PROCEEDINGS OF HEALTH SCIENCE
"FK-DIKUA"

Editors:
Heru Santoso Wahito Nugroho
Angelito E. Alvarado
Sanglar Polnok
David Ackah
Yessy Dessy Arna

Proceedings of Health Science "FK-DIKUA"

Editors:
Heru Santoso Wahito Nugroho (Indonesia)
Angelito E. Alvarado (Philippines)
Sanglar Polnok (Thailand)
David Ackah (Ghana)
Yessy Dessy Arna (Indonesia)
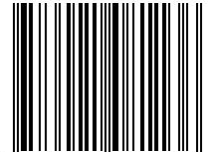
Publisher:
Forum Ilmiah Kesehatan (FORIKES)
2017

Proceedings of Health Science "FK-DIKUA"

PREFACE

Proceeding of Health Sciences "FK-DIKUA" is part of the launching event of The Alumni Communication Forum of Doctoral Program in Health Sciences of Airlangga University, Indonesia. In this event presented scientific articles in the areas of health, written by researchers from several countries, namely Indonesia, the Philippines, Thailand, and India. Scientific publication also involves the editors of several countries, namely Indonesia, the Philippines, Thailand, and Ghana.
We hope that these proceedings can contribute significantly to the development of science and technology in the field of health.

Surabaya, April 22, 2017

Editors

TABLE OF CONTENTS

BIOPSYCHOSOCIOCULTURAL (BPSC) PARADIGM AS A HOLISTIC HEALTH PARADIGM

Muhammad Anshari[1]

1= Faculty of Nursing and Health Science, Muhammadiyah University of Banjarmasin, Indonesia

E-mail: ans1167@yahoo.com

ABSTRACT

Recently, the growth of a disease still has not been surmounted satisfactorily by conventional biomedical concept. Human beings are multisystem creature, thus, handling various complaints of the diseases demanded the whole handling and comprehensive medical treatment. Furthermore, there was a new awareness to handle gaps by creating more holistic perspective. However, the new perspective in the medical system could not directly replace the earlier reductionist pattern, but it still left over the philosophical, theoretical, and technical problems. All in all, this text was an alternative offer to fill that gap.

Keywords: bio-psychosociocultural, holistic health

INTRODUCTION

The change of social status could also change lifestyle which became less controlled, then, it brought a significant impact on our health. Our daily carelessly consumption pattern could be a cause of illness. The fact, it did not build our awareness to act positively to take the right attitude. In the other hand, there was a fact that there was the increase of quantity of degenerative diseases such as coronary heart, stroke, high blood pressure, diabetes, and other diseases such as asthma, cancer, psychosomatic that could not be treated by medicines which were from the result of high technology. Although the development and findings of new degenerative medicines were always occurred, actually the limitations in surmounting the disease were also more limited. This perspective had shown to us that the various diseases above had developed more and more so that we could not surmount them. Briefly, those diseases such as degenerative disease should not been perspective as the only biological aspect but also it related to the culture or another disease which was caused by the relation that influenced each other between biological aspect and socio-cultural aspect.

Another factor that was very influential in the spread of disease was a disease that was caused by people's behavior patterns which were affected by social and cultural conditions. The spread of HIV/AIDS in Papua and diphtheria in Sumenep, East Java, Indonesia or in other areas that widely spread was due to cultural factors and customs as well as individual factors. Kuru disease was found in the Fore people of New Guinea. The disease of trypanosomiasis, bilharziasis, ochonerciasis, filariasis, malaria, and many others were triggered by the social, cultural, and ecological dynamics (Foster, 1986). Explanation for the disease cases required the interconnection of biological, psychological, social, and cultural spectrum in order to obtain a comprehensive perspective.

Biological relation and socio-cultural context of health had already been discussed in the discipline of Anthropology of Health. Various problems concerned with bio-cultural reciprocal relationship between human behavior in the past and the present with the degree of health and disease. This aimed at improving the health status through a greater understanding of relationship between the symptoms of bio-socio-cultural and health, as well as through changes toward healthy behavior that was believed in improving health. Despite, the exposure was generally still interpretative. Thus, it required a clear conceptualization in the aspect of epistemology and theoretical basis. Particularly concerning: interconnection episteme grounding between the socio-cultural spectrum with biology, relationships that described the influence of various variables of socio-cultural spectrum to biological spectrum variable, and what kind of mechanism, that became the foundation of the cause-effect relationship. This article was intended as a basic idea or initial step to close these gaps.

LITERATURE REVIEW

Biopsychosocial Perspective as An Early Step

The latest development in psychological and physiological medic had caused new way of thinking about health and disease. A psychiatrist George L. Engel from the University of Rochester, in an article in Annual Science 1977 (Engel, 1977), stated "the need for a new medical model". Then, this concept was

labeled as bio-psychosocial (BPS). A perspective viewed health and disease as the product of a combination of biological characteristics factors (e.g. genetic predisposition), behavioral factors (e.g. lifestyle, stress, trust, and health) and social conditions (e.g. cultural influences, family relationships, social support).

BPS perspective had contributed the efforts to interconnect the biological, psychological, and sociological spectrums as body systems. Recently, the perspective had shifted dramatically from illness to health, which recognized that psychosocial factors (e.g. belief, relationships, and stress) gave a great impact to development of recovery and healing of the sick (illness) and disease.

The creation of BPS perspective had marked the creation of a new consciousness in the biomedical field which the disease was previously only as reductive perspective in narrow scope and sharp as a purely biological concept. In the biomedical model, any disease process could be explained in an aberration of normal function by: pathogens, genetic or developmental abnormalities, or injury (Engel, 1977). This emerging awareness had brought a new paradigm that the best actual health should be understood in terms of a combination of biological, psychological, and social factors rather than purely as a biological spectrum only. Bio-psychosocial (BPS) was an approach that was assumed that biological, psychological (related thoughts, emotions, and behavior), and social factors all played important roles in human functioning in the context of diseases and illness.

Biological spectrum of BPS model tried to understand how the cause of disease came from individual's body function. The psychological component of BPS model searched for psychological causes of health potential problems such as lack of self-control, emotions, and negative thoughts. The social part of BPS model investigated how social factors such as socioeconomic status, poverty, different technologies, and religion could affect health. BPS model showed that treatment of diseases; for example, type two of diabetes and cancer, required health teamwork in overcoming biological, psychological, and social influence. In philosophical sense, bio-psychosocial model stated that the work of the body could affect the mind and the way of how the mind could affect the body (Halligan and Aylward, 2006).

Mind could directly affect immune system, and there were many studies which proved this case. Psychosocial factors could cause biological effects for patients with predisposing risk factors for example that depression itself could indirectly cause liver problems, but people who were depressed might be more likely to have alcohol problems, and, because of it, they tended to get liver damage. Perhaps it was the increased risk that leaded to an increase of disease. Most diseases in BPS perspective tended to be a disease that was moderated by behavioral or called as bio-psychosocial disorders (Bruns & Disorbio, 2006). An example of this case was type 2 of diabetes, which was the prevalence of the obesity growth and lack of physical activity were on the line to become a worldwide pandemic.

Eventhough, BPS perspective had not had a single model but it had a general framework to guide the exploration of theoretical and empirical research that had accumulated a lot of researches. One of the areas that had been greatly affected was formulation and test of social-cognitive model of health behavior for the last 30 years (Armitage and Conner 2000). Socio-cognitive variables influenced the involvement of healthy behaviors and comply with prescribed medical regimens, and self-efficacy in chronic diseases such as type 2 of diabetes and heart disease. Besides, there were other models including the Health Belief Model, Theory of Reasoned Action and Theory of Planned Behaviour, Trans-theoretical model, the Relapse Prevention Model, Gollwitzer's implementation-intentions, the precaution-Adoption Model, the Health Action Process Approach (Garcia & Mann 2003; Carels, et al., 2004; Carels, et al., 2005).

A Critical View of BPS Model

BPS as a new model had been widely criticized. One of them claimed that most BPS was biomedical model, in which biological factors were still superimposed on psychological and social spectrum. Critics also claimed that theoretical basis of this model was insufficiently clear. Besides, there were also disadvantages of this model and there was less solid language concepts/systems (i.e. psychological and medical terminology which were parallel and unrelated), and even, the complex relationships between causes and effects factor of every subsystem (biological, psychological and social) which affected health and disease were unknown properly (Havelka et al, 2009; Armstrong, 1987; Ogden, 1997).

Other critics often underlain their objections toward BPS perspective based on several studies such as studies on the benefits of a bio-psychosocial model in understanding the etiology of chronic disease factors that influenced the development of peptic ulcer disease and ischemic heart disease. The results showed that it was impossible with certainty claim that there was an influence of psychosocial factors in

the etiology of this disease through mechanism mediation of psycho-neuroendocrinology (Smith, 2006). Another study aimed at decreasing the morbidity and mortality of coronary heart disease in the form of negative health behaviors. The study participants were included in the program of reducing the intensity of risk behavior. After 7 years, the evaluation of the program showed disappointed results such as practically no effect either on morbidity or coronary mortality (MRFI, 1988). Fortunately, no general rejection of the basic model, instead it related to the concept of research and found the cause of failure in the conceptual and methodological approaches (Havelka et al, 2009).

Other practitioners often blamed the BPS perspective about its attention to three aspects of disease. How we chose?, how we made priority of one aspect to the other aspects?. Some might suggest that evidence-based medicine provided a selection mechanism, but the presence of evidence was often limited even nothing. Bio-psychosocial model did not guide us on how to prioritize. As a result, the priority of the case did on the run with reference respectively. They also argued that the use of one pure method often produced better results or more valid than the use of several approaches together (Nassir Ghaemi, 2009).

The Need of New Holistic Perspective

The interesting thing about the creation of BPS, it had spawned a concept that was now popular as a mind-body connection, which discussed more philosophical argument between bio-psychosocial perspective and biomedical one. However, there was still a work to be elaborated by BPS perspective that was initiated by Engel. Moreover, there was unavailability of test model to describe interactions or causal influence of mind versus body. The focus to bring the relationship between mind which was as an independent variable that directly influenced toward biological (physiological) aspect which was as the dependent variable was important key in terms of holistic medical intervention. But earlier, in order to build the philosophical models as a theoretical model, it was necessary to stipulate epistemological foundation of the correlation of each subsystem spectrums (biological, psychological, and social).

As mentioned in the introduction above, that because of people's behavior patterns were influenced by social and cultural dynamics, then, degenerative diseases contacted more with cultural aspects. It could be said that general health and disease which were found recently arose from the correlation between biological and socio-cultural aspect. According to this perspective, the essential perspective to be raised was not only limited to the biological, psychological, and social spectrum. It was required a broader perspective, or holistic and it became logical to add the fourth spectrum that was culture.

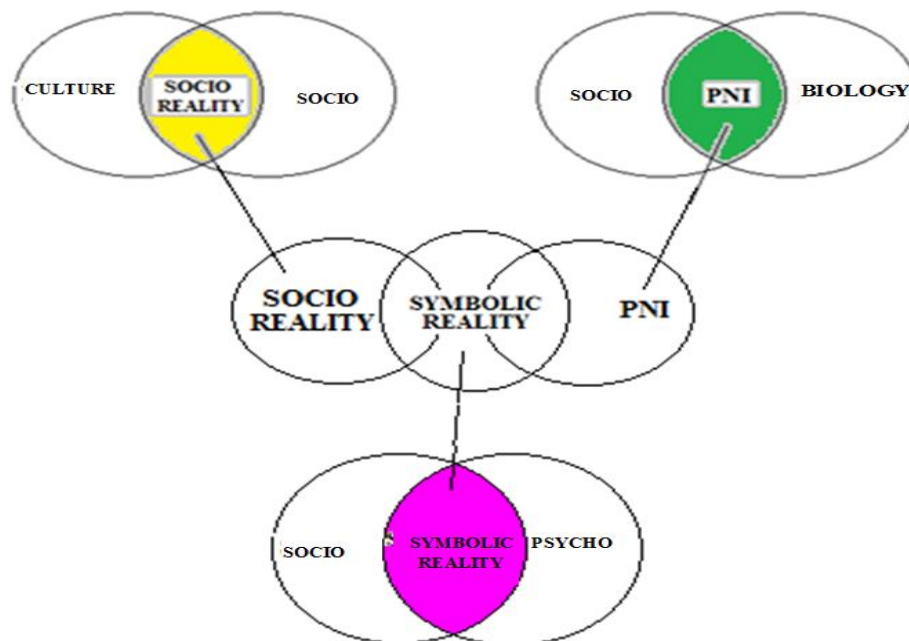### Biopsychosociocultural Perspecttive (BPSC)

Figure 1. Interrelation had been formed (natural)

Any scientific field could not stand independently if it was linked in the efforts to resolve social problems, without any holdings of integration with other scientific knowledge. Science that was understood as a form of integral knowledge was in the form of interconnection with other scientific systems and intended to human's benefit. Science used variety approaches which would be developed rapidly due to possible growth of a new discipline which was combination of the two sciences and it was called as an inter-disciplinarity.

A holistic study required interdisciplinary observation. Hence, it took effort to build interrelationships between scientific spectrums which were involved. The biological, psychological, social, and cultural spectrums had been interrelated naturally, which was known as: socio-culture and psychobiology. The interrelation results had become an establish study in their domains.

Socio-cultural interrelation that rose in this discussion was form of socio-cultural adaptation strategy which was called as social reality. Social reality was a world of human interaction that existed outside individuals where social roles were determined and established through negotiation among individuals including the form of medical systems. The tremendous powers of this social reality were belief, value, and interest which were spread inner (individual) and outer (social) due to enculturation.

Psychobiological interrelation was built by using psychoneuroimmunology paradigm (PNI). PNI had a learning concept system that was very important in the correlation toward science spectrum interrelation because it gave us an access to personal biological reality. In addition, the process of learning system would produce cognition (perception) which determined the suitability of individual response to stimuli (Putra, 2011). Form of socio-psychological interrelation was occurred in dimension as Kleinman (1981) said that it was as a world symbolic or symbolic reality. World symbolic was a place of transactional meaning between personal and community. In that capacity, the symbolic reality could play a role as an integrator between medical systems (such as: ethno-medicine, allopathic etc.) with PNI. Integration of medical systems with PNI which was facilitated by symbolic reality produced a pattern that was known as BPSC perspective (biology-psycho-socio-cultural).

Description of BPSC Paradigm
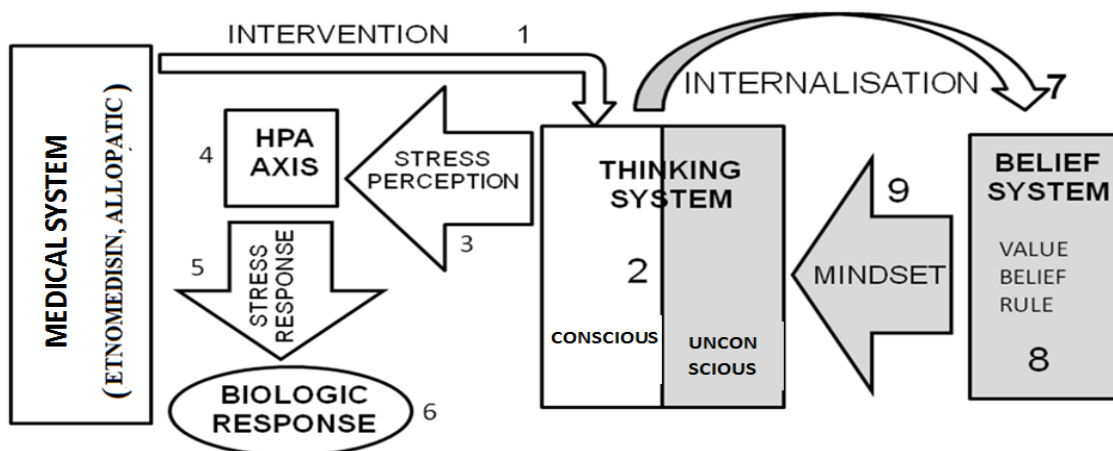
Figure 2. BPSC Paradigm Scheme

Based on the schematic above, BPSC paradigm represented stimulus-response which acted as stimulus was Medical Systems (Ethno-medicine, Allopathic) and response was psychological variables (stress perception) and biological variables (stress response) (Ansari and Utami, 2016; Ansari, 2016a).

Consciousness consisted of two, namely: operating on conscious mind (consciousness) and unconscious mind (sub-consciousness). The role of conscious mind (consciousness) was the process of thinking system zone. The role of subconscious mind (sub-consciousness) was long-term memory which was stored in a collection of life experiences that recorded strongly at the subconscious layer such as mindset. Mindset was a collection of thoughts that provided personal guidelines and legislation in deciding attitudes and behavior. Mindset was formed through learning process, repetitive, and prolonged, thus, it settled strongly in the subconscious mind. The quality of mind with perception that had been referred to mindset was known as stress perception (2).

Psychoneuroimmunology studies had identified at least there were two pathways that connected perceptions (stress perception) with biological responses which were HPA axis and LC- NE axis. Stress perception (2) was as a collection of thought that was executed by HPA pathway to produce biological response (stress response) (4). Stress perception (2) which had negative quality would produce biological response (stress response, 4) with negative qualities too (Putra, 2011). Manifestations of negative biological response were including increased levels of cortisol and immunity resistance (Boonen, 2013; Ellenbogen, 2002; Ebrecht, 2003).

Based on Bio-psychosociocultural paradigm (BPSC), it could develop the model that could explain holistic intervention of medical system. Model which was currently available for this purpose was a metamodel meaning-making (Ansari, 2016 b). The metamodel was developed to explain the concept of ethno-medicine intervention in influencing perception system (stress perception) and biological (stress response).

BPSC paradigm in our perspective could be used as a holistic perspective to complement the previous paradigm that was initiated by Engel. Furthermore, there were several reasons to support such assumption. BPSC paradigm at least had tried to build a clear interconnection epistemologically and prepared operational mechanism pathway. However, there was a test variable (value, belief and rule) that referred to mind-body relationship (mind-body), mind intervention (independent variable) which resulted response in the body (dependent variable).

A Review of BPSC Paradigm Technique Aspect

A perspective of conventional biomedical model that applied to case of patients who complained chest pain as an example, then, in this case the doctor focused on physical causes of disease. Your doctor would ask you some questions about diet, history of illness, signs, and symptoms of empirical myocardial infarction that was considered as important things. Furthermore, the doctor would order objective lab tests and monitor vital signs (such as temperature, pulse, and blood pressure) that would form basic finding in providing diagnosis. Therapeutic measures would be taken by doctor to prescribe medication plan for patients based on biological etiology and pathogenesis and symptomatic.

If the treatment pattern of patient's case was handled according to a holistic concept of BPSC, then the doctor would ensure psychosocial and physical processes that could lead to a major complaint of chest pain. Your doctor might ask you a history of life pressures and behavior. Diagnosis was formed by combination of behavioral factors, psychological one, and standard laboratory tests. In the therapy phase, the doctor would discuss available interventions with special attention on the behavior and lifestyle that could affect pain and obedience toward the treatment plan. Attention to psychological and behavioral control would be pursued by inducing belief, values, and rule systems of the patient. If this was happened, then, positive behavior response in the form of confidence, optimism, and obedience to accept and carry out the treatment regimen would create a strong basis in individual patient in order to support the efforts of holistic healing. Another aspect of holistic concept was the availability of space for patient to be actively involved in formulating and implementing the plan, and maintaining a supportive relationship with a doctor in recovery process.

CONCLUSION

A holistic paradigm in medical and health interventions was an interdisciplinary study that should have a comprehensive element, involving a wide spectrum of science, including: biological, psychological, social, and cultural spectrum. Those four spectrums of science could be assembled their interconnectivity to form a unity perspective that in this text was proposed as bio-psychosociocultural perspective (BPSC). As a holistic perspective, BPSC had provided: an epistemological foundation, mechanism pathway, and a wide range of test variables. Nonetheless, in other word, it could be stated that this perspective had completed the perspective models which was initiated before by George Engel (1977).

REFERENCES

Anshari,M., (2016a). Dissertation, Konsep Ritual Baharagu Dalam Meempeengaruhi Sistem Persepsi Dan Biologis Pada Etnomedian Dayak Paramasan Pegunungan Meratus, Ikes Universtas Airlangga, Surabaya.

Anshari, M., (2016b), Mindset As Coping Mechanisms In Ritual Healing Of Ethnomedicine Dayak Paramasan Meratus, Proceeding

Anshari,M., Utami, T.N., (2016). Membangun Paradigma BSPB, Forikes.

Armstrong D, Social Science and Medicine, 25 (1987) 213–218.

Boonen, E. (2013). Reduced cortisol metabolism during critical illness. Nursing Engl Journal medicine, 1477-1488.

Ebrecht, S. R., & Kunt, W. (2003). Cortisol responses to mild psychological stress are inversely associated with pro inflammatory cytokine. Brain, Behavior and Immunity, 373-383.

