BMI >30) PCOS women and 20–25% of lean (BMI<25) PCOS women[18] . Raised serum levels of LH and testosterone hormone in association with low or normal levels of follicular stimulating hormones and abnormalities in the secretion of estrogen, described as an endocrine profile which may believed to be diagnostic of PCOS, both elevated level of the LH and insulin resistance are the most common endocrine abnormalities seen in PCOS women . The underlying genetic causes of high level of LH is still not known [19] .Insulin resistance in PCOS can be caused by a post binding deformity in insulin receptors signaling pathways, and higher insulin levels might raise the ovarian capacity for gonadotropins. Hyperinsulinemia might suppress the production of sex hormone–binding globulin (SHBG) on the liver which in turn stimulate androgen production and worsen features of hyperandrogenism[19,20,21,22]. An overview of PCOS pathophysiology. The Aim of the study are to Study the concentrated levels of some hormones in such as TSH, T3 T4, and testosterone in women with PolyCystic Ovary Syndrome in Babylon city

Materials and Method

Patients Groups: A total number of 50 women with PCOS are involved in this case control study. Patients are collected from outpatient and private gynecological clinics from different area of Babylon regardless the marital status, whom age ranged from 18-40 years in a period from March to December 2018. The PCOS diagnosis was depended on Androgen excess and PCOS society at 2006 criteria:

1. Oligo-ovulation and/or un-ovulation;
2. Biochemical signs and/or clinical signs of hyperandrogenism (signs of hyperandrogenism include hirsutism, alopecia or acne).
3. Appearance of polycystic ovaries on ultrasound (morphological changes of the ovaries was diagnosed using abdominal ultrasound).

Control Groups: A 50 fertile women were collected from primary health care centers in Baylon and who have regular menstrual cycle with no sign of hyperandrogenism and their age group between 18-40 years and subjected to ultrasound examination and have normal hormonal level and blood sugar was measured to exclude diabetes mellitus.

Collection of Blood Samples: For each patient (patient groups and control groups) 2-3 ml of blood were aspiration by syringe 5ml, serum was separated by centrifugation at 3000rpm/10 minutes, and kept in 10ºC until used and thawing of each frozen sample

Hormone Kits: The kits used in this study for estimation of TSH, T3, T4 and Testosterone concentrations were supplied by Spectrum co.,Netherlands,and the determination of hormone concentrations would done according to supplied company

Body mass index (BMI) was calculated as follows: weight (kilograms)/height2 (meters).

Statistical Analysis: Results were analyzed using the test T. test use of less significant difference (least significant differences) (LSD) at the level of significance ($P \leq 0.05$, $P \leq 0.01$ and $P \leq 0.001$) to show statistically differences.

Results and Discussion

This is a case control study involved 50 women with PolyCystic Ovary Syndrome PCOS. These were compared with age matched 50 apparently healthy controls. The basic characteristics of PolyCystic Ovary Syndrome PCOS women and control groups are shown in Table (1). There was significant difference in BMI and age group distribution between cases and controls. $P<0.0$. Tables 2-5 and fig 1 illustrate the levels of various hormones in women with PolyCystic Ovary Syndrome . According to statistical analysis could been concluded that the level of T3, T4 and testosterone were increased in comparison with healthy control group and there are a differences between patient and control group $P<0.05$. Polycystic ovarian syndrome is one of the most popular endocrine disorders in the humans. In fact, emphasis on its importance rise from increased prevalence of cardiovascular diseases and higher cardiovascular morbidity even in young and thin women with PCOS this may be partially due to low grade inflammation. Excessive amount of visceral or ectopic fat, a feature of most women with PCOS played an essential role in cardiovascular disorders, in addition to atherosclerotic changes.[16,17] Patients with PCOS are presented with low progesterone level as a result of oligo-ovulation or anovulation therefore the immune system could be overstimulated by excess estrogen leading to production of autoantibodies in those patients.[18]. It is a relatively

strong estrogen when compared to estrogens made by the body. Women who are overweight are at an increased risk of diseases that are known to be caused by elevated estrogen levels. Uterine cancer and breast cancer are more common in women who are overweight.[19] Women that are overweight are more likely to be diabetic. Women who are diabetic are more sensitive to estrogen than women who are not diabetic. Estrogen also increases weight gain and makes it more difficult to lose weight. Women who are overweight should not take standard synthetic estrogen replacement.[20] Women who are not at high risk for osteoporosis should avoid estrogen replacement. Estrogen has two FDA approved indications. One is the relief of hot flashes the other is the prevention of osteoporosis in high risk women.[21] Women that have a thin frame, and of North European decent with extremely fair skin, sedentary lifestyle, history of smoking and prolonged steroid use are at risk for osteoporosis.[22] It is found that administration of therapeutic human gonadotrophin hormones or FSH for induction of ovulation in infertile women may induce immunological reaction to these therapeutic agent leading to decrease their efficacy and induce anti-gonadotropin Ab or anti-FSH Ab formation and this immune reaction might range from mild and transient to severe immunological reaction.[23] The endocrinological abnormalities of PCOS begin after puberty. Despite These multifactorial pathophysiology, women with PCOS still have few interrelated attributes, including insulin resistance, hyperandrogenism, and modified gonadotropin elements.[24] Raised serum levels of LH and testosterone hormone in association with low or normal levels of follicular stimulating hormones and abnormalities in the secretion of estrogen, described as an endocrine profile which may believed to be diagnostic of PCOS, both elevated level of the LH and insulin resistance are the most common endocrine abnormalities seen in PCOS women . The underlying genetic causes of high level of LH is still not known.[4,15,20]

Table 1. Basic Subjects Characterise

	Cases (No=50)	Controls (No = 50)	p value
Age (Years) Mean ± S.D.	32.7 ± 1.3	18.4 ± 6.4	0.036
BMI (Kg/m^2) Mean ± S.D.	23.0 ± 4.5	18.0 ± 3.4	0.048
History of infertility: No (%)	40(80%)	45(90%)	0.0

Table 2. The concentration of T3 in menopausal women and control group. P<0.05

T3		
P Value	**Control**	**Menopausal women**
0.05	2.467	7.432

Table 3. The concentration of T4 in menopausal women and control group. P<0.001

T4		
P Value	**Control**	**Menopausal women**
0.001	19.840	31.762

Table 4. The concentration of TSH in menopausal women and control group. P<0.001

TSH		
P Value	**Control**	**Menopausal women**
0.001	11.658	22.977

Table 5: The concentration of Testosterone in menopausal women and control group. P<0.05

Testosterone		
P Value	**Control**	**Menopausal women**
0.001	15.78	20.244

Conclusion

There was significant difference in body mass index (BMI) and age group distribution between cases and controls. P<0.05, while there was a statistical differences in fertility status between two studied groups. P<0.05. According to statistical analysis could been concluded that the level of T3, T4, TSH and testosterone were increased in polycystic ovary in comparison with healthy control group and there are a differences between patient and control group . P<0.05.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of anatomy and histology -College of medicine –university of Babylon, Iraqand all experiments were carried out in accordance with approved guidelines.

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