Ellenbogen, M. A. (2002). Stress and selective attention: The interplay of mood, cortisol levels and emotional information proccessing. Physiology, 723-732

Engel G. (1977). The need for a new medical model: a challenge for biomedicine. Science, 196:129-136.

Kleinmann, A. (1981). Patients and Healers in the context of culture. USA: University of California Press.

M. Havelka et al.: Biopsychosocial Model, Coll. Antropol. 33 (2009) 1: 303–310

Multiple Risk Factor Intervention Trial Research Group, Journal of American Medical Association, 248 (1988) 1465–1477.

Nassir Ghaemi, S. (2009), The rise and fall of the biopsychosocial, Model The British Journal of Psychiatry, 195, 3–4. doi: 10.1192/bjp.bp.109.063859Ogden J, Journal of Health Psychology, 2 (1997) 21–29.

Putra, ST. (2011). Biology Persepsi dalam Psikoneuroimunologi Kedokteran. Surabaya: Airlangga University Press.

Smith GD, The Biopsychosocial Approach: a Note of Caution, In WHITE P, Biopsychosocial Medicine – An Integrated Approach to Understanding illness, (University Press, Oxford, 2006).

THE DEVELOPMENT OF NURSING CARE QUALITY MODEL BASED ON THE ANALYSIS OF NURSE'S PERFORMANCE AND NURSE'S AND PATIENT'S SATISFACTION

Abdul Muhith[1]

1= Institute of Health Science "Majapahit", Mojokerto, Indonesia

E-mail: cua_muhith@yahoo.co.id ; abdulmuhith1979@gmail.com

ABSTRACT

The basic shifting of competitive quality in hospital was not only determined by profits, but also creation value and additional value for customers. Nurses, who were often having contact with patients and spending their time to serve patients, had a major role in treating patient's health. Patient's satisfaction which was as a quality indicator was the successful key for the competition of health nursing in hospital. The aim of this study was to develop a nursing care quality model based on the behavior of nursing performance, organizational and work behavior as well as patient's satisfaction. The method used was a cross sectional study, with 14 inpatient rooms, and 176 nurses. Areas of research were: organizational factors (organization and leadership culture), performance factors (feedback and variations of work), nurse's characteristics (motivation, attitude, commitment, and mental models), nursing practice, interpersonal communication, nurse's and patient's satisfaction. The results showed; 1) nursing practice was influenced by performance factors and not influenced by organizational factors; 2) interpersonal communication or professional nursing was influenced by nursing practice; 3) Professional care was influenced by nurse's satisfaction; 4) Patient's satisfaction was influenced by professional nursing. The results also implied: organizational culture was dominated by clan and market culture, right leadership coaching; by improving the provision of feedback and variations would improve nurse's performance, high motivation and commitment, enough attitude and mental models (independence), and enough nurse's and patient's satisfaction. Based on the results, the recommended models were: 1. Providing freedom for nurses in nursing practices and improving their communication skills or professional nurses; 2. Providing more incentives and feedback, as well as various works or responsibilities; 3. Maintaining or increasing clan and market culture; 4. Coaching was more suitable than nursing team performance.

Keywords: Quality, Nursing Care, Performance, Satisfaction

INTRODUCTION

The development of health services in Indonesia had been successful in improving health care more evenly. The progress of science and technology had resulted that population of educated and controlled information increased more, so that they could select and demand to obtain qualified health care (Supriyanto and Ernawaty, 2010). Therefore, it needed to be learnt development issues and opportunities that arose in health development efforts and one of them was the quality of health care. Quality of health care as the quality of service was an important part that needed more attention of healthcare provider. Services quality packaging which would be produced should be one of hospital marketing strategies that would sell services to users. Hospital management should always try to make product and services which were offered to be able to endure or to be continuous, so they could capture market share.

Health care organizations, such as hospitals were essentially public services organizations. Hospitals needed to have an excellent service quality character in accordance with patient's expectations. Interaction between health workers and patients could be done by giving trust and credibility. Patients were hospital users who had right to assess service performances. The better the assessment of patients, the better the quality of health care in hospital (Donabedian, 1980).

The quality of nursing care in hospital depended on skill, speed, ease, and accuracy in performing nursing act. This meant that nursing services depended on the efficiency and structural effectiveness in the whole systems of a hospital. Nursing service quality was one of the basic necessities of every person. So far, the experts in health and nursing field were trying to improve: the quality of self, profession, nursing equipment, managerial ability and quality of nursing care (Potter and Perry, 2005).

In 2005 the Directorate of Nursing Services of Health Department (Direktorat Pelayanan Keperawatan Depkes) in collaboration with the World Health Organization (WHO) conducted an assessment of nursing care in East Kalimantan, North Sumatra, West Java, East Java, and Jakarta –

Indonesia which indicated that: 1) 70.9% of nurses over the last 3 years never joined training, 2) 39.8% of nurses still performed non-nursing duties, 3) 47.4% of nurses did not have a written job description, and 4) had not been developed specifically nurses performance evaluation.

Data in Hospitals of Gresik in 2010 showed that the ratio (comparison) of nurses and beds had not qualified the standard of Depkes, 2005 that meant the number of nurses was still less (SK. Menkes RI 262 / Menkes / PER / VII / 2005). Indicators data of inpatient services at RSUD Gresik in 2010 showed that the use of BOR (Bed Occupancy Rate), inpatient units had been efficient. As well as with the indicator data services of inpatient unit at Semen Gresik Hospital in 2010 that showed the condition of BOR (Bed Occupancy Rate) was in standard category. It meant that the use of hospital beds was categorized as efficient one. Indicator data of inpatient service unit at Petro Kimia Gesik Hospital in 2010 showed the use of Bed Occupacy Rate was compliant and efficient, although in 2009 and 2010 there was increase in the number of nurses and beds. While, indicator data of inpatient services unit at Muhammadiyah Gresik Hospital showed the utilization of beds was still not efficient and less standard category.

Quality of service and implementation of hospital nursing care in Gresik had not qualified the standard yet (100%). Semen Gresik Hospital was better because the level of patient's satisfaction had fulfilled the concept of Pareto 80:20. Based on the description of the data in the background of this research showed about how the importance of nursing care. Moreover, the purpose of this research was to develop nursing care quality models based on analysis of nurse's performance and nurse's and patient's satisfaction.

METHOD

This cross-sectional study was conducted in March 2011 to February 2012. The population of this research was all inpatient units of hospitals in Gresik, namely RSUD Gresik, Semen Gresik Hospital, Petro Kimia Gresik Hospital, and Muhammadiyah Gresik Hospital. The samples were all heads of inpatient units, nurses, and patients with the inclusion criteria: had one of three types of culture (clan, market, and hierarchy culture) and had one of two types of leadership (coaching and directing leadership). RSUD Gresik and Semen Gresik Hospital were hospitals that qualified the inclusion criteria. The sample size of this study was 14 inpatient units who were selected by simple random sampling technique. Furthermore, data were collected, and then analyzed with Partial Least Square (PLS).

RESULT

The summary of this research could be seen in figure 1 and figure 2 below:
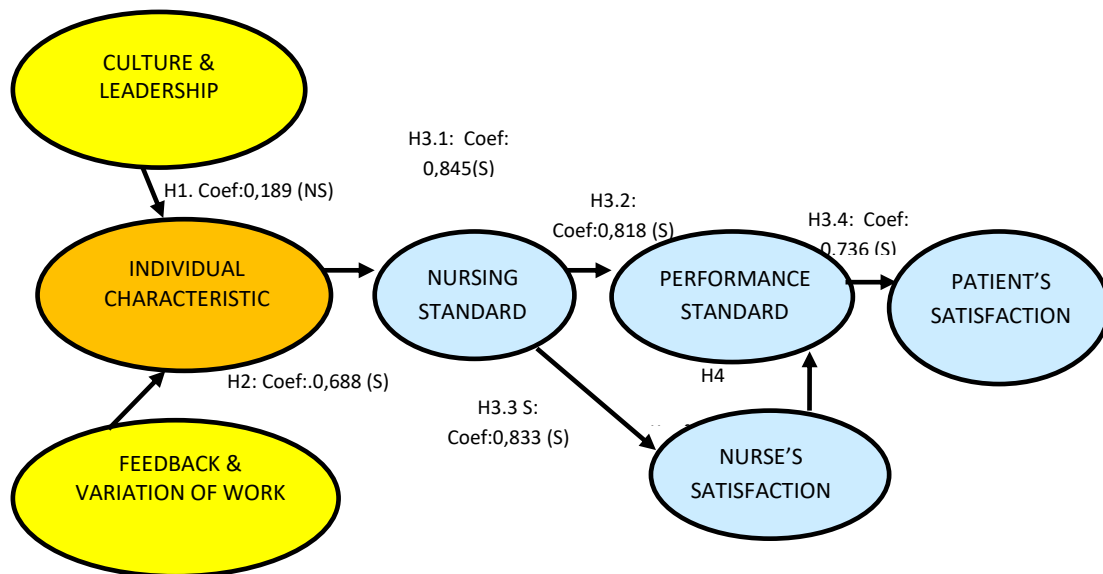
Figure 1. Hypothesis Test Result
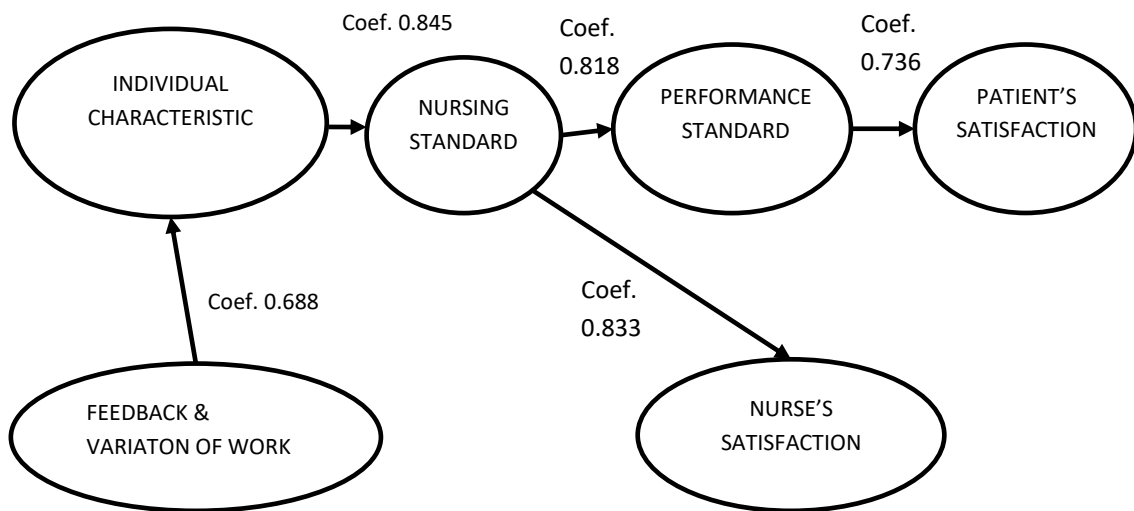
Figure 2. Final Research Model

Line 1: Starting from nurse's feedback and variation of work→ nurse's individual characteristics → nursing care standard→ professional performance standards of nurse → patient's satisfaction. The findings provided the evidence that nursing characteristics and individual characteristics of nurses were important determinants in applying nursing care standard and nursing professional performance standard in order to improve or increase patient's satisfaction. These findings also indicated that external conditions (feedback and variations of nursing) and internal (attitudes, motivation, commitment, and mental model or independence of nurses) were determining factors or variables (enablers) on improving nurse's performance quality.

Line 2: Starting from nurse' feedback and variation of work → nurse's individual characteristic→ nursing care standard→ nurse's satisfaction. These findings indicated that nurse's feedback and variations of work and nurse's internal conditions (attitude, motivation, commitment, mental model, or independence of nurses) could be determining factors or variables (enablers) of nurse's satisfaction.

DISCUSSION

The Influence of Organizational and Leadership Culture through Nurse's Individual Characteristics

Figure 1 showed that there was no influence of organizational and leadership culture of inpatient unit leader through individual characteristics of room nurses. Organizational culture type of room was dominated by clan culture (50%), market culture (28.6%), and hierarchy culture (21.4%).

Clan culture by Cameron and Quinn (2006), was a culture that oriented a collaboration, emotional attachment, and a culture that focused on maintaining flexibility, attention to the staff, team members with commitment as its trigger value, and staff development and high staff participation, whereas, culture market indicated competing orientation with compliance based service of patient's need as its trigger. Hierarchical culture was supervision and controlled based culture with a trigger value of efficiency and discipline.

It could be concluded that clan culture that dominated was conformity with nurse's characteristic in giving high motivation and commitment of work. Hierarchical culture was needed on situation and mental model or nurse's reliance through weak task, because hierarchical culture was supervision and controlled oriented culture through the work of subordinates. Leadership type of inpatient unit leader was mostly coaching (57.8%), and then directing (42.9%). Leadership coaching or mentor and facilitator would establish effective communication between team members and foster their strong participation among its members. Coaching in organizational culture reflected in clan culture. Coaching was a leadership behavior with orientation direction of high correlation and high task. Control of decision-making remained the leader task (Cameron and Quinn, 2006).

The results showed that coaching leadership type tended to be good in increasing motivation and commitment (> 80%), such as clan culture but it was weak on the mental models or independence and

attitude of nurses (<49%). Directing leadership tended to give enough value to all characteristic components of nurses (commitment, motivation, mental models or independence, and attitude of nurses).

A study conducted by Lewin, Leppitt, and white in Gillies (1989) showed that group produced a greater quantity of work if it was under directing leadership but it would be better quality of work if it was under coaching leadership. According to Gillies (1989), the factors that determined the best leadership style were existed situation including difficulty and complexity of tasks assigned: time available for completion of task, group size, communication patterns within the group, educational background, and employee's experience. The characteristics were very suitable and in accordance with nursing team method, also according to nursing professional performance, which emphasized collaboration and participation. Since most of clan organizational culture and coaching leadership type, organizational and leadership culture types which were performed by leader were relatively homogeneous in each nursing room, or culture. Besides, leadership type of headspace would have no influence on motivation, attitude, commitment and mental model or independence of nurses. Leadership that was owned by inpatient unit leader had no significant effect on nurse's individual characteristics and job satisfaction that was felt by nurses. It might be caused by work period of inpatient unit leader and nurse was on average so that the leadership style that was applied by unit leader did not give influence to nurses.

The results showed that there was no significant influence of culture and leadership of inpatient unit leader through nursing care quality (nursing care standards, professional performance standards of nurse , and nurse's and patient's satisfaction) in hospitals of Gresik.

The Influence of Feedback and Variation of Work toward Nurse's Individual Characteristics

The results of the research informed that there was a significant influence of feedback and variations of nursing job which was affected professional performance standards of nurse . Feedback and variations on professional performance standards of nurse affected nurse's characteristics (motivation, commitment, attitude and mental model or independence of the nurses). The research proved that the research hypothesis 2 was true. Feedback from employers was still low (50% was proceeded) and the variation of work was quite high (71.4%), so it could be predicted when the feedback as supervision and control efforts were improved and added a little more variety of work or not monotonous work anymore. Besides, it would provide an increased motivation, commitment, and attitude and mental model of nurse's performance, then, ultimately it affected professional performance standards of nurse . This was in accordance with the theory of Kopelman (1986), that work factors affected nurse's performance through meditation of motivation and commitment factor. Hence, it needed priority and attention to feedback from unit leader in order to increase motivation and commitment of their subordinates with consequences on performance improvement.

The results showed that there was a significant effect of feedback and variations of nurses in inpatient unit of nursing care quality (nursing care standard, professional performance standards of nurse , and nurse's and patient's satisfaction) through the nurse's individual characteristics (motivation, attitude, commitment and mental model or independence) in hospitals of Gresik.

The Influence of Characteristics toward Nursing Care Quality

The analysis result of proved line showed that there was a significant influence of nurse's individual characteristics (motivation, attitude, commitment, mental model, or independence) toward nursing care quality, which were: 1. Nurse's individual characteristics toward nursing care standard, 2. Nursing care standard toward professional performance standards of nurse and nurse' satisfaction and 3. Professional performance standards of nurse toward patient's satisfaction. This result showed that the hypothesis was proved.

The Influence of Characteristics toward Nursing Care Standard

The analysis result of proved line showed that there was a significant effect of nurse's individual characteristics (motivation, attitude, commitment and mental model, or independence) through standards compliance of nursing care (Figure 1).

Motivation and commitment of nurses at work were highly rated, so it needed to be maintained and increased continuously. Attitudes and mental models to be able to work independently and

professionally were still less. When nursing services quality contributed in capturing hospital competition, independence and professional in terms of nursing care should be a concern of every hospitals (Leebov and Scott, 1994). Nursalam (2011), the results of the study concluded that rewards, training and development, leadership and division of work schedule had an influence on nurse's satisfaction.

The Influence of Nursing Standard toward Professional Performance Standards of Nurse

Those who carried out a better adherence of nursing care standard would also conduct better professional performance standards of nurse (interpersonal communication) in patients, similarly to nurse' satisfaction. The results showed as what Nursalam (2011) had explained that there was a significant influence of nursing care standards through professional performance of the nurse.

The Influence of Nursing Standard toward Nurse's Satisfaction

The implementation of nursing care standard influenced on nurse's satisfaction. Nurse's satisfaction was one indicator of nurse loyalty, so that loyal nurses would be motivated to provide better services to the patients.

Nurse's satisfaction in support of organization with reference to Abraham Maslow's theory was most of nurse's satisfaction was on the affiliation need and it was needed a supervision in performing the work. Maslow's theory was analogue of motivation theory. Moreover, the analysis result of proved line showed that there was an influence on nursing care standard toward nurse's satisfaction.

The Influence of Nurse's Professional Performance toward Patient's Satisfaction

The analysis result of proved line showed that there was an influence of patient's satisfaction toward the implementation of the professional performance standards of nurse. Patient's satisfaction toward the professional performance standards of nurse in inpatient unit was quite satisfied in terms of caring, collaboration, empathy, courtesy, and sincerety . Empirical study on satisfaction level was quite satisfied; it meant that although there was an influence, this suggested that nurse's professional performance should be increased if hospitals would be successful in capturing competition.

Nurses were those who were directly involved in patient care. Nurse's professional performance could be perceived by the patient. This statement was in accordance with Supriyanto and Ernawaty, (2010) who stated that health care was a type of "Credence quality" product which meant that although patients often took advantage, they remained in ignorance of what was valued. Patient's satisfaction among caregivers that could be observed was the process of delivering services or nursing professional standards, and not on nursing aspects itself (nursing practice standards). This was in accordance with the concept of health services quality by Donabedian (1980).

The Influence of Nurse's Satisfaction toward Professional Performance Standards of Nurse

The results showed that nurse's motivation was high. It was same as high assessment on work commitment and enough on mental attitude of nurses. Basically, nurse's productivity was influenced by various factors such as education level, training, motivation, work ethic, work experience, mental attitude, physical condition, technology, social security, health and safety of workplace, management and policies implemented, especially leadership (Supriyanto Ratna, 2010).

Nurse's attitude in nursing care or assessment activity until evaluation was sufficient. This was possible because nursing care was a job of nurse's skill manifestation that was routine, so it was just enough to give a boost employment. The research proved that there was an association of work variation toward nurse's characteristic, especially working attitude.

Nursing Care Quality Model Development

Nursing care quality model development referred to quality system and findings of the analysis of performance research (empirical) and theoretical study.

The basic assumption

The old model of nursing care put more emphasizes on implementation of nursing care (nursing care and caring process), not comprehensively considered all components of performance or quality system by Donabedian (1980), which included structural components (input), process, and outcome.

Second Assumption

Evolution of quality paradigm was originally driven from "provider-driven" to "customer driven". Customer driven was one key to success in capturing human resource competition (competitive advantage). Customer driven was service quality that tried to fulfill the customer's needs and expectations.

From both assumptions, nursing care quality development, started from the current outcomes condition (patient' satisfaction and nurse's satisfaction), then, it was analyzed the cause in quality processes (application of nursing care and nurse's professional performance). Problems of quality processes were analyzed in component structure.

Patient's and Nurse's Satisfaction Outcome

Patient' Satisfaction

The results showed that patient's satisfaction in terms of caring, collaboration, empathy, courtesy and sincerety was categorized as quite satisfied. Patient's satisfaction was one indicator of quality services which were provided and capital to get more and loyal patients. Loyal patients would reuse the same health care when they needed it again. In fact, it was known that loyal patients would invite other people to use the same health care facilities (Kaplan, 1996).

Nurse's professional performance related to their ability in communicating and having interactive relationships in performing therapeutic nursing had to be improved. Patients were more easily assessing how nurses delivered services of nursing technical aspects. Hence, the task of nursing professional organizations was how to improve therapeutic communication skills of nurse as complement in delivering nursing care standards. This could be additional education outside in nursing profession.

The quality development of nurse's professional performance could be done by providing training in both *on / off the training* about the right therapeutic communication. *On the job training, it* could be done by involving nurses in a seminar on nursing, providing opportunity for nurses to attend training that was associated with increasing competency of nurses. Moreover, it could also bring in relevant trainers from outside. Thus, the mental competence and working model or independence of nurses could be improved. In *off-the-job training,* thing could be done was increasing the education level of nurses in strata one (S1).

Nurse's Satisfaction

Performance might be in the form of speed, ease, and comfort of how nurses provided medical services, especially nursing at a relatively fast caring time, ease in fulfilling patients' needs and the given pleasantness by paying more attention to cleanliness, friendliness, and completeness of hospital equipment.

The results showed that the nurses' satisfaction was more influenced by the implementation of nursing care standard that could be done if it was compared with organizational support (facilities, salaries, promotions, and the suitability of type of work). The perceived value of nurses on application of nursing care standard in assessment, diagnosis, and planning was high (100% could be implemented properly), while implementation and evaluation had not been able to be done completely (100%). Organization support was perceived by nurses until in reasonably satisfied level.

The results above indicated that nurses still needed to be improved their capability to implement nursing care standard by improving the competence (knowledge and skills). Similarly, organization support which was conducive and facilitative for nurses to apply nursing care standard fully.

The Development of Organizational and Leadership Culture of Inpatient Unit Leader

Organization was built with a set of values, as crystallization of individual value, group and eventually became a common value (Cameron and Quinn, 2006). Research conducted by Cameron and Quinn (2006) could be determined that there were four cultural types or organizational leaderships, those

were clan, hierarchy, market and adhocracy leadership. Typology of culture, business organization leadership based on the theory of management: effective performance, leadership, and skill management. From this management theory, it was raised indicators (measurement tool) in six measurement dimensions.

The results of the study informed that organizational culture type was largely dominated by Clan culture (emphasizing collaboration and teamwork), and had started market oriented culture or patient's need fulfillment. Most of leadership type of room leader was dominated by coaching leadership (leadership with the type of assistance). Directing leadership was still found in nurse's teamwork. This showed that nurses were not proved in doing professional cooperation.

Job Characteristics Development (Feedback and Variations)

Employee did their functions and activities related to satisfaction and commission, so it could be added other factors, which were: 1. Expectations of commission, 2. Perception of task, 3. External encouragement or leadership, 4. Needs based on Maslow, and 5. Work factors (design , task variation, feedback, monitoring, and control). Job-related factors, the results of research informed that feedback was less done by inpatient unit leader and nursing job variation was quite varied.

If the process was associated with the theory of Kopelmen (1986), work factors that were feedback, variation, work design, workload, and job design affected individual performance toward attitudes, knowledge, ability, and motivation variables. Generally, it could be concluded that the lack of feedback that was done by inpatient unit leader could affect nurse's individual performance.

Suggestion to do was giving feedback as a mean of leader controlling. Inpatient unit leader did control, supervision, and checking, and not too much focus on non-nursing task.

Development of Attitude, Motivation, Commitment and Mental Model or Independence of Nurse

Commitment and motivation of nurses were high, but the ability to run a self-reliance or independence was still enough, thus, coaching and directing leadership types at room were still felt necessary. However, with increased levels of competence through on / off-the-job education, making nurses capable in carrying out nursing care quality (able), then supporting leadership type could be considered.

Situational leadership type meant that there was no any best suited to all conditions of interest, and subordinates behavior condition. The fact of the research was it found all types of situational leadership, such as delegating, supporting, coaching, and directing. Coaching and directing leadership types were widely practiced by inpatient unit leader in order to enhance nurse's independence in implementing nursing care independently and professionally.

On the job training was required in workplace for knowledge management; the QC (Quality Control) aimed to make a good nurse independence. Besides, there was the remuneration of nurses. Currently remuneration was the most effective forms to increase nurse's commitment. Remuneration of nurses could be done in the form of rewards system and focused on nursing team.

On the job training could also be done in the form of hand skill improvement of nurses. It was expected to increase commitment and mental models or independence in the nurse's work. Nurse would believe more in their ability. In the off-job training that needed to be proposed was an increase in nurse's education level to strata one (S1)/bachelor degree. In principle, improving processes and inputting with on the job training or off the job training would have an impact on knowledge management and improvisation of communication skills. Of course, the input - process - outcome should get a support of organizations (hospitals), as well as the role of nurse professional organizations.

CONCLUSION

Model Test Result

Organizational and leadership culture of inpatient unit leader did not significantly influence nurse's characteristics (motivation, attitude, commitment and mental model or independence of nurses). Organization culture type was largely dominated by clan culture (emphasizing collaboration and teamwork), and had been already started a market oriented culture or fulfillment of patient's needs. Leadership type of inpatient unit leader was dominated by coaching leadership (leadership with the type

of assistance). Directing leadership type was still found in nurse work team. Feedback and variations significantly influenced nurse's characteristics (motivation, attitude, commitment and mental model or independence of nurses). Feedback was less done by inpatient unit leader and nursing job variation was quite varied. Motivation and commitment level of employment were high, while working attitude and independence of professional work as a nurse (mental models) were in enough categories.

Nurse's characteristics (motivation, attitude, commitment and mental model or independence of nurses) significantly influenced nursing care quality (nursing care standards, professional performance standards of nurse, and nurse's and patient's satisfaction). 1) There was a significant influence of nurse's individual characteristics toward nursing care standard. 2) There was a significant influence of nursing care standard toward the professional performance standards of nurse. 3) There was a significant influence of nursing care standard toward nurses' satisfaction. 4) There was a significant influence of professional performance standards of nurse toward patient's satisfaction. Nurse's satisfaction had no significant influence on implementation of professional performance standards of nurse. Nurse's satisfaction of organization support was quite satisfied. Nursing care standards were activities which were related to competence (knowledge and skills), while nurse's professional performance was related to soft skills, which received less attention in the process of nurse's education.

Nursing Care Quality Development Model Proposed

The nursing care model had to be prepared by principle; 1. Based on research analysis line, 2. Reality or factual condition descriptive analysis, and 3. Synthesis of descriptive results and line of research, then developed a model that referred to the customer's needs and expectations (customer driven) which leaded to hospital quality competition (competitive advantages). Generally, the development of nursing care quality models that existed referred to a comprehensive quality system.

REFERENCES

Cameron, K.S., dan Quinn R.E., 2006. Diangnosis and changing organizational cultur, john wiley and sona, Inc, San fransisco.

Depkes, 2005. Standar tenaga keperawatan di rumah sakit, Departemen Kesehatan Republik Indonesia.

Donabedian, A., 1980. Aspects of medical care administration, Harvad University, Press.

Gilles, D.A., 1989. Management a systems approach, Philadelphia:W.B. Saunders. Company.

Herzberg, F., 1977. One more time: how do you Motivate employee? The manajement proses, Edisi 2, New York; Macmillan.

Kaplan, R.S., dan Norton D. J., 1996. Balanced scorecard, translating strategy into action. Harvard Business School Press.

Kopelman, R.E., 1986. Managing productivity in organizations, Mc Graw-Hill Book Company, New York.

Leebov, W., dan Scott G., 1994. Service quality improvement the customer satisfaction for health care, Hospital Publishing, Inc, America.

Luthans, F., 1995, Organizational Behavior, Seventh Edition, International Edition, New York, Mc Graw-Hill Inc.

Maholtra, K.N., 2003. Marketing research, Prentice-Hall Inc, New York.

Nursalam, 2011. Manajemen keperawatan aplikasi dalam praktik keperawatan, Salemba Raya, Jakarta.

Potter, A.P., dan Perry G.A., 2005. Fundamental keperawatan: Konsep, Proses dan Praktek, Penerbit Buku Kedokteran EGC, Jakarta.

Robbins, S.P., 2002. Organizational behavior, 10th ed. Oct 16., Prentice Hall Internationa Inc, San Diago State University.

Stoners, J.A., dan Freeman R.E., 1992. Management, 5th –ed, Prentice Hall, Engle Wood Cliffs, New Jersey, United State of America.

Supriyanto, S., dan Ratna, 2007. Manajemen mutu, Health Advocacy, Surabaya.

Supriyanto, S., dan Ernawaty., 2010. Pemasaran Industri Jasa Kesehatan, PT ANDI, Yogjakarta.

Tjiptono, F, 2006. Manajemen Jasa, Penerbit Andi, Jogjakarta

Woodruff, G, 2002. Understanding your customer, opportunities, need, value and satisfaction, First Edition, Infinity Books, A Maya Blackwell Imprint. New delhi.

THE ROLE OF ZINC AND CYSTEINE AMINO ACID ON GROWTH BIOMARKER OF STUNTING TODDLER'S BONE AFTER GIVING HIGH DOSAGE OF VITAMIN A

Hendrayati[1], Bambang Wirjatmadi[2], Merryana Adriani[2]

1=Department of Nutrition, Health Polytechnic of Ministry of Health in Makassar, Indonesia
2=Department of Nutrition, Faculty of Public Health, Airlangga University, Surabaya, Indonesia
E-mail: hendragizi@yahoo.co.id

ABSTRACT

One of the causes of stunting on toddlers was abnormal growth of the bone which the width of epiphyseal bone plate did not grow well, thus, it disrupted the elongation of the bone, and it would have high risk for toddler's height. The cause factor of bone growth disorder on toddler was influenced more by nutrition intake. Giving vitamin A in high dosage could provide high amino acid. Hence, RAR and RXR could be active as a transduction signal that could interlace DNA transcription. If it was involved with the supply of zinc and cysteine amino acid as substances in composing Zing Finger Protein (ZFP), DNA transcription would be with ZFP as promoter gene. Furthermore, this research was a Randomized Pre-Post Test Control Group Design research. The treatment for this research was giving zinc and cysteine amino acid on short toddlers who had gotten high dosage of vitamin A from government program. The indicator that was measured was including the level of IRS 1, TNF α, and calcium. The result of the research proved that IRS 1 was significant as a biomarker in improving the growth of the bone. Calcium was the major factor in improving the growth of the bone, meanwhile, TNF α could improve the linear growth through IRS 1. All in all, the conclusion of this research proved that giving zinc and cysteine amino acid could improve linear growth on the short toddler who got high dosage of vitamin A through the mechanism of Insulin Receptor Substrate 1 (IRS 1), TNF α, and calcium. The supplementation of zinc and the feeding with protein sources could be given as a companion supplementation of high dosage of vitamin A which had been implemented with the government all this time.

Keywords: Zinc, Cysteine Amino Acid, high dosage of Vitamin A, IRS 1, TNF α, and Calcium

INTRODUCTION

Background

The problem of stunting toddlers or linear growth disorder is still a major problem in Indonesia. In 2007, the prevalence of stunting toddlers reached 36.8%, in 2010 decreased to be 35.6%. Nationally, it was occurred a reduction in 1.2 % in 3 (three) years. The management in surmounting stunting toddlers had been implemented through various government programs, including providing vitamin A capsule in high dosage (Riskesdas (basic health research), 2010).

The function of vitamin A in linear growth correlated with genetic control which was intervened by derivate retinoic acid. The retinoic acid was chained on nuclear receptor which had role in giving respond on specific gene for increasing or reducing the level of specific expression gene. This nuclear receptor was included nuclear Retinoic Acid Receptors (RAR) and Retinoid X receptor (RXR). RAR and RXR must be chained with retinoic acid so that it could be active. Through this way, vitamin A through the activity of retinoic acid was an important regulator for controlling the gene transcription which would influence so many functions in the body (Thurnham, 2014).

Giving high dosage of vitamin A was less effective in surmounting stunting toddler problem if it was looked from the mechanism of gene transcription because retinoic acid could not work optimally without help from other substances such as protein which was as a composer of receptor, and zinc which was as a promoter gene (Barasi, 2009). The increase of zinc which was as a companion on giving high dosage of vitamin A could be become an alternative in surmounting stunting toddler problem.

The role of zinc was as a micro mineral that could mediate vitamin A transportation through Retinol Binding Protein (RBP). Zinc deficiency could cause the reduction of RBP synthesis in the liver which could impact on the reduction of RBP concentration in plasma. Therefore, the work mechanism of vitamin A without zinc would not be maximal (Agustian Leon, 2009).

Zinc did not only have a role on RBP synthesis but it was also important in the process of differentiation of bone cell in order to reach optimal linear growth on the toddler who was in growth

period. In the process of bone cell differentiation, zinc needed either cysteine amino acid or histidine amino acid. Both of those kinds of amino acid were known to work in gene regulation. Klug called it as zinc-finger. The shape of zinc-finger needed the residue of four amino acids as ligands, which were two cysteine and two histidine for each zinc molecules (Stipanuk, 2006). The chain pattern of both amino acid and zinc was known as Protein Zinc-Finger (PZF). PZF was important to chain transcription factor toward DNA by chaining the residue of histidine and cysteine on transcription factor and the receptor of nuclear hormone. Zinc placed finger-like secondari structure on protein. This structure could increase transcription factor on promoter gene (Solomon, 2013).

Zinc was also one of micro minerals that had a role in protein synthesis and the function of cellular enzyme. Thus, the role of zinc in the growth was a great bone growth. Recently, around 20% of toddler population in the world had risk of zinc deficiency from the food in daily life. UNICEF, USAID, and WHO concluded that it needed zinc supplementation in some countries, including Indonesia (Imdad, 2010). Zinc intake in Indonesia nowadays reached 51.6% of Recommended Dietary Allowance (DRA) (in Indonesian language, DRA was Angka Kecukupan Gizi (AKG)) (Purwatini, 2010).

Besides, another mechanism of zinc was it could give positive effect in the growth of the bone through stimulation of timulin hormone, which was hormone that was needed for differentiation, proliferation, and maturation of lymphocyte T. The lymphocyte T had a role as a cell that could induce TNF α, which had a role in the regulation of Growth Hormone (GH) for inducing Insulin Like Growth Factor-1 (IGF-1). IGF-1 needed Insulin Receptor Substrate 1 (IRS1) on proliferation of bone cell or osteoblast. Basically, the bone growth was started from osteoblast activity (Andrea, 2009). When it was in matrix maturation, the bone cell of osteoblast formed calcium ion as inorganic mineral that could increase bone mass (Huldani, 2012).

In bone growth, cysteine amino acid hastened hormone receptor transcription in the reaction of zinc finger protein (ZFP), induction of Transforming Growth Factor β (TGF β) and the forming of Cysteine Rich Intestinal Protein (CRIP) which was very chained with zinc.

Moreover, this research study aimed at appraising the change of the level of IRS1, TNF α, and calcium on stunting toddlers by giving zinc and cysteine amino acid after supplementation of high dosage of vitamin A.

PURPOSE

This research would give an illustration in improving bone growth through biomarker of bone improvement such as IRS 1, TNF α, and calcium after the supplementation of zinc and cysteine amino acid on stunting toddlers after giving high dosage of vitamin A.

METHOD

The design of this research was Randomized Pre-Post Test with Control Group. The treatment utilized Double Blind Methods. Sample of this research was toddler who was in the range of 2.5 until 5 years old with the stunting that had gotten high dosage of vitamin A (200.000 SI) from government. The sample was divided by three groups which were group 1 that was given zinc (n=15), group 2 that was given zinc + cysteine amino acid (n=15), and group 3 that was as a control (n=15).

Zinc was given in sulfate zinc syrup that was produced by PT. Indofarma, with the dose of 5 ml (27.45 mg of sulfate zinc which was equal with 10 mg of zinc). The cysteine amino acid was obtained from PT Autocindo Indonesia; in powder, tasteless, and white color with the dose of 25 mg/days, which was given for three months continuously (90 times in giving).

Bone biomarker was measured from blood specimen and all of them utilized Eliza method which utilized Human IRS 1 Eliza Kit (CN: E-EL-H5554 96T), Human TNF α Eliza Kit (CN: 430207), and Human Calcium Eliza Kit (DICA-500). Furthermore, the measurement was conducted in laboratory of teaching hospital (Rumah Sakit Pusat Pendidikan (RSPP)), Hasanuddin University, Makassar, Indonesia.

RESULT

Table 1 showed that not all sufferers of linear growth disorder (Height/Age = TB/U) either short or very short toddlers underwent the problem in nutrition status disorder if it was seen from the index of Weight/Age (BB/U). Moreover, the measurement result that was obtained in most of samples was 84.44% in good nutrition status.

Table 1. Distribution of Sample's Characteristic of the Research in Area of Public Health Center of Sudiang Raya Makassar in 2015

Sample's Characteristic	Group 1		Group 2		Group 3	
	n	%	N	%	n	%
Age (Year)						
≤ 2.5	2	13.33	3	20	5	33.33
> 2.5	13	86.67	12	80	10	66.67
Total	15	100	15	100	15	100
Gender						
Male	10	66.67	6	40	5	33.33
Female	5	33.33	9	60	10	66.67
Total	15	100	15	100	15	100
TB/U (Height/Age)						
Short	9	60	10	66.67	11	73.33
Very Short	6	40	5	33.33	4	26.67
Total	15	100	15	100	15	100
BB/U (Weight/ Age)						
Good Nutrition	12	80	13	86.67	13	86.67
Less Nutrition	3	20	2	13.33	2	13.33
Total	15	100	15	100	15	100

The measurement result for the level of Insulin Receptor Substrat 1 (IRS 1) could be looked in table 2 below:

Table 2. Distribution of Change of IRS 1 Level on Research Sample in Area of Public Health Center of Sudiang Raya Makassar in 2015

Treatment Group	n	IRS 1 Level (ng/ml)		P value
		Before	After	
1	15	3.2 ± 2,0	2,5 ± 1.6	0.837
2	15	4.9 ± 2,8	3.5 ± 1.7	0.089
3	15	4.8 ± 2,3	4.4 ± 2.1	0.648

In Table 2 could be known that the average change of the lowest IRS 1 level was occurred in group 1, which was a group that was given zinc. In this group, the average of IRS 1 level before treatment was 3.2 ng/ml with variation of 2.0 ng/ml. After the treatment, it was occurred reduction in 0.36 ng/ml and it became to be in the average of 2.5 ng/ml with variation of 1.6 ng/ml. Result of statistical test (t test) was P-value = 0.837 which meant that there was no significant difference of IRS 1 level between before and after giving zinc.

As well as with group 2 and group 3, the P-value for the change of IRS 1 level before and after treatment did not show the significant thing with P-value were 0.089 (group 2) and 0.648 (group 3). The result of anova test was obtained that P-value = 0.342, and this showed that there was no significant difference of the change for the three groups of treatment, which were group 1 that was given zinc, group 2 that was given zinc + cysteine amino acid, and group 3 that was as a control.

The change variation of the average of IRS 1 level was looked very different with group 2, which was a treatment by giving zinc + cysteine amino acid that was occurred quite high level change if it was compared with group 1 and group 3.

In Figure 1, it could be looked that there was significant difference of IRS 1 level in every group. The highest change of IRS 1 level was group 2 if it was compared with group 1, which was given zinc, and group 3 which was as a control. In group 2 that had a treatment of giving zinc and cysteine amino acid, in the average was occurred a change of IRS 1 level in 1.34 ng/ml, from the level of 4.88 ng/ml to be 3.53 ng/ml.
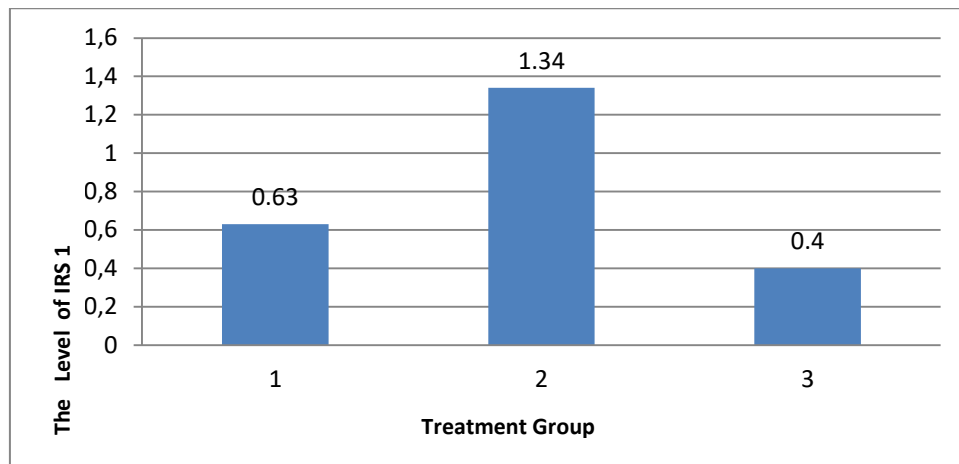
Figure 1. The Average Change of IRS 1 Level on every Research Group in Area of Public Health Center of Sudiang Raya Makassar in 2015

Table 3. Distribution of the Change of TNF α Level on Research Sample in Area of Public Health Center of Sudiang Raya Makassar in 2015

Treatment Group	n	The Level of TNF α pg/ml		P Value
		Before	After	
1	15	23.7 ± 2.5	24,1 ± 2.3	0.470
2	15	23.3 ± 2.1	26,1 ± 4,3	0.018
3	15	22.3 ± 2.0	23.6 ± 2.2	0.131

In table 3 gave an illustration that the average of TNF α level before giving zinc + cysteine amino acid in group 2 was 23.3 pg/ml with the variation of 2.1 pg/ml. After treatment, it was occurred an increase in 2.7 pg/ml to be the average of 26.1 pg/ml with variation of 4.3 pg/ml. The result of statistical test (Wilcoxon) was P-value = 0.018 which meant that there was a significant difference on TNF α level in the group 2 which was given zinc + cysteine amino acid.

In group 1, which was given zinc, was obtained the difference average in 0.4 pg and group 3. which was as a control, was obtained that the average of them was occurred the increase of TNF α level in 0.9 pg/ml. Result of statistical test (Wilcoxon) showed that every P-value was 0.470 in group 1 and P-value was 0.131 in group 3. This gave an explanation that there was no significant difference on TNF α level between before and after treatment in group 1, as well as in group 3. The result of anova test was obtained that P-value was 0.105, and this showed that there was no significant difference for the change of TNF α level for three treatment groups.
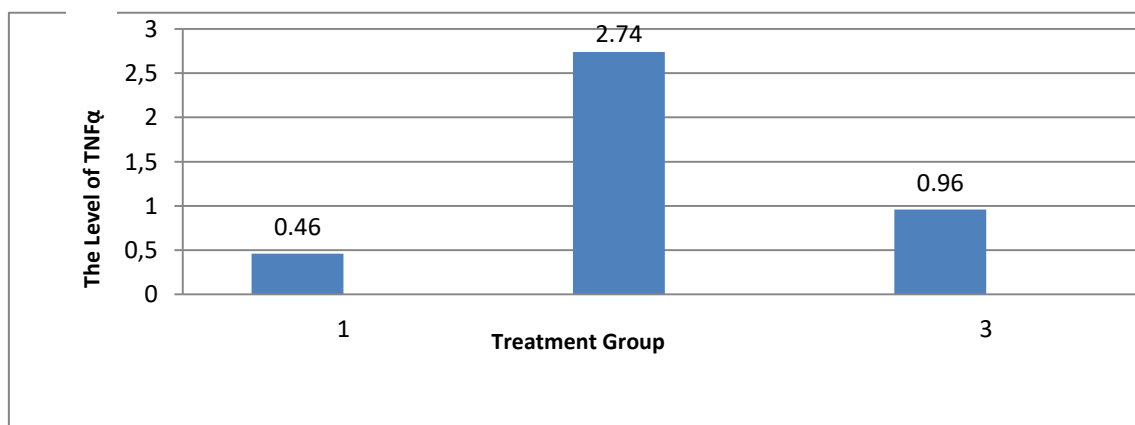
Figure 2. The Average Change of TNF α Level on Research Sample in Area of Public Health Center of Sudiang Raya Makassar in 2015

The measurement result of calcium level from twice measurements (before and after treatment) could be seen in table 4.

Table 4. Distribution of Change of Calcium level on Research Sample in Area of Public Health Center of Sudiang Raya Makassar in 2015

Treatment Group	n	The Level of calcium mg/ml		P Value
		Before	After	
1	15	10.0 ± 2.4	17.3 ± 5.86	0.0001
2	15	8.6 ± 1.5	17.4 ± 3.5	0.0001
3	15	14.1 ± 5.9	16.6 ± 7.2	0.349

Table 4 showed that the average of calcium level before giving zinc was 9.9 mg/ml with variation of 2.4 mg/ml. After it was given treatment, it was occurred an increase in 7.2 mg/ml to be in the average of 17.3 mg/ml with variation of 5.7 mg/ml. The result of statistical test (Wilcoxon) was P-value = 0.0001 which meant that there was a significant difference on calcium level between before and after giving zinc. The average of calcium level on group 2 before giving zinc + cysteine amino acid was 8.6 mg/ml with the variation of 1.5 mg/ml. After the treatment, it was occurred an increase in 8.8 mg/ml to be the average of 17,4 mg/ml with the variation of 3.5 mg/ml. The result of statistical test (Wilcoxon) was obtained that P-value was 0.0001 which meant that there was a significant difference on calcium level between before and after giving zinc + cysteine amino acid. The P-value for group 3 was obtained a value of 0.349 which meant that there was no significant difference on control group which the sample of control group only got vitamin A. Overall, the change of calcium level before and after the treatment could be seen Figure 3.
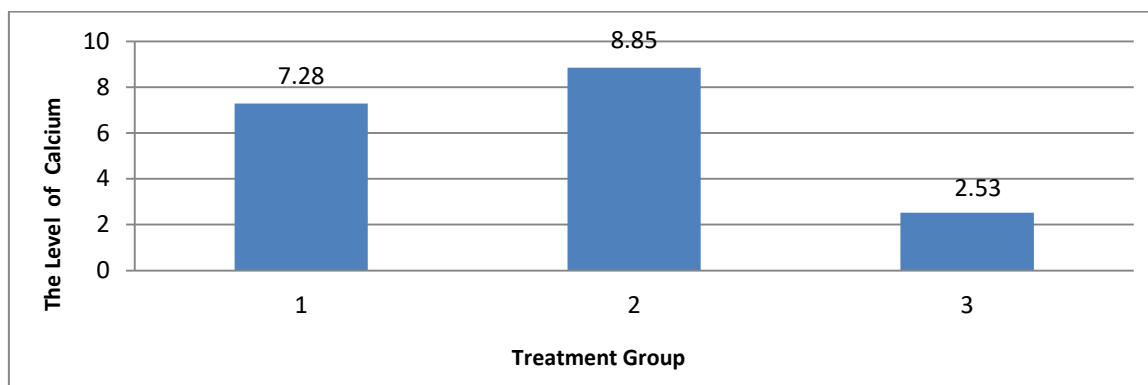
Figure 3.The Average Change of Calcium level on Research Sample in Area of Public Health Center of Sudiang Raya Makassar in 2015

DISCUSSION

In this research, it was conducted a measurement of 3 biomarkers that could give an illustration of the bone growth mechanism which were the level of IRS 1, TNF α, and serum calcium.

The result of IRS 1 measurement in group 2, which was given zinc + cysteine amino acid was occurred a change in 1.342 ng/ml. This was the highest change if it was compared with group 1 (0.3642 ng/ml) and group 3 which was in 0.4 ng/ml.

IRS 1 was found in various kinds of cell, including bone cell. The chain of insulin made the activity of tyrosine kinase subunit β that caused insulin biological effect could trigger phosphorilation on some protein of cytoplasm and dephosphorilation on other protein. The role of IRS 1 was very important that the mice which were broken their IRS 1 gene would show their retardation of the growth in medium level of in utero. The affinity of IRS 1 was influenced by insulin, other hormone, sport, and food intake. The reduction of exposure total into insulin would increase the affinity of receptor, hence, the receptor total in every cell increased in starved condition such as malnutrition. In contrary, the increase of exposure to insulin, for example improving food intake, would reduce receptor concentration. Moreover, it was proved that giving zinc + cysteine amino acid + vitamin A could reduce the highest receptor

concentration (IRS 1) if it was compared with other treatments. Thus, it could be stated that the treatment could improve metabolic status on short toddler (Alkaladi, 2013).

In addition, giving zinc could help metabolism of bone cell and zinc could interact with the hormone which were involved in bone growth such as somatomedin C, osteocalcin, testosterone, tiroid hormone, and insulin. The level of zinc in bone was very high if it was compared with other tissues. This showed that zinc was very important in strengthening bone matrix. Besides, zinc also eased the effect of vitamin D toward bone metabolism through stimulation of DNA synthesis in bone cell. However, zinc had very important role during growth period (Riyadi, 2010).

Cysteine had some biological roles because the structure of its molecule could undergo either oxidation reaction or reduction reaction. The cysteine had different function regarding its stable structure, thus, it could become catalytic on various translasional. Therefore, cysteine was amino acid that must be fulfilled for growth process, even, in the period of surmounting nutrition problem such as on short toddler (Muhtarudin, 2011).

If cysteine and histidine chained with zinc, they would form stable chain. Furthermore, the 4 residue of cysteine which were chained on zinc would form four thiolate-Zn^{2+} which were strong and great element. This element was stable as disulfide and cytosol, thus, it could become good catalyst of amino acid on either reduction reaction or oxidation reaction in some metals such as between Zn^{2+} and sulfur, which zinc would chain stronger for oxidating. Thus, the cysteine which chained with zinc underwent an oxidation faster in cytosol. Therefore, it would be faster to produce the energy.

Yasser Kheralla reported that IRS 1 was a receptor that had role in improving mice's teeth. This research proved that IRS 1 was a potential receptor on the reaction of osteoblastogenesis and fibroblastogenesis in mice's damaged teeth. This reaction could hasten the growth of teeth bone. Moreover, this research also explained that IRS 1 could catch the signal from growth factor such as IGFs, IGF-1, and IGF-2. The work mechanism from this receptor reaction was almost similar with either paracrine reaction or autocrine reaction (Kheralla, 2013).

Oxidation in thiol group was occurred in the forming of cysteine. Scientifically, the cysteine had certain role in protein structure such as insulin, IGF, growth factor, immunoglobulin, or antibody (Lehninger, 2006). Transcription process was one of the processes of cell differentiation which this process was started by the chain of promoter gene from ZFP and transcription cofactor that caused DNA transcription, for example on bone morphogenetic protein which caused mRNA transcription that was involved in osteogenesis (Rifai, 2009).

The work mechanism of other IRS 1 was involved with insuulin. Insulin was a hormone that worked on metabolism of macro nutrition substance in producing energy. In peripheral tissue such as muscle and fat tissue, insulin chained with IRS 1 which was in cell membrane. The chain between insulin and IRS 1 would produce a signal that had role in the metabolism process of glucose in muscle and fat cell. After the occurrence of chain between insulin and IRS 1, this tranduction signal had role in increasing the quantity of GLUT-4 (glucose transforter-4). The process of synthesis and translocation of this GLUT-4 would insert glucose from extracellular into intracellular, and then, it underwent a metabolism (Kurt ,2014).

This research result was in accordance with Kurt's explanation which IRS 1 was direct factor that could improve linear growth through TB (height) indicator. As what was explained in analysis result of Amos strip that IRS 1 correlated positive toward TB (height) in 0.394. Result of AMOS test showed that P-value was 0.0001, and this showed that there was a significant influence from IRS 1 toward TB (height) (Kurt,2014).

IRS 1 also had role in maintaining homeostasis of blood sugar which IRS was an endogenous ligand toward insulin, IGF-I, and IGF-II. The chain of ligand into α-chain from ectodomain IR induced structural change in receptor that could cause residue of autophosphorilation of tyrosine kinase (TK) intracellular from chain β-. This change facilitate adaptor protein removal such as receptor protein of insulin substrate (IRS) beside Src, Src Homologi 2 - B (SH2-B), APS, and protein phosphatase including PTP1B, that finally, it could maintain the homeostasis of blood sugar. Therefore, the level of blood sugar could be controlled.

IRS 1 also had a role in nutrition metabolism. IRS 1 and tyrosine could be used as an enzyme that transferred phosphate group from ATP to tyrosine residue on protein of intracellular target. Insulin chain for subunit α caused the subunit β underwent autophosphorilation. Thus, it triggered catalytic activity from receptor. The catalytic receptor activity could stimulate intracellular protein to do phosphorylation. Therefore, it could produce biological respond. One of biological reactions which were occurred could be supported by zinc and calcium. The work mechanism of zinc and calcium, particularly for proinsulin in

Golgi body, was proinsulin that got additional zinc and calcium. In addition, it would cause the form of proinsulin hexamer which would not be soluble in water. The enzyme which was outside of the golgi body would change proinsulin into insulin and C-peptide. By being good enzyme activity, it could be occurred the perfect form of the energy.

One of the strips of energy form that was through the increase of a delivery from fat acid into muscle or intracellular metabolism reduction of fat acid caused metabolic intracellular increase of fat acid, such as diacylglycerol, fatty acyl of KoA. This metabolic which activated serine/threonine kinase was initiated by protein kinase that caused phosphorylation serine/ threonine sites on insulin receptor substrate (IRS-1 and IRS-2). Besides, in its shift could reduce the ability of insulin receptor substrate for activating PI3-kinase. As the impact, the activity of glucose transportation and the occurrence of signaling receptor insulin were less (Department of Medicine, 2012).

The fact of this research result could be related with IRS 1 role in nutrition metabolism. The glucose metabolism that was occurred in liver, which GLUT-2 had a function as glucose transportation through cell membrane into the cell. Liver had a role in managing body glucose homeostasis. In deficiency condition of glucose source intake, it would be occurred the increase of endogenous sugar blood level which was from the glukoneogenesis and glikogenesis process in liver tissue. This process was occurred normally if the insulin control was normal (Asman, 2014).

If it was occurred a resistance toward insulin such as for the toddlers who underwent undernutrition, for example short toddler, the inhibition effect of insulin hormone toward mechanism of the production of over endogenous glucose was not occurred optimally. Therefore, it would raise glucose production in liver. Thus, the fulfillment of glucose on undernutrition toddler was more than endogenous system.

The effect of more endogenous system as glucose source, short toddlers would undergo low appetite as the effect of low glucose taking from exogenous one that could suppress the appetite (Kurt, 2014). Giving zinc + cysteine amino acid + vitamin A could help metabolic improvement through the role from each nutrition substance. Cysteine was a protein that had some roles. One of the roles concerning with the growth factor was the form of zinc fingger protein which worked together with amino acid for chaining zinc and had role as promoter gene (Stipanuk, 2006).

Furthermore, this research gave an illustration that short toddlers could be occurred metabolism disorders that was indicated with the increase of IRS 1 level and reduction after being given higher zinc + cysteine amino acid + vitamin A if it was compared with short toddlers who were only given zinc + vitamin A or were only given vitamin A.

This reserach also proved that giving zinc + cysteine amino acid + Vitamin A could be more effective for improving linear growth rather than only giving zinc + Vitamin A or only vitamin A. IRS 1 influenced significantly toward height. Besides, IRS 1 also could give well growth respond through growth factor of IGF-1 and IGF-2.

TNF α level in group 2 changed significantly after treatment, meanwhile, group 1 and group 3 did not change any way. This showed that giving zinc + cysteine amino acid + vitamin A had an impact toward the change of TNF α on short toddlers.

TNF α had a function as a cytokine pro inflammation in improving bone growth. Katarina Mårtensson reported that there was cytokine pro inflammation in the process of improvement of bone inflammation in mice. The research result showed that there was an increase of the level of IL-1 and TNF α in the process of bone inflammation. The effect of bone improvement regarding this pro inflammation cell related with the respond from growth factor such as either IGF-1 or GH (Martensson, 2004).

Besides as a pro inflammation, TNF α involvement in improving bone growth had a role in osteoclast stimulation for stimulating RANKL production by stromal cells and also induced RANKL secretion by lymphocyte T, lymphocyte B, and endothelial cells for inducing osteoclast formation indirectly. TNF α also stimulated M-CSF production by stromal cells. Osteoclast differentiation factor (ODF was also known as RANKL/TRANCE/OPGL) stimulated osteoclast progenitors on monocytes / macrophages to be osteoclast by the existence of macrophage colony-stimulating factor (M-CSF).

TNF α also increased osteoclastogenesis through mechanism in influencing osteoclastogenesis on osteoclast precursor in bone marrow by basic cells for differentiating to be c-Fms+/CD11b+/RANK+/- osteoclast progenitors through the mechanism of independent RANKL/RANK. Afterwards, this osteoclast precursor entered into blood vessels and peripheral tissue, then, differentiated became mature osteoclast (dependent mechanism) which had role in hastening the process of bone resorption.

Mechanism of the involvement of zinc and TNF α was in zinc transporter activity (ZnTs). There were 10 until 15 zinc transporters in human cells. Expression and distribution cellular from ZnTs was

managed strictly by the change of plasma zinc level. ZnTs reduced intracellular zinc through zinc chain from cells or to intracellular vesicle. Therefore, zinc in cell must be looked over. ZnTs activity showed specific expression of responsive ZnTs toward physiological stimulation through hormone and cytokine, including TNF α (Cousins, 2006).

Besides, this research result also showed that giving zinc + cysteine amino acid + Vitamin A was the best treatment for improving linear growth through the increase of TNF α level as cytokine pro inflammation that was needed in the process of inflammation in beginning bone remodeling in osteogenesis process. The remodeling that proceeded well could improve the growth of toddler's bone in growth period. In addition, TNF α also supported IRS 1 on osteoclast cell in the process of bone mineralization.

Another indicator from bone improvement was calcium level. The analysis result showed that giving zinc + vitamin A was as well as with giving zinc + cysteine amino acid + vitamin A in improving plasma calcium level. Almost 50% from plasma calcium was calcium that was ionized with referral of 1.0-1.2 mmol/l; and the others were not ionized and chained on citrate. 50% from plasma calcium was chained with protein, particularly for albumin. Physiologically, calcium was free, active, and responsible for the effect of bone growth and neuromuscular (Lanham, 2014).

Calcitonin reduced calcium level by hindering bone resorption and excreting out when calcium level in blood underwent an increase above the normal. The bone reabsorption was occurred by matrix alteration and dismissal of calcium mineral by osteoblast and osteocyte. This reabsorption increased due to enough calcium level. Therefore, the form of bone matrix could not gratify if there was protein malnutrition, regarding most of calcium was chained by albumin (Baron, 2013).

The availability of calcium in plasma was concerned with the mechanism form of calcium either endogenous calcium or exogenous calcium. Exogenously, calcium intake must be followed by other nutrition substances such as protein and zinc. Generally, protein had positive impact on zinc absorption because zinc absorption tended to increase with protein intake. The consumption of animal protein (such as meat, egg, and cheese) increased zinc bioavailability from food crops sources because amino acid was released from animal protein such as cysteine amino acid that would chain zinc and have positive effect in zinc absorption as the effect of the increase of zinc solubility. If zinc absorption could proceed positively, the calcium availability would be positive regarding externally, rich calcium food was in rich protein and zinc food (Rainer, 2012).

Calcium improvement could increase long bone velocity. This was concerned with the mechanism of metal chain. In this case, zinc and protein could form stable chain. For example, the chain of cysteine amino acid and zinc could form the chain of four molate – Zn^{2+} and this chain would form stable element and it was disulfide chain that was more in cytosol. Besides, the chain between Zn^{2+} and amino acid that contained sulfur such as cysteine could have a role as redox catalysis reaction, thus, it could produce good energy (Stefano, 2012).

CONCLUSION

1. Giving zinc and cysteine amino acid after supplementation of high dosage of vitamin A could influence the level of IRS 1. This showed that a mechanism of bone growth improvement which IRS 1 was a direct factor could improve linear growth through height on short toddler.
2. Giving zinc and cysteine amino acid after the supplementation of high dosage of vitamin A could increase TNF-α level. This showed the mechanism of bone improvement which TNF α was a cytokine pro inflammation which was as the maturation precursor of osteoclast in the process of osteogenesis. Hence, it could hasten bone resorption which indicated that it was the process of linear growth improvement on short toddler.
3. Giving zinc and cysteine amino acid after the supplementation of high dosage of vitamin A could increase plasma calcium level. This showed the mechanism of linear growth improvement. Moreover, calcium was a substance in forming long bone on short toddlers.

REFERENCES

Agustian Leon, Tiangsa Sembiring, Ani Ariani. (2009) Peran Zirkum Terhadap Pertumbuhan Anak. Sari Pedriatik, Vol.11.No 4. December 2009, p 244-249.

Alkaladi, Ali. (2013) Effect of Zinc Defficiency and Supplementation on Insulin Signaling in Chickens. Advances in Environmental Biology, 7 (1) : 104-108.

Amber, W., Lina A.S., Hong Yu and Webster, Kaeith A. (2010) Age-related Molecular Genetic Changes of Murine Bone Marrow Mesenchimal Stem Cell. BMC Genomic, 2010, 11 : 229 p : 1-14.

Amber, W., Lina A.S., Hong Yu and Kaeith A.W. (2010) Age-related Molecular Genetic Changes of Murine Bone Marrow Mesenchimal Stem Cell. BMC Genomic, 2010, 11 : 229, p : 1-14.

Bapenas. (2011) Rencana Aksi Nasional Pangan dan Gizi 2005-2015. ISBN 978-979-3767-68-9.

Barasi, M.E. At a Glance. (2009) Ilmu Gizi. Jakarta, Erlangga, p : 124-129.

Baron, D.N. (2013) Kapita Selekta Patologi Klinik Edisi 4. Translators Petrus Andrianto and Johanes Gunawan, EGC, p : 192-208.

Cousins, Rj. (2006) Mammalian Zinc Transport Trafficing and Signals. J. Bio Chems, 281 : 24085-9.

Department of Medicine, 2012. University of Chicago, Chicago. Addressreprint requests to Dr. Polonsky at the Department of Medicine, University of Chicago, 5841 S.

Huldani. (2012) Biomarker Remodeling Tulang. Lambung Mangkurat University, Faculty of Medicine, Banjarmasin.

Kuntoro. (2011) Metode Statistik. Revision Edition, Pustaka Melati.

Kurt, Hojlund. (2014) Metabolism and Insulin Signaling in Common Metabolic Disorders and Inherited Insulin Resistance. Dan Med J., 2014, 61 (7) 84890, p : 1-40.

Lanham, S., Ohoud, H., and Ailsa, G. (2014) Mineral Utama Kalsium dan Magnesium. Buku Ajar Ilmu Gizi Edisi 4, Editor Jim Mann A Stewart Thurwell. Translation by Andry Hartono, EGC, p : 131-143.

Marcello, M., Francrsca De Vita, Fulvio, L., et al. (2013) IGF-1, the Road of the Nutritional, Inflammatory, and Hormonal Pathway to Frailty. Nutrients, 5, p : s4184-4205.

Martha, I.Kartasurya, Faruk, A., Hertabio, W.S., Rahfiludin, Z., dan Geoffrey, C.M. (2012) Zinc Combined with Vitamin A Reduced upper Respiratory Tract Infection Morbidity in a Randomised Trial in Preschool Children in Indonesia. British Journal of Nutrition, 2012, p : 1-10.

Meera, K.C., Jan Van Den Broeck, Kany-Kany A.L., Notobeko, M., Andrew, T., dan Michael, L.B. (2010) Effect on Longitudinal Growth and Anemia of Zinc or Multiple Mikronutrien Added to Vitamin A: a Randomized Controlled Trial in Children Age 6-12 Month. BMC Public Health, 2010, 10: 145, p : 1-11.

Muhtatarudin, (2011) The Effect Supplementation of Hydrolized of Feather Meal and Organic Mineral on Nutriens Digestibiliy, Dailly Gain, and Rations Efficiency of Male Etawah Cross Goats. Department of Livestock Production. Lampung University.

Rifai, Muhaimin. (2009) Sinyal Tranduksi dan Sistem Pertahanan Tubuh. Brawijaya University Malang, p : 1-16.

Riyadi, Hadi. (2010) Zinc (Zn) untuk Pertumbuhan dan Perkembangan Anak, Penanggulangan Masalah Defisiensi Seng (Zn). Department of Public Nutrition, Faculty of Human Ecology -IPB. Bagor, p : 33-59.

Salgueiro, M.J, et al. (2006) The Role of Zinc in the Growth and Development of Children. Nutrition, Vol 18, p : 510-519.

Stipanuk, M.H. (2006) Biochemical, Physiological, & Molecular Aspects of Human Nutrition, Second Edition. Saunder Elsevier, p : 1053-1058.

Solomon, N.W, dan Robert, M.R. (2009) The Interaction of Vitamin A and Zinc Implication for Human Nutrition. The Amarican Journal of Clinical Nutrition, 33 p : 2031-2040

Solomon, N.W. (2013) The Importance of Dietary and Environmental Zinc for Human Health can be Ignored only at Significant Peril to Child Well-being Throughout the Word. Ann. Nutr. Metab., 62 (suppl 1) p : 8-17.

Stefano, M.M., and Vadim, N.G. (2012) Analysis and Functional Predictin of Reactive Cysteine Residues. Journal of Biological Chemistry, Vol 287, No.7, p : 4419-4425.

Thrumham, D. (2014) Vitamin A dan Karotenoid. Buku Ajar Ilmu Gizi Edisi 4, Editor Jim Mann A Stewart Thurwell, Translation by Andry Hartono, EGC, p : 185-202.

Yasser, K. (2013) Insulin like Growth Factor-I (IGF-I), its Receptor (IGF-IR) and Insulin Receptor Substrate 1 (IRS1) Expression as an Early Reaction of PDL Cells to Experimental Tooth Movement in the Rat. p : 1-79.

THE INFLUENCE OF SERVANT OF GOD'S KNOWLEDGE AND SKILL TOWARD VCT SUPPORT FOR INDIVIDUAL WHO HAVE RISK OF HIV AND AIDS

Imelda F.E. Manurung[1]

1= Faculty of Public Health, Nusa Cendana University, Indonesia

E-mail: ifem1113@gmail.com

ABSTRACT

VCT service is one of prevention effort of HIV transmission. Servant of God is part of society who is believed to have a favor in treating disease and recovering someone's condition. This research aimed at analyzing the influence of servant of God's knowledge and skill toward the giving of VCT support for individual who had risk of HIV and AIDS. The data of this cross sectional research was collected from 78 servants of God. Afterwards, the data was analyzed by utilizing linear regression test. The analysis result showed that servant of God's knowledge and skill influenced toward VCT support for individual who had risk of HIV and AIDS. Therefore, the knowledge and skill needed to be increased in improving the VCT support from the servant of God.

Keywords: Servant of God, VCT, Knowledge, Skill

INTRODUCTION

Background

Total of HIV and AIDS cases in Indonesia 2014 reached 225,928, or increased if it was compared with the condition in 2013 which was 179,775 cases. All provinces of Indonesia had been found HIV and AIDS cases and every year, it increased more and more. HIV and AIDS cases in East Nusa Tenggara (NTT (Nusa Tenggara Timur)), Indonesia also increased from 2,264 cases in 2013 to be 3,252 in 2014. HIV and AIDS cases had been found at all districts in East Nusa Tenggara Province, Indonesia (KPAN, 2014).

Finding of HIV and AIDS cases was commonly obtained in the patients who had been in serious condition or in AIDS stage. This condition indicated that the potency of the occurrence of transmission was very high due to lateness in detection. This could be explained by the increase of HIV case on housewife and baby. Data until last year of 2014 showed that distribution of HIV case was based on occupation, and the highest proportion was on housewives (KPAD NTT, 2014). This reality became the basic for involving all potencies of society in preventing HIV.

The increase of HIV case from year to year became a reason that HIV test was very important as a first service in preventing the transmission of HIV and AIDS. This HIV test was the most important entrance in the service of prevention, nursing, support, and medical treatment. There were two approach types of HIV test service which were VCT (Voluntary Counseling Testing) and PITC (Provider Initiated HIV Testing and Counseling) (KPAN, 2010).

VCT service was meant in order to help society, particularly for population group who had risk of HIV, vulnerable population, and their members of family for knowing the health status, regarding HIV, which the result of it could be used as a material of motivation for the effort of prevention and transmission which immediately had a health help that was needed. (Indonesian Health Department (Depkes RI), 2006).

The Province of East Nusa Tenggara had certain criteria which some people there were very depended to servant of God, not health worker. The servant of God was a person who was believed by society to have a favor of ability to cure disease and to be able to help individual in overcoming life problem. A service that was done by servant of God was service of love, thus, he / she made the people felt comfortable and were not judged when they wanted to heal.

The result of preliminary research showed that the servant of God's knowledge and point of view toward HIV and AIDS were still less. Moreover, his/her point of view regarding HIV that it was as a punishment disease: HIV transmission which was occurred due to having sex while menstruation and being close with HIV sufferer was the point of view that must be cleared.

Abara et al. (2015) and Ramı́rez-Jhonson et al. (2013) explained that a church leader, pastor, and congregation had an empowerment of doctrine, love attention, mental recovery by using their belief in

giving support of life spirit for HIV and AIDS sufferers. This condition supported to need a proof of the influence of servant of God's knowledge and skill toward VCT support for individual who had risk of HIV and AIDS.

PURPOSE

This research aimed at analyzing the influence of servant of God's knowledge and skill toward VCT support for individual who had risk of HIV and AIDS.

METHOD

This cross sectional research was conducted in August 2015 to October 2015 in Kupang City, East Nusa Tenggara, Indonesia which had the highest number of HIV and AIDS cases if it was compared with other cities in East Nusa Tenggara Province. The population of this research was the registered servant of God in prayer meeting in 87 churches of Masehi Injili Timor (GMIT), Kupang city. The number of sample was counted based on certain formula for hypothesis test according to proportion (Purnomo, Bramantoro, 2013). Referring to the explanation of the formula, which was explained by Hulley et al. (2006), it was obtained that the sample was 70 respondents firstly, and then, it was added to be 78 respondents.

The data regarding knowledge, skill, and VCT support (information support, motivation support, appraisal support, and instrumental support) were collected through filling the questionnaire that was tested its validity and rehabilitation.

RESULT

In table 1, it could be seen that servant of God's knowledge and skill influenced significantly toward the giving of VCT support for individual who had risk of HIV and AIDS. This could be seen through p-value <0.05. The influence coefficient which was from knowledge was 0.48, meanwhile, skill was 0.42.

Table 1. The influence of knowledge and skill toward VCT support for individual who had risk of HIV and AIDS in Kupang City in 2016

Variable	VCT Support		Mean
	B	P	
Knowledge	0.48	<0.001	65.41
Skill	0.42	<0.001	48.98

DISCUSSION

The result of this research showed that the increase of servant of God's knowledge and skill would increase VCT support for individual who had risk of HIV and AIDS. A person would find HIV information firstly before he / she decided to give VCT support for other people, particularly the information regarding the use of VCT action whether it impaired or benefitted for other people. The servant of God's knowledge was a basic for servant of God to be involved in various humanistic activity. Generally, the servant of God's knowledge level regarding HIV and AIDS was included in poor category. The risk factor of HIV transmission had not known much by the servant of God. The servant of God's answer showed that HIV transmitted not only through having unsafe sex, but also through shaking hands, clothes, and other private utensils. Moreover, the servant of God's answer regarding general stigma was in good category. The servant of God accepted and behaved any one with love. Positive point of view from her/him about the individual who had risk of HIV and AIDS was in accordance with the value of servant of God's empowerment in giving VCT support that was in quite good category. The positive knowledge and acceptance toward the individual who had risk of HIV and AIDS became a basic for servant of God's empowerment in giving VCT support for them.

The skill which was owned by individual would support strategic various actions for promoting health issues in various sectors. Graff and Patrick (2015) in West Virginia proved that good skill could support the people for behaving safe sex. Moreover, knowledge and skill were one of dimensions for

realizing the society empowerment (Sorensen et al., 2012). The research study was in accordance with the result of this research that knowledge and skill were one of the factors in realizing empowerment.

CONCLUSION

The increase of the VCT support giving for individual who had risk of HIV and AIDS was influenced by the level of servant of God's knowledge and skill. Hence, it was recommended to need the effort in increasing servant of God's knowledge and skill as a figure who was believed by the society to give VCT support for individual who had risk of HIV and AIDS.

REFERENCES

Abara, W., Coleman, J.D., Fairchild, A., Gaddist, B., White, J., (2015). A Faith-Based Community Partnership to Address HIV/AIDS in the Southern United States: Implementation, Challenges, and Lessons Learned. Journal Religious Health, Vol. 54, No. 1, pp. 122-133.

Depkes, RI, (2006). Situasi HIV dan AIDS di Indonesia Tahun 1987-2006. Pusat data dan informasi Depkes RI, Jakarta.

Hulley, B.S., Cummings, R.S., Browner, S.W., Grady G.D., Newman B.T. (2013) Designing Clinical Research. Lippincott Williams and Wilkins, Philadelphia.

Graff, S.A., Patrick, H.J. (2014) Foundation of Life-Long Sexual Health Literacy. Health Education, Vol. 115, No. 1, pp. 56-70.

Komisi Penanggulangan AIDS Nasional, (2014) Laporan Kementrian Kesehatan Triwulan IV, 2014. http://www.aidsindonesia.or.id/list/7/Laporan-Menkes : disitasi: 28 September 2015

Komisi Penanggulangan AIDS Daerah, (2014) Laporan Tahunan kasus HIV dan AIDS Propinsi NTT

Komisi Penanggulangan AIDS Nasional, (2010) Strategi dan Rencana Aksi Nasional Penanggulangan HIV dan AIDS tahun 2010-2014. Lampiran Peraturan Menteri Koordinator Kesejahteraan Rakyat Selaku Ketua KPAN Nomor 08/MENKO/Kesra/ 2010

Purnomo, W., Bramantoro, T. (2014) 36 Langkah Praktis Sukses Menulis Karya Tulis Ilmiah. Revka Putra Media. Surabaya.

Ramirez-Johnson, J., Diaz, H.L., Feldman, J.B., Ramirez-Jorge, J. (2013) Emempowermenting Latino Church Leaders to Deal with the HIV-AIDS Crisis: A Strengths-Oriented Service Model. Journal of Religious Health. Vol. 52, No. 2, pp. 570–588.

Sarason, I., Sarason, B. (1985) Social Support: Theory, Research and Applications. Martinus Nijhoff Publisher. USA, pp. 73-110.

SURVEILLANCE SYSTEM OF HIV/AIDS SUSPECT DETECTION BY CADRE EMPOWERMENT AT BULUKUMBA DISTRICT, SOUTH SULAWESI, INDONESIA

Masriadi[1], Darmi Indrawati[1], Syamsul Bakhri[1]
1= Institute of Health Science "Tamalatea", Makassar, Indonesia
Email:arimasriadi@gmail.com

ABSTRACT

The number of people who were infected by HIV increased more and more and they were spread around the world, including at Bulukumba district. One of the causes from this condition was there was no improvement of surveillance system for detecting HIV/AIDS, there was no cadre involving, there was no digital map for endemic area, manual note, and manual report, thus, it was occurred a difficulty in reporting HIV/AIDS cases. Furthermore, this research aimed at making surveillance system for detecting HIV/AIDS suspect by cadre empowerment in detecting the suspect or HIV/AIDS sufferers, and in noting and reporting in computerization-based. In this research, it was built surveillance system for detecting HIV/AIDS suspect at Bira village and Balong village, Bulukumba district by training the cadre for detecting HIV/AIDS suspect and designing simple software for accommodating problems in noting and reporting. During the research, it was found 52.38% of male suspect and 47.62% of female suspect. According to risk factor, it was found 9.52% was homosexual, 66.67% was heterosexual, and 23.81% was syringe users.

Keywords: Surveillance System, HIV/ADS, Cadre, Training

INTRODUCTION

Recently, HIV/AIDS still becomes a phenomenon because the data appears only in less, but there are still many cases that have not been noted and reported. The numbers of peoples, who are infected HIV/AIDS, increase rapidly and are spread widely around the world. However, the cadre involvement in detecting the sufferers is still less even in some districts, they have not involved the society in detecting HIV/AIDS sufferers. Based on the explanation above, it needs to be built the surveillance system of HIV/AIDS suspect detection that involves directly the society who is formed in a cadre. Then, the involved cadre does detection directly toward HIV/AIDS sufferers, does training by using local language that is used by the people in the village, hence, it eases the society to understand it. Moreover, this is expected to be able to transpire commonly for all villages in Bulukumba village, South Sulawesi, Indonesia.

This research aimed at making surveillance system of HIV/AIDS suspect detection by cadre empowerment that could overcome the problem of the increase of suspect detection or HIV/AIDS sufferers, and could note and report regarding HIV/AIDS sufferers in computerization-based.

METHOD

Generally, the production of surveillance system of HIV/AIDS suspect detection was consisted of: cadre training in HIV AIDS suspect detection, adjoining the cadre while training, training in using software that was made, and adjoining and observing the result of using software.

RESULT

Below was the summary of the development result of surveillance system in detecting HIV/AIDS suspect.

Figure 1. Output result of cadre's report from surveillance system

Figure 1 gave information through surveillance system that had been reported by cadre which the result of it was cleared in table below:

Table 1 Distribution of Gender

Gender	Total	Percentage
Male	11	52.38
Female	10	47.62

Table 1 showed respondent total based on gender that was found by cadre in two parts which males were 11 people (52.38%) and females were 10 people (47.62%). This described that males often visited to Cafe around Bira beach.

Figure 2. Output result of cadre's report from surveillance system

Figure 2 gave information through surveillance system that had been reported by cadre which was cleared in table below:

Table 2. Distribution of Risk Factor that Was Found by Cadre

Risk Factor	Total	Percentage
Homosexual	2	9.52
Heterosexual	14	66.67
Syringe Users	5	23.81

Table 2 showed respondent total based on risk factor that was found by cadre, which were: homosexual: 2 persons (9.52%), heterosexual: 14 persons (66.67%), and syringe users: 5 persons (23.81%). High risk factor of heterosexual was because they often visited Bira beach that was located closely, hence, their wives who were at home also had risk being infected HIV/AIDS.

Figure 3. Output Result of Cadre's Report Based on Minor Symptoms

Figure 3 gave information through surveillance system that had been reported by cadre which further was cleared in table below:

Table 3: Distribution of Minor Symptoms that had been found by cadre

Adult Minor Symptoms	Total	Percentage
Chronic Cough in more than 1 month	7	33.32
Progressive Chronic Simplex Herpes	6	8.57
Recurrent Fungal Infection in Female's Genital	6	8.57
There was Multisegmental Zoster Herpes and or beru	1	1.42
Oro pharyngeal candidiasis	1	1.42

Table 3 showed that distribution of minor symptoms that was found most by cadre was the symptom of chronic cough in more than 1 month (33.32%).

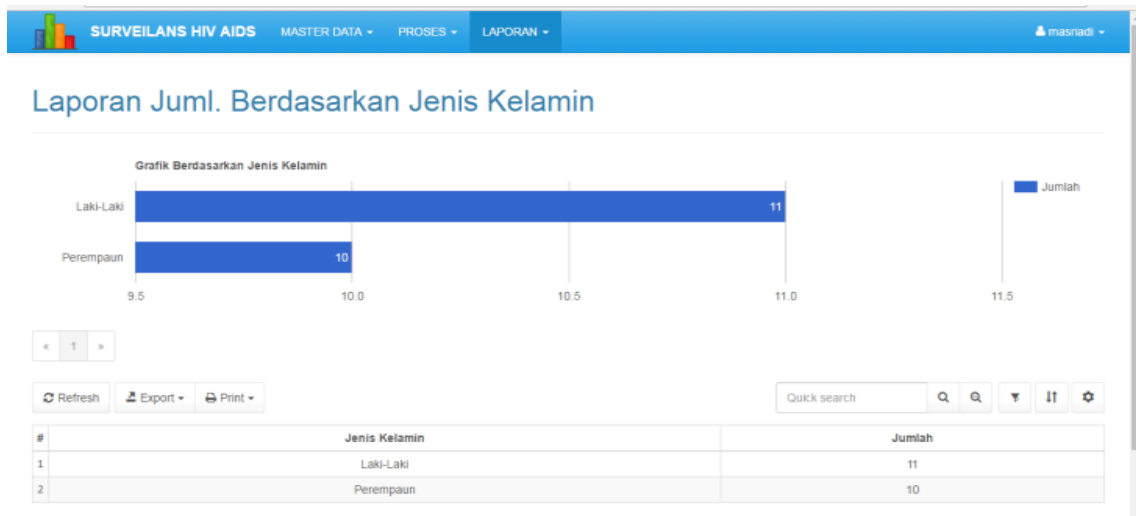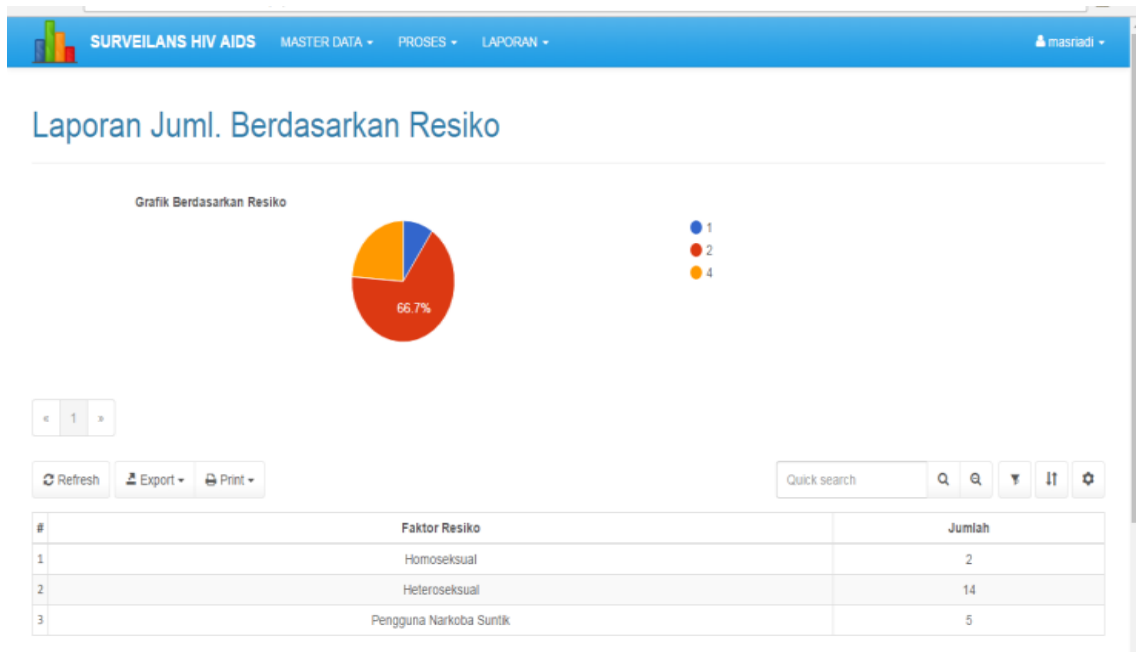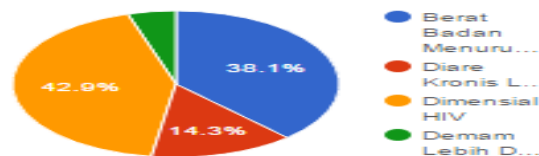

Figure 4: Output Result of Cadre's Report based on Minor Symptoms

Figure 4 gave information through surveillance system that had been reported by cadre which further was cleared in table below:

Table 4: Distribution of Mayor Symptoms that was found by cadre

Adult Mayor Symptoms	Total	Percentage
Body Height reduced > 10 % in 1 month	8	11.42
Chronic Diarrhea in more than 1 month	3	4.29
HIV Dimensial	9	12.87
Fever in more than 1 month	1	1.42

Table 4 showed that the most mayor symptoms was the symptom of HIV dimensial which was 12.87%.

DISCUSSION

This research result was obtained after the researcher conducted some stages which were stage of system research and system development. Stage of system development was needed information as basic thought of new system design. The system assessment was started with collecting data though deep interview, direct observation, and documentation analysis. Stage of system development was conducted by resisting in accordance with the field situation which was cadre empowerment.

In this research, it was conducted cadre empowerment by doing training regarding the use of software in reporting surveillance system for detecting HIV/AIDS suspect. Afterwards, the cadre did a tracking of HIV/AIDS suspect in the field. High case of HIV/AIDS suspect that was found by cadre proved that there were surveillance systems by using software which had helped government work regarding in finding new cases of HIV/AIDS in society. There were many male cases which were recorded by cadre that proved there was correlation with location of research which was not far from the tourism object of Pasir Putih Tanjung Bira.

The cadre's difficulty in detecting HIV/AIDS suspect caused incompatibility with the outcome that was needed by the government. This was occurred because some factors such as cadre's unknown regarding alternative strategy in collecting data about the society who had undergone HIV/AIDS symptoms, and also the society less opened about preliminary symptoms that they underwent due to lack of trust each other among the cadres and health workers with society. In this case, the sufferers perhaps felt afraid of being banished by society.

As the comparison, Gita (2012) reported that there was a problem in the implementation of surveillance system of HIV/AIDS in Health Department of Cirebon which was the information that was resulted had not been able to result an outcome that was in accordance with the information needs, such as analysis result based on sufferer's origin or sufferer's characteristic, and there had no data basis, thus, there was a possibility of high data redundant. Therefore, it caused a difficulty in improving data and in accessing information of the result of HIV/AIDS prevention activity.

CONCLUSION

The development of surveillance system of HIV/AIDS suspect detection by cadre empowerment at Bulukumba district, South Sulawesi, Indonesia could proceed well. Due to good cooperation of the team and active role from the source, the activity could proceed well in accordance with the plans. Thus, it was expected to be able to give advantages for the effort of HIV/AIDS suspect detection by cadre empowerment at Bulukumba district, South Sulawesi, Indonesia.

REFERENCES

Dinas Kesehatan Kabupaten Bulukumba (Health Department of Bulukumba district). 2014. Profil Dinas Kesehatan Bulukumba: Data kasus HIV/AIDS.

Dinas Kesehatan Provinsi Sulawesi Selatan (Health Department of South Sulawesi Province), 2013. Profil Dinas Kesehatan Provinsi Sulawesi selatan: Data kasus HIV/AIDS.

Direktorat Jendral PP dan PL DepKes RI, 2008. Data kasus HIV/AIDS di Indonesia

Ditjen PPM & PL Kemkes RI, 2011. Data kasus HIV/AIDS di Indonesia.

Ditjen PPM & PL Kemkes RI, 2013. Data kasus HIV/AIDS di Indonesia.

Komisi Penanggulangan AIDS, 2009. Data kasus HIV/AIDS di Indonesia.

Masriadi, 2014. Penyakit Menular. First edition. Grapindo: Yogyakarta

ANALYSIS FACTOR THAT INFLUENCED INDEPENDENCE OF HEAD INJURY PATIENTS WHO WERE EVER NURSED AT EMERGENCY INSTALLATION OF RSUD DR. R. KOESMA TUBAN

Ahsan[1], Tina Handayani[1], Moh. Ubaidillah Faqih[1]
1= Faculty of Medicine, Brawijaya University, Malang, Indonesia
E-mail: ahsanfkub@yahoo.com

ABSTRACT

A head injury which is caused by traffic accidents is the main cause of disability and mortality. FIM is one of independence measurements of head injury patients. Several factors are suspected of the age, mechanism of injury, initial GCS score, hypotension, pupil diameter and the light reactions, CT scan, alcohol consumption, and duration of treatment. The purpose of this study was to determine the factors that affected independence of head injury patients. This study was an observational analytic research by using a retrospective design of the 107 samples of medical records at RSUD dr. R. Koesma Tuban, East Java, Indonesia from January 2016 to April 2016. The sampling technique that was used was cluster random sampling with the inclusion and exclusion criteria. Instruments of this research used sheets and sheets of FIM checklist. The analysis used contingency coefficient test and logistic regression test. Results of logistic regression analysis showed that factors which affected were GCS (p = 0.996) and Pupil (p = 0.077). The equation obtained y = 0.357 + 19.434 (GCS) + 2,041 (Pupil). Hosmer and Lameshow test results showed good calibration (p = 1.000), AUC value of 93.6% indicated that the regression equation obtained capable of distinguishing the independence of head injury patients based on variables of GCS and pupils and the remaining of 6.4% was influenced by other factors. Moreover, the conclusion of this study was the initial GCS score and pupil were dominant factors that influenced on independence. Therefore, nurses needed to improve the management of head injury patients in emergency phase by not ignoring the GCS and Pupil measurement.

Keywords: Independence, Head Injury, Functional Independence Measure (FIM)

INTRODUCTION

Traffic accident could cause various injuries. The most injury which was occurred more was head injury. Head injury due to accident was a major cause of disability and mortality in developed country. This condition was commonly occurred on motor rider who did not wear helmet or who wore unqualified helmet or incorrectly (Wijayanti, 2012). 30-60 % of head injury patient with uncontrolled Intra Cranial Pressure (ICP) died and it was different with other great researches which found that outcome result was better with medium fault (Moulton & Pitts, 2005).

Area of Tuban district, East Java, Indonesia was passed by Pantura major line that connected Surabaya (East Java) - Semarang (Central Java) – Jakarta (West Java). High volume of vehicles could cause traffic jam and could make other problems such as traffic accident. Pantura line in area of Tuban included Tuban Widang road flow, Jl. Manunggal, Jl. Panglima Sudirman, Jl. RE. Martadinata and Jl.Tuban Semarang that had been occurred the increase of traffic accident.

According to the data in 2009 – 2013, the occurrence of traffic accident in Pantura line that passed Tuban area tended to undergo an increase. The total of traffic accident in 2009-2013 was 1,107 occurrences. The effect of the accident was dead victims in 208 people, serious injured victims in 249 people, and minor injured victims in 1,147 people. In 2012, it was the highest total of traffic accident that was 348 occurrences or 31.4% with dead victims in 45 people, serious injured people in 65 people and minor injured people in 411 people. Overall, the total of traffic accident in 2009-2013 mostly underwent an increase of 17.03% in every year (Rosyida, Daryono, & Prasetyo, 2015).

In determining prognosis on the head injury sufferer particularly for the serious head injury was often difficult, meanwhile, an accurate prognosis was important to give an informed consent. This was caused by an assessment limitation in beginning clinic, how long the healing on head injury patients, and many factors and variables that affected it (Hadi, 2014).

Some factors which were suspected were age, injury mechanism, preliminary score of Glasgow Coma Scale (GCS), hypotension, pupil diameter and light reaction, computed tomography (CT) scan, the use of alcohol and drugs (Jiang, 2012). The factors were such as age, gender, serious injury, death in

hospital, insurance type and the location of hospital as the cost predicator of hospital and how long the medical treatment for injury (Gardner, Smith, Chany, Fernandez, & McKenzie, 2007). The right outcome assessment was obtained in 3, 6, and 12 months after brain injury. Moreover, the patient's condition was significant better clinically, particularly 6 months after brain injury (Arnold, 2013).

There were many kinds of outcome measurement scales and they were Glasgow Outcome Scale (GOS), Barthel Index (BI), and Functional Independence Measure (FIM) (Hadi, 2014). Functional independence measure (FIM) was a measurement tool that was used for appraising patient's dependence. This measurement tool could be used commonly by all parties such as doctor, nurse, physiotherapy, patient, and family. The assessment was included physical or motoric ability, including vegetative function and cognition function such as communication and interaction with other people around (Van Middendorp, et al., 2011).

The purpose of this study was in order to know the factors that influenced head injury patient's independence who were ever treated at emergency installation of RSUD dr. R. Koesma Tuban (regional public hospital), East Java, Indonesia.

METHOD

This research was analytic observational research that utilized retrospective design toward 107 samples of medical records at RSUD dr. R. Koesma Tuban from Januari to April 2016 that then, it was conducted home visit for assessing the independence based on Functional Independence Measure (FIM). The sampling technique that was utilized was cluster random sampling technique with inclusion criteria: 1) alive patient, 2) patient who had immobilization disorder, 3) patient who was ≤ 6 months old, 3) patient who was in domicile at Tuban District, 4) patient who was able to become respondent.

This research also excluded head injury patient's medical record with referral of > 48 hours from injury occurrence and head injury patient that was accompanied with other disorders. The instruments of this research which were utilized were basic collection sheets, checklist, and FIM sheets. The bivariate analysis utilized contingency coefficient, meanwhile, the multivariate analysis utilized logistic regression test.

RESULT

This research was conducted in May until July 2016 at RSUD dr. R. Koesma Tuban for collecting preliminary data about age, injury mechanism, hypotension, GCS, pupil's condition, result of *Ctscan* test, alcohol consumption, the length of stay at hospital and medical record and for determining the population of head injury patient who was ever nursed at IGD (Emergency installation) in 146 respondents. The result of this research was analyzed based on univariate analysis, bivariate analysis, and multivariate analysis.

Table 1. Frequency Distribution of Respondent's Characteristic

Characteristic	n	%
Gender		
Male	59	55.1
Female	48	44.9
Age		
1-4 years old	1	0.9
5-14 years old	17	15.9
15-24 years old	26	24.3
25-44 years old	29	27.1
45-59 years old	21	19.6
>59 years old	13	12.1
Head Injury		
Minor	78	72.9
Serious	29	27.1
Total	107	100

Table 2 Result of Bivariate Analysis of Contingency Coefficient

Variable	n	r	P
Age	107	0.101	0.953
Injury	107	0.117	0.223
Hypotension	107	0.032	0.744
GCS	107	0.423	0.000
Pupil	107	0.360	0.000
CT scan	107	0.066	0.492
Alcohol	107	0.130	0.174
Length of stay	107	0.351	0.000

Based on table 2, it could be known that the variables that did not correlate with FIM were age, injury mechanism, hypotension, CT scan test, and alcohol consumption. Meanwhile, the variables that correlated with FIM were GCS, pupil's diameter, and the length of stay at hospital.

Table 3 Result of Multivariate Analysis of Logistic Regression

	Variable	Coefficient	P	OR
Step 1	Minor GCS	18.454	0.996	103401604.41
	Pupil Isokor	1.435	0.227	4.20
	The Length of Stay <3	16.437	0.997	13751925.87
	Constanta	0.357	0.469	1.429
Step 2	Minor GCS	19.434	0.996	275390993.19
	Pupil Isokor	2.041	0.077	7.70
	Constanta	0.357	0.469	1.429

According to Table 3, it could be known that the variables which influenced with the independence of head injury patient were GCS and Pupil. The powers of the biggest correlation to the smallest one were GCS (OR=275390993,19) and Pupil (OR=7.70). The probability of the independence of head injury patient could be counted with the equation:

$$y = constanta + a_1x_1 + a_2x_2 + \ldots + a_ix_i$$

and

$$p = 1/(1+e^{-y})$$

Notes:
a   = Coefficient value for each variable
x   = Independent variable value
p   = probability
e   = natural number = 2.7
Categorical dependent variable coding:
GCS   : 1 "minor"; 0 "serious"
Pupil   : 1 "Isokor"; 0 "Anisokor"
The length of stay   : 1 "<3"; 0 ">3"

Therefore, the respondent's probability for the independence if the measurement of preliminary GCS showed minor result and the isokor pupil was 100%. Meanwhile, if head injury patient was with serious GCS and anisokor pupil, the patient's probability for being independence was 58,8%.

Table 4. Result of Hosmer and Lameshow Test

Chi-square	Df	Sig
0,000	3	1.000
0,000	2	1.000

According to the result of Hosmer and Lameshow test in table 4, the equation of y = 0.357 + 19.434 (GCS) + 2.041 (Pupil) had equation quality that had good calibration with significant value of 1.000, which it was more than 0.05. This showed that Hosmer and Lameshow test were fulfilled, hence, the equation model that was obtained through multiplication result between regression value (19,434) and GCS factor had value of 1 if it was minor GCS and it would have value of 0 if it was serious GCS. Then, it was plus with multiplication result of regression value (2.041) with pupil factor that had value of 1 if it was isokor pupil and it had value of 0 if the anisokor was plus with Constanta value in 0.357. Moreover, those were valued to be able to predict the independence of head injury patient.

Table 5. Result of ROC Curve Test

Area	Std. Error[a]	Asymp Sig.[b]	Asymptotic 95% Confidence interval	
			Lower Bound	Upper Bound
0.936	0.029	0.000	0.871	0.983

Based on table 5, it was obtained that the value of Area Under Curve (AUC) was 93.6%. It meant that the discriminant value of this equation model was very strong. This showed that 93.6% of regression equation that was obtained could differentiate the independence of head injury patient based on the variable of GCS and pupil, and another was 6.4% that was influenced by inaccurate other factors in this research.

DISCUSSION

GCS, pupil condition, and the length of stay at hospital as the determinants of the independence

Research result showed that GCS variable had a correlation with the independence of head injury patient. The more serious GCS, the higher the independence (depended on). This was caused by there was a difference of the higher minor GCS total with the independence that was in more dominant independent category which meant that it was various data variation.

According to Udekwu et al., GCS value before resuscitation correlated with the number of death and functional outcome on the head injury patient. However, characteristic limitation that adhered had to be in accordance with the condition of clinical prognosis in every patient with outcome prediction in various population groups. GCS score as specific indicator on head injury was often obscured by various things such as supply difference and oxygen needs which such as it was caused by anemia, hypotension, or hypoxia. Besides, it was also caused by depression effect of central nerve due to drugs (Udekwu, Kromhout-Schiro, Vaslef, Baker, & Oller, 2004).

Glasgow coma scale (GCS) was a clinical measurement that was used for assessing the seriousness of the injury in serious head injury. Glasgow coma scale should have been checked on the sufferer in beginning injury, especially in before having paralytic drug and before intubation: this score was known as preliminary GCS score. The consciousness degree apparently had strong influence toward the chance of living and curing. Glasgow coma scale was also strong prediction factor in determining prognosis, which was a low GCS score in the beginning injury correlated with poor prognosis (Arifin & Henky, 2012).

Sastrodiningrat (2006) reported that 82% of the sufferers with GCS score of 11 or more, in 24 hours after the injury had good outcome or moderately disabled and it was only 12% of them who died or had severe disability. Outcome would progressively reduce if the preliminary GCS score reduced. Among the sufferers with preliminary GCS score of 3 or 4 in first 24 hours after the injury was only 7% who obtained good outcome or moderate disability. Among the sufferers with GCS score of 3 when they entered to be nursed, the 87% of them would die. Loss of long consciousness in many things was not predictive to the poor outcome.

Furthermore, the research result showed that pupil condition correlated with the independence of head injury patient. The worse the pupil condition, the higher the independence (depended on). This was caused by there was a difference of higher isokor pupil total with the independence which was in more dominant independent category and it meant that it was various data variation.

The pupil reflex toward light was indirect measurement toward herniation and brainstem injury. Generally, dilatation and fixation from one side of the pupil indicated the herniation, which the illustration of dilatation and fixated both pupils were found irreversible brainstem injury. The limitation of prognosis assessment was occurred on the pupil that underwent dilatation and fixation due to direct trauma to the eyeball without hurting the third intracranial nerve or accompanying with brainstem injury. Clinical research for observing prognosis toward the reflex of pupil light had been conducted in various

methodologies. Some those researches researched a measure and pupil reaction toward light and some those researches only noted whether there was dilatation without looking at the pupil size or not (Arifin & Henky, 2012).

Therefore, extra ocular movement disorder and negative pupil reflex also correlated with poor prognosis. Pupil diameter and pupil reaction toward the light were two parameters which were more researched and able to determine the prognosis. In evaluating the pupil, direct orbital trauma must be eliminated and the hypotension had been solved before evaluating the pupil. Besides, rechecking must often be conducted after evacuation of intracerebral hematoma (Gufron, 2013).

Based on the research result, it was known that the length of stay correlated with the independence of head injury patient with weak correlation and positive direction correlation which meant that the length of the day in staying at hospital, the higher the independence (depended on). This was caused by there was a significant difference between the total of length of stay <3 days which was higher and the independence which was more dominant independent category and it meant that it was various data variation.

Length of Stay was the nursing length that was given to the patient by a health service center. The length of stay of patient at hospital was of course influenced by many factors. One of them was good preliminary management to the patient and would determine the outcome correctly. A conducted research regarding outcome from head injury showed that GCS would increase the morbidity number and mortality would influence patient's Length of Stay in hospital (Sastrodiningrat, 2006)

In every year, there were 200.000 occurrences of head injury which needed a nursing at hospital which 1,74 millions of patients with 280 head injury patients who were undergoing temporary disability in minimum 1 day. The length of stay of head injury patient at emergency installation was different and it was depended on the seriousness of the patient's injury (Bethel, 2012). The minor head injury patient for 3 days with the length of stay in minimum 1 day and maximum 7 days and the most influenced factor in predicting the length of stay of head injury patient was GCS (Sipayung & Syapitri, 2015).

Dominant Factor toward Independence

The research result showed that the variable that influenced toward the independence of head injury patient was GCS and Pupil. The correlation power from the biggest to the smallest one was GCS (OR=275390993.19) and Pupil (OR=7.70). The respondent's probability for independence was 100%. With the equation quality that was obtained had good calibration which was p=1,000 on the result of Hosmer and Lameshow, meanwhile, discrimination value was 93,6% with statistically interpretation was very strong.

The degree consciousness was apparently had strong influence toward the chance of living and curing. GCS was also strong prediction factor in determining prognosis, which was low GCS score in beginning injury which correlated with the poor prognosis. Jennet et al. reported that 82% of sufferers with GCS score of 11 or more in 24 hours after injury had good outcome or moderately disabled and only 12% of them died or suffered severe disability. Progressively outcome would reduce if preliminary GCS score reduced. Among the sufferers with preliminary GCS score of 3 or 4 in 24 hours for the first time after injury, only 7% of them got good outcome or moderate disability. Moreover, among the sufferers with GCS score of 3 when entered to be hospitalized, the 87% of them would die (Sastrodiningrat, 2006).

In addition, there were some controversies in the inside while determining GCS. Determining GCS score after cardiopulmonary resuscitation could reduce GCS prediction value. On some sufferers, either eye score or verbal score were difficult to be determined on swollen eye and endotracheal intubation action. Motoric score could become strong prediction; sufferer with motoric score of 1 (bilateral flaccid) had mortality of 90%. Low motoric score in beginning injury and in the age of more than 60 years old was a dead combination (Kelly, Kordistani, & Martin, 1996).

Loss of long consciousness in many things was not predictive toward poor outcome. Groswasser and Sazbon conducted functional healing review from 134 sufferers of consciousness disorder for 30 days. Almost a half of them had total reliance in daily activities and 20% of others had limited reliance. Usually, the cured patient was in the age of less than 30 years old with good function of brainstem (Groswasser & Sazbon, 1990).

Abnormality of pupil function, extra ocular movement disorder, abnormal motoric respond pattern such as flexor posture and extensor posture, predicted poor outcome after serious head injury (NINDS, 2015). Sastrodiningrat (2006) stated that anisokor, irregular pupil reflex or the pupil that did not react toward light stimulation were caused by the compression toward third brain nerve or there was an injury on upper brainstem that usually due to transtentorial. In a review toward 153 adult sufferers with transtentorial herniation, only 18% of them had good healing. Among the sufferers with anisokor when

they entered to be hospitalized with uninjured brainstem, 27% of them reached good healing, but if it was found unmoved pupil and had bilateral dilatation, significantly it was found only 3.5% of them were healed. The sufferers with anisokor pupil who got well healing tended to have younger age, and the reflex of upper brainstem was not disordered. 10 of 40 (25%) sufferers with one pupil that dilated ipsilateral toward a subdural bleeding reached functional healing. Seelig et al. reported that only 6 from 61 (10%) sufferers with bilateral pupil dilatation reached functional healing (NINDS, 2015).

CONCLUSION AND SUGGESTION

Based on the result that was obtained, it could be concluded that the factors that influenced with the independence of head injury patient who was ever nursed in emergency installation of RSUD dr. R. Koesma Tuban were preliminary GCS score and pupil reflex. Hence, the suggestion could be given were: 1) This research result could be used as an information of the importance of measuring GCS and pupil reflex test by emergency installation nurse as the effort in increasing the management of head injury patient on emergency phase; 2) The further researcher used this research result as a basic research in developing the research in case of head injury by considering other factors such as the degree seriousness of head injury, location of head injury, and nursing during at home, thus, the result that was obtained would be more accurate.

REFERENCES

Arifin, M., & Henky, J. (2012). Analisis nilai functional independence measure penderita cedera servikal dengan perawatan konservatif. Makara, Kesehatan, Vol. 16, No. 1, June 2012, 17-22.

Arnold, C. D. (2013). Faktor – Faktor Yang Berhubungan Dengan Outcome Pasien Pasca Operasi Hematoma Epidural (EDH). Padang: Faculty of Medicine, ANdalas University.

Bethel. (2012). Emergency Care of Children and Adults With Head Injury. Nursing Standard. (43), 49-56.

Gardner, Smith, Chany, Fernandez, & McKenzie. (2007). Factors associated with hospital length of stay and hospital charges of motor vehicle crash related hospitalizations among children in the United States. Arch Pediatr Adolesc Med 2007, 161(9), 889–895.

Groswasser, Z., & Sazbon, L. (1990). Outcome in 134 patients with prolonged posttraumatic unawareness. Part 2 : Functional outcome of 72 patients recovering consciousness. J. Neurosurg, 72 : 81 – 4.

Gufron, A. (2013). Hubungan gambaran hasil CT scan dengan nilai glasgow coma scale pada pasien cedera kepala. Yogyakarta: Muhammadiyah University Yogyakarta.

Hadi, J. (2014). Pengaruh koagulopati terhadap glasgow outcome scale penderita cedera kepala berat yang tidak mempunyai indikasi operasi. Padang: Andalas University.

Jiang, J. (2012). Head trauma in China. Injury, Int. J.Care Injured 44 (2013) , 1453–1457.

Kelly, D., Kordistani, R., & Martin, N. (1996). Hyperemia following traumatic brain injury. Relationship to intracranial hypertension and outcome. J Neurosurg, 85 : 762 – 71.

NINDS. (2015). Traumatic Brain Injury. Maryland: NIH Publication No. 16-158.

Rosyida, S. N., Daryono, & Prasetyo, K. (2015). Kajian Kecelakaan Lalu Lintas Di Jalan Arteri Pada Jalur Pantura Wilayah Tuban. Swara Bhumi Vol 1, No 1, (2015).

Sastrodiningrat, A. G. (2006). Memahami Faktor-Faktor yang Mempengaruhi Prognosa Cedera Kepala Berat. Suplemen Majalah Kedokteran Nusantara Volume 39 No. 3 September 2006.

Sipayung, N. P., & Syapitri, H. (2015). GCS sebagai prediktor lenght of stay pasien CKR di RSU Pringadi Medan. INJEC Vol 2 No 2 Okt 2015.indd.

Udekwu, P., Kromhout-Schiro, S., Vaslef, S., Baker, C., & Oller, D. (2004). Glasgow coma scale score, mortality, and functional outcome in head-injured patients. J Trauma, 56: 1084-1089. doi:10.1097/01.TA.0000124283.02605.A5.

Van Middendorp, J., Hosman, A., Donders, A., Pouw, M., Ditunno, J., & Curt, A. (2011). A clinical prediction rule for ambulation outcomes after traumatic spinal cord injury: a longitudinal cohort study. The Lancet, 377(9770), 1004-1010.

Wijayanti. (2012). Asuhan keperawatan pada Tn. S dengan gangguan sistem persyarafan: cedera kepala post kraniotomi hari ke-2 di Ruang Sofa Rumah Sakit PKU Muhammadiyah . Surakarta: Muhammadiyah University Surakarta.

THE INFLUENCE OF GIVING ZINC TOWARD SERUM ZINC CONTENT ON POSTPARTUM MOTHERS

Lydia Fanny[1]
1= Department of Nutrition, Health Polytechnic of Ministry of Health in Makassar, Indonesia
E-mail: lydiafanny90@yahoo.com

ABSTRACT

A target of 80% coverage in giving breast milk (ASI) in Indonesia was still very far from reality. The result of Basic Health Research (Riskesdas) in 2013 showed that exclusive breastfeeding was only 30.2%. This study aimed at analyzing the influence of giving zinc after supplementation of high-dose of vitamin A on postpartum mothers toward serum zinc content. The design of this quasi-experimental research was Randomized Pre Test Post Test with Controlled Group. The treatment was giving zinc on postpartum mothers for 3 months. The sample size was 37 postpartum mothers who were divided into a treatment group (20 people) and controlled group (17 people). An analysis result showed that there were significant differences of serum zinc content between the treatment group and the controlled group, thus, it was concluded that zinc was useful for the prevention of malnutrition and the enhancement of infant's immune.

Keywords: serum zinc, postpartum mothers

INTRODUCTION

Babies would have a strong immune system when they got breastfeeding because some nutrients were transferred from mothers through breast milk. Breastfeeding helped in protecting babies from disease due to anti-infection agents which were contained in breast milk. Various scientific studies had proven that children, who were breast-feeding during infants, generally they had strong immune system that produced the qualified human resources (Prabantini, 2010).

When nutrients which were transferred from the mother were less, particularly vitamin A and zinc, it would increase various diseases such as infections (Leon, et al, 2009) and a decrease of immune function (Konomi cit. Li Chen, 2012) such as a decrease of signal molecule surface function from T cells and lymphokines production (Hughes et al, 2004). WHO (2009) also stated that about 15% of <5 year-old-children mortality rate in developing countries occurred because the mothers did not give breast milk.

The roles of vitamin A were as a macrophages activator and a monocytes differentiation in immune response, as well as for development and maintenance of epithelial cell function. Meanwhile, the roles of zinc were to maintain protein structure, synthesis and degradation of RNA, DNA and ribosomes. Besides, zinc was also useful to regulate gene expression by stabilizing structure of DNA-binding proteins. Zinc-dependent enzymes involved in proteins formation such as collagen. Setting of zinc homeostasis in body was activated by thymulin and metallothionin. Macrophages immunity cell, natural killer cells and antibodies could not work properly if there was no zinc. Zinc was also needed in retinol binding protein (RBP) formation. Low zinc content caused disturbances in metabolism of vitamin A (Linder, 2006). Lack of vitamin A and zinc were very closely related to infectious diseases rate and high mortality rate among infants and toddlers (Adriani, 2009).

A study in Brazil showed that if the mother breastfed in lack of vitamin A, the babies would have lack of vitamin A too (Ribeiro, 2010). Vitamin A that was found in breast milk was the main source for infants in their first six months of life and an important source until two-year-old babies. This was in accordance with conducted research by Martin et al. (2010). They stated that if the mother who breastfed was supplemented by vitamin A, retinol serum of breast milk would increase, which had a positive impact on babies.

Target of 80% coverage of breastfeeding in Indonesia was still very far from reality. The prevalence of exclusive breastfeeding based on Indonesian Demographic and Health Survey (1997-2007) decreased from year to year: from 40.2% (1997) to 39.5% (2003) and significantly decreased to 32% (2007). Even Riskesdas 2010 reported that the decline continued to 15.3% in 2010. The Infants who aged 0 month and who were exclusively breastfed was 39.8% and the 5-month-old infants who were exclusively breastfed were only 15.3%. Riskesdas 2013 showed that exclusive breastfeeding was 30.2%, while the data of Riskesdas 2013 showed that vitamin A supplementation was 75.5% of 90% national target (Balitbangkes Kemenkes RI, 2013).

Nearly 10 million of toddler (below five years old children) suffered lack of subclinical vitamin A (retinol serum ≤ 20μg / dl), and 60 thousands of them were followed with spotting bitot symptoms which had a risk of blindness. Low levels of retinol in blood were strongly related with high rates of infection, mortality, or health problems on infants and toddlers (Depkes RI [Ministry of Health of Indonesia], 2009). The high toddler's proportion in Indonesia with retinol serum <20 mcg/100 ml caused them had high risk in undergoing xerophthalmia and decreased immunity, thus, they were easily suffered a disease (Arita, 2010). A national survey in 2006 showed that lack of vitamin A still reached 14.6% (Herman, 2007).

This study aimed to analyze the effect of giving serum zinc after high-dose of vitamin A supplementation on postpartum mothers toward serum zinc content.

METHOD

Design of this Quasi-Experimental research was Randomized Pre Test Post Test with Control Group. The treatment was giving zinc to postpartum mothers at Public Health Center (Puskesmas) of Sudiang Raya, Makassar, Indonesia for 3 months. The sample size was 37 postpartum mothers who were divided into a treatment group (20 people) and a controlled group (17 people). Further, it was analyzed the differences of serum zinc content between the two groups by using T-Test.

RESULTS

Postpartum Mothers' Characteristics

The average age of postpartum mothers in the controlled group was 30.47, while, the treatment group was 29.95. The results of *T-test* showed that there was no significant difference in age between the treatment group and the controlled group (p = 0.751).

In both groups, the majority of postpartum mothers were a housewife, and the percentages for each group were 76.5% and 95%. Results of *Fisher exact test* showed that there was no significant difference in maternal work of two groups (p = 0.058).

In both groups, the majority of postpartum mothers had last education in high school degree, which was 35.3% and 45%. *Mann-Whitney U test* showed that there was no significant difference in education of both groups (p = 0.270).

Serum Zinc Content Before and After Intervention

Table 1. Serum Zinc Content Before and After Intervention

Group	N	Serum Zn Before Intervention	Serum Zn After Intervention	P	Serum Zn Addition
Controlled	17	8931.58 ± 11092.00	1394.68 ± 642.18	0.001*	-7536.91 ± 11169.37
Treatment	20	1767.37 ± 1855.38	8618.61 ± 9282.87	0.000*	6851.25 ± 9405.30
P		0.000*	0.000*		0.000*

Notes: * significant at α = 0.05

Table 1 showed that the increasing average of serum zinc content in controlled group was -7536.91 ± 11169.37 and 6851.25 ± 9405.30 was in treatment group. The results of *independent samples t-test* was p = 0.000 (there were significant differences in serum zinc content addition in both groups).

DISCUSSION

Serun Zn Content Before and After Intervention

Zinc content in serum was a sign for zinc status of population. The results showed that the treatment group had increased higher serum zinc content than the controlled group. The results showed that the addition of zinc would increase serum zinc content of postpartum mothers in the treatment group. The results were in accordance with conducted research by Hanna (2009) regarding zinc supplementation, vitamins and minerals to expectant mothers since <14 weeks pregnancy up to the time of childbirth. In this case, exclusive breast-fed infants had higher zinc plasma concentrations.

CONCLUSION

Based on the results, it could be concluded that giving zinc after high-dose of vitamin A supplementation on postpartum mothers might increase postpartum mothers' serum zinc content at Public Health Center of Sudiang Raya, Makassar, Indonesia. Thus, it could be stated that zinc was useful for the prevention of malnutrition and the enhancement of toddler's immune.

REFERENCES

Aritonang, I. (2010). Menilai Status Gizi untuk Mencapai Sehat Optimal. Yogyakarta: Penerbit Leutika dan CEBIOS.

Balitbangkes. (2010). Laporan Hasil Riset Kesehatan Nasional 2010. Jakarta; Departemen Kesehatan Republik Indonesia.

Balitbangkes, (2013). Laporan Riset Kesehatan Dasar (Riskesdas).Jakarta;Depkes

Dimeavita R. (2013). Hubungan Dukungan Suami Terhadap Pemberian ASI Di Kecematan Snoa Kabupaten Bantaeng.

Februhartanty J. (2009). ASI dari Ayah Untuk Ibu dan Bayi. Jakarta; Semesta Media.

Herman, S, (2007). Studi Masalah Gizi Mikro di Indonesia (Perhatian Khusus pada Kurang Vitamin A, Anemia dan Seng). Laporan Penelitian. Bogor. Puslitbang Gizi.

Hellen Keller International, (2006), Summary and Accomplishments Of The HKI/GOI Collaboration For Vitamin A, 1999-2005, http://www.hki.org/research/VA_19992005.28small.29_reduced.pdf, Disitasi. 3 Januari 2014.

Hanna Eneroth, Shams el Arifeen, Lars Ake Persson, Iqbal Kabir, Bo Lonnerdal,Mohammad Bakhtiar Hossain, and Eva Charlotte Ekstrom, (2009), Duration of Exclusive Breast Feeding and Infant Iron and Zinc Status in Rural Bangladesh, The Journal Of Nutrition. pp.1562-1567.

Hasnidar. (2012). Faktor-faktor yang Mempengaruhi pemberian ASI ekslusif di Kelurahan Mangasa Kecamatan Tamalate Kota Makassar. Karya Tulis Ilmiah. Nutrition Department, Health Polytechnic of Makassar.

Ikatan Dokter Anak Indonesia (IDAI). (2013). Kendala Pemberian ASI Eksklusif. http://idai.or.id/public-articles (accessed on 14th January 2015).

Kuntoro, (2007). Metode Sampling dan Penentuan Besar Sampling. Surabaya : Pustaka Melati.

Li Chen, Yong-Fang Liu Ms/ Min Gong, Wei Jiang, Zhen Fan, et.al, (2012), Effects of vitamin A, vitamin A plus zinc, and multiple micronutrients on anemia in preschoolchildren in Chongqing, China. Asia Pasifik Journal clinic Nutrition. Vol.21.No.1.pp.3-11.

Linder, Maria C, (2006).Nutritional Biochemistry and Metabolism With Clinical Applications. Second Edition.Prentice-Hall International Inc,USA.

Leon Agustian,Tiangsa Sembiring, Ani Arianil, (2009), Peran Zinkum Terhadap Pertumbuhan Anak. Sari Pediatri. Vol.11,No.4, hal 244-249.

Liona, Dewa Ayu, (2012). Pengaruh pemberian zinc pada ibu hamil KEK trimester III terhadap kadar zinc dan retinol serum saat nifas. Thesis. Magister Program in Universitas Airlangga Surabaya. Department of Public Health.

Notoatmodjo Soekidjo. (2003). Ilmu Kesehatan Masyarakat Prinsip-Prinsip Dasar. Jakarta. PT. Rineka Cipta.

Notoatmodjo, Soekidjo. (2007). Metodologi Penelitian Kesehatan. Jakarta: PT. Rineka Cipta.

Nuraini A. (2013). 7 Jurus Sukses Menyusui. Jakarta. PT Elex Media Komputerindo.

Permatasari TAE. (2013). Optimalisasi Peran Keluarga Terhadap Keberhasilan Pemberian (Asi) Eksklusif. http://www.fkkumj.ac.id/arsipjurnal/78-asi (accessed on 13rd December 2014).

Siregar Arifin. (2004). Faktor – Faktor yang MempengaruhiI Pemberian ASI Oleh Ibu Melahirkan. http://library.usu.ac.id (accessed on 13rd January 2015).

Sastroasmoro Sudigdo, Ismael Sofyan. (2002). Dasar-Dasar Metodologi Penelitian Klinis. Edisi 2. CV. Sagung Seto. Jakarta.

Sastroasmoro Sudigdo, Ismael Sofyan (2008). Dasar-Dasar Metodologi Penelitian Klinis. Edisi 3. CV. Sagung Seto. Jakarta.

WHO. (2011). Pelatihan Konseling Menyusui Modul 40 Jam WHO/UNICEF.

Wiji RN.(2013). ASI Dan Panduan Ibu Menyusui. Yogyakarta. Nuha Medika.

DISTRIBUTION OF CARIES BASED ON PUFA INDEX ON COLLEGE STUDENTS OF STUDENT STUDY SERVICE (*KKN*) PARTICIPANTS

Ristya Widi Endah Yani[1], Angelito E. Alvarado[2], Sanglar Polnok[3], Dincy Devassy[4], Hadi Prayitno[5], Yessy Dessy Arna[6], Heru Santoso Wahito Nugroho[6]

1=Department of Dental Public Health, Faculty of Dentistry, Jember University, Indonesia
2= Human Resources Development Manager, LA Vina General Hospital, Philippines
3= Faculty of Nursing, Naresuan University, Thailand
4= Alponsa Clinics, Franciscan Clarist Congregation, India
5=Social Welfare Department, Faculty of Social and Political Sciences, Jember University, Indonesia
6= Health Polytechnic of Health Ministry in Surabaya, Indonesia
E-mail: ristya_widi@unej.ac.id

ABSTRACT

Adolescence is a period which the activity of caries and periodontal disease increases due to high consumption of cariogenic food and lack of maintaining healthy teeth and healthy mouth. This research aimed at describing caries based on PUFA index on 45 college students. The data regarding caries condition was provided in table. The research result showed that pulpitis cases was found in 345 teeth, fistula case in 8 teeth, meanwhile, ulcer and abscess case were not found. The condition above showed that caries based on PUFA index on college students was included in high category.

Keywords: Caries, PUFA index, College Students

INTRODUCTION

In the world, caries was a problem with the highest prevalence and significantly, it caused social effect, influenced 60-90% of school-age children and most of them were also teenagers (Dixit, et al., 2013). The recent study reported that there was an increase of high caries either on children or adult people. Caries trend had a tendency for being serious and involved many teeth. Serious caries that was not treated could cause pulpitis, sepsis, and infection which could widen to periodontal tissue, and sometimes it could cause serious complication such as cellulitis and brain abscess (Alkarimi, et al., 2012). Mouth cancer was in second ranking on males and third ranking on females, meanwhile, oropharynx cancer was in fifth ranking in Southeast Asia (World Health Organization, 2013). East Java Province had high DMF-t index, which was 5.5, with *decay* number in 1.6, *missing* in 3.8, and *filling* in 0.08. College students of Student Study Service [*Kuliah Kerja Nyata (KKN)*] participants were 20 – 24 years old which according to *Riskesdas* that DMF-t number for the age of 15-24 years was 1.8 (Balitbangkes, 2013). Adolescence was a period which the activity of caries and periodontal disease increased due to high consumption of cariogenic food and the lack of maintaining healthy teeth and healthy mouth.

Furthermore, there were various indexes for measuring dental and oral disease. PUFA index gave information about clinical consequence from untreated caries, such as pulp abscess that was perhaps more dangerous rather than the lesions of caries. Criteria for PUFA index were pulpitis, ulceration, fistula, and abscess. PUFA score for an individual was about 0-32 (Monse, et al., 2010; Benzian, et al., 2011; Monse, et al. 2012; Mehta, et al., 2013; Praveen, et al., 2015).

METHOD

The subject of this descriptive research was 45 college students of KKN participants in phase 1 at Glingseran village, Wringin sub-district, Bondowoso district on 21st February 2017. The data that was about variable of this research (caries based on PUFA index) was collected through dental check. The instrument and material which were utilized were glass mouth, oral sonde, forcep, *nierbekken*, *dappen glass*, tampon basin, *handscoon*, masker, mouthwash glass, *tissue*, *headlamp*, alcohol, *cotton roll*, and tampon. The collected data was analyzed descriptively and then, it was provided in table and chart.

RESULT

Table 1. Distribution of Dental Disease with PUFA Index Based on the Total of Teeth

Type of Dental Disease	Total of Teeth	Percentage
Pulpitis	345	24%
Fistula	11	0.8%
Ulcer	0	0%
Abscess	0	0%
Total	1440	

Distribution result of teeth check on college students of Student Study Service *(KKN)* participants was provided in Table 1.

DISCUSSION

Distribution of caries based on PUFA index on college students of Student Study Service *(KKN)* participants in phase 1 at Glingseran village, Wringin sub-district, Bondowoso district, Indonesia were: pulpitis (24%), fistula in 8 teeth (0.8%), meanwhile, ulcer and abscess were not found. This showed that high case was due to untreated dental disease, particularly pulpitis in adolescence. In addition, the total of other cases was less or even was not found in check time. In this case, perhaps the three cases had ever been occurred, but in the check time, it had healed. Thus, the occurrence number seemed to be small. According to the age group, the most number of dental treatment proportion was in the age of 16-18 years (69.4%),meanwhile, in the age of 19-20 years was 30.6%. The most susceptible age toward caries was in the age of 4-10 years which was in baby teeth and in the age of 12-18 years which was in adult teeth (Wong, et al., 2008).

Caries was a common chronic disease that was occurred in adolescence and it could cause negative impact toward either individual welfare or group when they had activities daily (Novita, 2016). In the age of more than 14 years, it was the more the time for being exposed by sugary and cariogenic food toward the teeth. If it was not supported by well dental and oral cleanliness, it would be occurred easily demineralization. As the effect, caries could be occurred. The biggest proportion of caries was found on students or college students which were 42.1% (Radiah, et al., 2013; Veiga, et al., 2016).

In addition, it was occurred hormonal change on adolescence to the early adulthood. The hormonal change could cause the occurrence of oral problem such as gum swellings. Hence, it could make oral cleanliness less. Nevertheless, this could cause the increase of caries occurrences (Tarigan & Rasinta. 2013; Lucaks & Largaespada, 2016).

CONCLUSION

According to the result of data analysis, it could be concluded that the occurrence of caries which was based on PUFA index on college students of Student Study Service *(KKN)* participants in phase 1 at Glingseran village, Wringin sub-district, Bondowoso district was in high category.

REFERENCES

Alkarimi H, A., Watt R, G., Pikhart H., Jawadi A, H., Sheiham A, Tsakos G. Caries and Growth in School-Age Children. Official journal of the American Academy of Pediatrics. 2012; 133(3): e616-e623

Balitbangkes. 2013. Laporan Nasional Riset Kesehatan Dasar. Jakarta: Depkes RI.

Benzian Habib, Monse Bella, Weltzen Roswitha Heibrich, Hobdell Martin, Mulder J, Helderman Wim V, P. Untreated Severe Dental Decay: A Negleted Determinant Of Low Body Mass Index In 12 Years Old Filipino Children. BMC Public Health. 2011; 11(558): 1-10

Dixit Lonim Prasai, Shakya Ajay, Shrestha Manash, Shrestha Ayush. Caries Prevalence, Oral Health Knowledge and Practice Among Indigenous Chepang School Children of Nepal. BMC Oral Health. 2013; 13(20): 1-5

Lucaks J.R., L.L Largaespada. Explaining sex differences in caries prevalence: saliva, hormones, and "life history" etiologies. Am J of human Biology. 2006; 18: 540-55.

Mehta N, M., Corkins M, R., Lyman B, Malone A, Goday P, S., Carney L, N., Monczka J, L., Plogsted S, W., Schwenk W, F. Defining Pediatric Malnutrition: A Paradigm Shift Toward Etiology-Related Definitions. Journal of Parenteral and Enteral Nutrition. 2013; 20(10): 1-22

Monse B, et al. 2012. The Effects of Extraction of Pulpally Involved Primary Teeth on Weight, Height and BMI in Underweight Filipino Children. A Cluster Randomized Clinical Trial. *BMC Public Health*. 2012; 12(725): 1-7

Monse B., Heinrich W, R., Benzian H., Holmgren C., Van Palenstein Helderman W. PUFA–An Index of Clinical Consequences of Untreated Dental Caries. Community Dent Oral Epidemiology. 2010; 38: 77–82

Novita A.R. Hubungan Karies Gigi Terhadap Kualitas Hidup Yang Terkait Dengan Kesehatan Gigi Dan Mulut Pada Remaja Usia 12-14 Tahun Di SMP Negeri 2 Jumantono Kabupaten Karanganyar. Undergraduate Thesis. Surakarta: Muhammadiyah University of Surakarta. 2016.

EARLY MARRIAGE OF MARRIAGE DISPENSATION IN EAST JAVA, INDONESIA (CHALLENGE OF TEENAGERS' READINESS TOWARDS GOLDEN GENERATION 2045)

Iswari Hariastuti[1]

1 = Representation of National Population and Family Planning Institution (BKKBN-*Badan Kependudukan dan Keluarga Berencana Nasional*) of East Java Province, Indonesia

E-mail: iswarihariastuti@yahoo.com

ABSTRACT

Global era caused big changes that tended to be negative towards teenager' behavior and one of them was early marriage. A dilemma had been occurred when the government legalized early marriage by granting marriage dispensation. Early marriage rates were increasing and most of them were caused by unwed pregnancy. Therefore, it was necessary to do a research to identify enabling, predisposing, and reinforcing factors of early marriage. Research result showed that the majority of early marriage actors still wanted a better life, but the knowledge, values, and skills which were possessed were still lack. Force and pressure of social media, family environment, and culture still dominated teenager's lifestyle. Economic powerlessness, lack of communication between parents and children, lack of faith, and lack of vision of becoming a developed generation were driven factors of early marriage occurrence. Most of early marriage executant did not know The Planned Generation Program/"GENRE" (Generasi Berencana) as a readiness to plan a qualified family life.

Keywords: early marriage, marriage dispensation, the golden generation

INTRODUCTION

Early marriage was a marriage that was occurred in women who were under the age of sixteen. Acts No. 1 of 1974 Article 7 provided that the minimum marriage age limit was 19 years for men and 16 years for women. If brides were not eligible, then, they were required to have "Mariage Dispensation" letter (DK) from local religious court. Submission of marriage dispensation by parents nowadays was widely reported in mass media.

As if, the existence of this law legalized early marriage. Couple of boys and girls were agreed to be married as long as it was reported by parents to religious court. Religious court reported that 90% of reason for granting marriage dispensation was an unwed pregnancy. As if early marriage was legalized, but on the other hand, there was an attempt to save the status of children who would be born. Most of them were junior high school students to high school students by age of 13 years for women and age of 18 years for men. Facts in the court showed that they had sex freely in cafes, homes, public places, and motel (Hakim, PT Malang). RPJM (medium-term development plan) survey (2015) reported an increase of dating behavior with sexual intercourse.

An increase of access to social media, permissive and almost unlimited environment encouraged unhealthy dating style. Physically children became more precocious and mature, puberty age was getting advanced; but psychologically, economically, religiously, and socially, they were unable to form a family to reach the golden generation.

Unicef (2011) reported that Indonesian early marriage rates ranked 37th place; while the study of Universitas Indonesia (2015) reported that in Indonesia, 2 million of 7.3 million women had already married at the age of <15 years, and the dropout rate ranked 2nd place in ASEAN, after Cambodia. Some of early marriage reasons were a religious factor, the desire to combine their potential, to avoid sin; although their marriage was in the physical, mental and economic had not been well established and mature and ended in a divorce. Raharjo (2015) reported that there was a lack of well-being in a family with marriage at a young age. It was driven by economic pressures and poor financial management.

Golden Generation was a generation of future human resource that needed serious attention in globalization era, because the golden generation had a strategic role for the success of national development. The next generation was considered very productive, very valuable, and very precious, hence, it needed to be managed and used well in order to be qualified, characterized human, intelligent, competitive, and qualified demographic bonus (Info Magazine, 2013).

Golden Generation idea arose due to more number of young people in Indonesia. Currently, there were 45 million people who aged 0-9 years old and who would be 35-45 years old in 2045; and 43 million people who aged 10-19 years old would be 45-54 years old in 2045. This demographics bonus was a national asset as an activator and filler development towards Indonesian golden in 100 years of Indonesian independence (Eddy, 2012)

The young generation as the hope of the nation had to have the attitude and mindset with a solid moral foundation, and intelligent to be able to adjust their encountered condition, in order to be successful in achieving their objectives. Success was a condition that was appropriate with expected criteria. Success needed to be achieved through competitive ability. With the competitive ability, young generation would achieve excellence, competitiveness, and would enhance the dignity of Indonesia. Indonesia would be a great nation, powerful, respected, and honored of its existence, as the embodiment of Indonesian ideals after 67 years of independence.

The description above showed the importance of research on the encouraging, reinforcing and supporting factors which increased marriage dispensation.

METHOD

This research was conducted in Malang and Bondowoso in May 2016 and June 2016. The study population was ever married people at age of <16 years. The sample size was 100 people who were chosen randomly in 20 districts. The research variables consisted of: socio-demographic background and knowledge, values, environment and culture (predisposing factors); pornography access, communication with parents (reinforcing factors); accessed to Planned Generation Program/"GENRE" (enabling factors); and the incidence of marriage dispensation. Data were analyzed descriptively.

RESULTS

Predisposing Factors
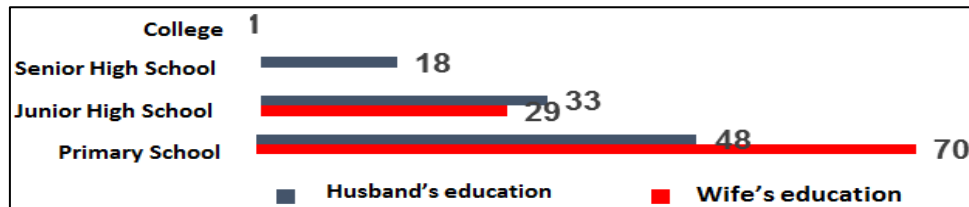
Figure 1. Husband and Wife's Educational Background

Figure 1 showed the conditions that could lead to early marriage that was low husband's and wives educational background.
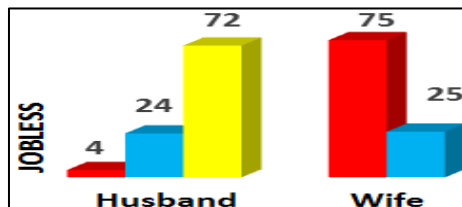
Figure 2. Husband and Wife's Job

Figure 2 showed that most of wives did not work (75%), while the majority of work was labor, which showed that early marriage couples were in a lower economic status.

The results of in-depth interviews showed that parents preferred to pay for his son's wedding rather than their daughter's school fees. The low level of education made it difficult to get a decent job.
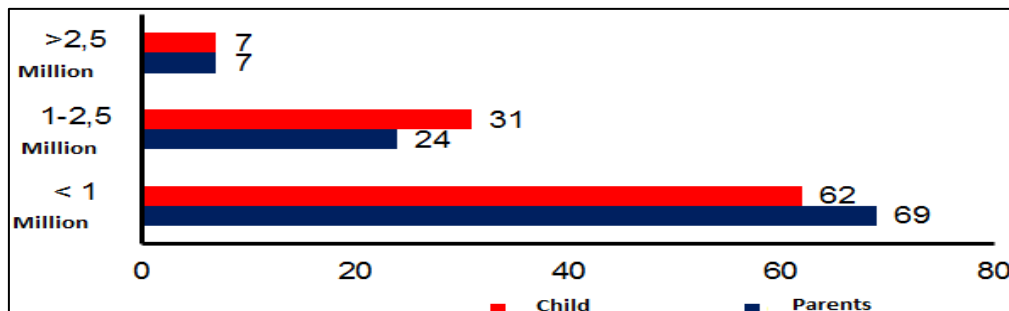
Figure 3. Respondents' Income

Figure 3 showed that family income was not more than half of regional minimum wages (*Upah Minimum Regional (UMR)*). Among 10 couples, eight of them were still supported by their parents.

Figure 4. Couples' Living Cost

In Bondowoso, cultural influences, the role of parents was more dominant rather than in Malang. Among 10 women, 6 of them conveyed a strong view that it was better to get married at early age rather than became a spinster. While among 10 of early marriages, 6 of them were done because of their parents' desire. The results of in-depth interviews with parents showed that most of early marriages were occurred because they were requested by parents with a reason of already in a long-time relationship, so the parents worried about things which were not desirable.

Three of 10 teenagers were forced to marry at early age because they were already pregnant. This condition was occurred in Malang as semi-urban areas. In those two regions, there were differences in dating style. Teenagers in semi urban areas tended to use gadgets which were exposed to pornographic content that affected their dating style.

The results showed that the majority of women experienced first menstruation at age of 13 years, but there were also at the age of 9 years. Most respondents had a very low knowledge about reproduction health (13%), which then, it leaded to early marriage, which did not consider into risk of their own reproduction health. Although most respondents knew that contraception could be used to avoid pregnancy (72%), but most of them had not thought of contraceptive use in dating.

Based on the research, it was known that 38% of early marriage in Malang was caused by unwed pregnancy. It became a case of attention, regarded to parents' communication, and understanding of impact and risk due to early marriage.

Enabling factors

One of the enabling factors that could lead to early marriage was an exposure to pornographic media. The results showed that the ease access to technology was a problem for the world of teenagers. Ease of access, Wi-Fi network availability, technology that could be bought very cheaply made more teenagers in Malang exposed to pornography rather than teenagers in Bondowoso. In addition, there were also shared stories about dating experiences, reading books and pornographic images. Marriage dispensation of unwed pregnancy was mostly from men's initiative. During dating, some of them had ever had sexual intercourse at home when there were no other family members. Pregnancy was occurred on average 2-3 times after sexual intercourse. Most of them did not pay attention to negative impact of dating style, because of lack understanding about reproduction health.

Unwed pregnancy was mostly influenced by school environment. Most of them knew that there were some students who got pregnant before graduating from the school. Discussion obtained information that the incidence of unwed pregnancy was related with smartphone ownership since primary school (approximately at class IV), dating patterns, lack of religious knowledge, and lack of communication with parents. There were also indications that dating behavior was accompanied with the use of drugs, which was triggered by the ease of having those drugs, such as *distro*, double L and so on.

The results showed that social condition, religious and cultural values in society were still relatively low. The assumption that if a person was not married at the age of 20 years, she was a spinster was a problem itself for parents and teens. Religious views that allowed them to marry at a relatively young age could be enabling factor for early marriage, and this would complicate the prevention of early marriage.

Reinforcing factors

The results showed a lack of parent-teenagers communication, both on reproduction health, as well as other things. The lack of communication had become reinforcing factor for the occurrence of early marriage because teenagers did not have a *bargaining position* to convey their aspirations, hearts, or just

to talk about situation at school. As a part of society with low economic level, parents were too busy to make a living for the family.

On the other hand, development from stakeholders in the prevention of early marriage was a lack, so that if early marriage could not be avoided, the actor of this marriage would experience a readiness problematic in terms of physical, economical, mental, and reproductive health. Therefore, lack of socialization of Planned Generation Program/"GENRE" could also be a cause of early marriage. Nevertheless, it was known that the Planned Generation Program/"GENRE" was not known by many teenagers.

DISCUSSION

Teenagers' Readiness toward Early Marriage according to Predisposing factors

In this study, predisposing factors were socio demographics and those were respondents' characteristic, respondents' couple, marriage, children, attitudes toward the value of children, knowledge of reproduction health, knowledge about early marriage, knowledge and experience concerning family planning, as well as attitudes and behavior in dating before marriage. It was known that early marriage was done based on two main factors namely cultural/religious that was the will of their parents and social factors that leaded to unwed pregnancy.

The first cause was often happened in Bondowoso. That was caused by parents' most influence toward their children's marriage, and strong cultural customs of matchmaking. The girls were not able to refuse an arranged marriage, so they were ready or not, they had to accept their parents' request to immediately marry. A small portion of early marriage in Bondowoso was due to their own wishes. That desire began from dating patterns, which in turn parents became determinant of marriage. Matchmaking and engagement were cultures that still could not be eliminated from Bondowoso. Strong *pesantren* (Muslim religion) culture among teenagers in Bondowoso made them as "*kuper*" (less social engagement). They only obeyed parental commands and "clerics" in which they had learnt religion.

In Malang, the majority of early marriage was due to unwed pregnancy. Here, the parent-child communication often leaded to dispute that triggered to rebellious attitude to parents. The teenagers more easily gained access to advanced technology, especially the Internet, so that they were more receptive to advances in technology and dare to do things which were considered as taboo for the youth in other areas.

Several points could be taken from marriage dispensation (DK) problem based on the research, those were: (1) marriage of DK submission was like an iceberg (2) marriage submission because of unwed pregnancy increased (3) more and more children were having children (4) challenges of teenagers preparation to the golden generation became heavier (5) the issue of high infant and maternal mortality became higher due to early marriage (6) understanding of reproduction health was minimal (7) the problem of teenagers' life style who did not see the locus, the pattern was almost as good as in rural and urban areas (8) weak family support leaded to high numbers of young divorce, and this tended to increase.

Teenagers Readiness toward Early Marriage according to Enabling Factors

Enabling factors were circumstances that allowed teenagers to be motivated to get married such as exposure to pornographic media; social, economic, religious, culture; and communication with parents. Generally, pornography exposure was mostly found in teenagers of Malang by the ease access to information, as well as the high level of education so that they understood better how to access Internet and to get information about pornographic things.

Some respondents said that at first, they had forced sexual intercourse with their partner, some were given stimulants, drugs, and were forced to be a willing. However, they admitted that the forced sense was continuously being lost and eventually becoming consensual, as they liked each other, and had sex with love, so they ignored negative impact of that behavior, and then, as consequences of unwed pregnancy could not be avoided. Ironically, sexual behavior was also due to the influence of drugs (*distro*, doubel L, etc.) That drug could be obtained very easily and cheaply. Some said that with fifty thousand rupiahs, they could get 100 *koplo* pills (drugs), some claimed that the price of one *koplo* pill was one thousand rupiahs, and some even had told that they ever knew a friend who died because of taking 80 pills at once.

Teenagers' Readiness toward Early Marriage according to Reinforcing Factors

Teenagers' readiness and coaching factors were obtained by teenager on reproduction health (participation on Planned Generation Program/"GENRE"), social, economic and cultural background

which strengthened teenagers' vision in embodiment of the golden generation. These results indicated that there was physical, economic, and mental health readiness in accordance with their limitations. Although aspects of physical, social, and economic were well enough; but because most of them had last education in primary school, this condition was not sufficient to reflect a prosperous life as what was expected by developed generation.

Education was an important asset for adolescence to get better job. When teenagers were in labor market, they began to feel full benefits of basic education and health that they got before. In addition, they would also develop the skills necessary for a productive livelihood. Conversely, a lack of readiness to be productive and self-reliant would make the less fortunate lives in the future.

In order to strengthen teenagers' decision to prepare themselves before marriage, there should be the provision of information for teenagers about sex education to prevent birth at an early age, reproduction health, safe motherhood, nutrition, physical health, psychological maturity, economic and social as well as spiritual packed in Planned Generation Program/"GENRE".

Planned Generation Program /"GENRE" Roles in Society

"GENRE" was one of the BKKBN-*Badan Kependudukan dan Keluarga Berencana Nasional* (National Population and Family Planning) programs in order to increase the age of marriage. The results showed that 1 of 10 teenagers had never heard about this program. The study conducted by Adams (2007) showed that knowledge had an important role in order to strengthen the capacity of teenagers' decision to prepare themselves before marriage. The increase of knowledge activity was done by providing information for teenagers, including sex education to prevent birth in early age, reproduction health education for couples, information about safe motherhood, nutrition information, along with information about physical health, psychological maturity, economic and social as well as spiritual, Therefore it was necessary to be socialized maximally by agents and cadre of family planning (*KB-Keluarga Berencana*) in the field. Extra personnel was also needed in order to succeed "GENRE" in society.

CONCLUSION

The issue of early marriage showed that teenagers were not ready to realize the golden generation. Nonetheless, early marriage by submission a marriage dispensation contained more harms rather than benefits.

IMPLICATION AND RECOMMENDATION

The case of early marriage needed to be looked more holistically. All of stakeholders needed soon to conduct "*stop nikah dini*" (Stop Early Marriage) movement comprehensively, in integrative and spatially, and massively for anticipating the increase of early marriage cases through 4 aspects which were promotive, preventive, curative, and rehabilitative.

The suggested recommendations were :
1. It needed Governor's instruction or regional regulation regarding the maturing of marriage age.
2. It was needed the commitment of all government institutions or non-governmental organizations for being more aware of the maturing of marriage age.
3. It was needed concrete step together through real program in all involved institutions for monitoring early marriage case and it was also needed a support from the society in its implementation from province level to lower level.
4. It was needed to be formed occupational group by understanding more of early marriage case which was started from its cause.
5. It was needed strengthening program of synergy family endurance with empowerment program of family economic.
6. It was needed the activity of certain synergy for monitoring and evaluating the reduction of early marriage number through all data or survey results, including social media that influenced.
7. It was needed a gadget content routinely at schools, particularly in primary school because a teenager in puberty had more risks.
8. It was needed Governor Policy for increasing the access of demography data in "online" at the institution in order to monitor the occurrence of early marriage and to constrict the space room of Religious Affairs Office (*Kantor Urusan Agama (KUA)*) for doing "mark up" toward child's age.

9. Reproduction health education needed to be started from basic education.
10. Promotion of reproduction health must be conducted since basic education, including anatomy, system, and function.
11. It was needed the increase of cooperation with all teachers, including counseling teachers, religious court, and the policies for monitoring the developed cases which were occurred.

REFERENCES

Adams, Arvil V. (2007). The Role of Youth Skills Development in the Transition to Work:A Global Review, HDNCY No. 5, Pebruary 2007, Copyright © 2007,The International Bank for Reconstruction and Development / The World Bank

BKKBN.(2015).Survei Indikator Kinerja Rencana Pembangunan Jangka Menengah Program KB Nasional Tahun 2015. Puslitbang KB dan Keluarga Sejahtera. Jakarta.

Eddy,Mungin,W.2012.Menyiapkan Bangkitnya Generasi Emas Indonesia, taken from website http://bk-fkip.umk.ac.id /2012 /09 / menyiapkan-bangkitnya-generasi-emas.html, accessed on 1st March 2016

Majalah Info Muria. (2013). Memandirikan Generasi Emas Indonesia. Edisi XIV/ May - July 2013

Raharjo, I. T., Puspitawati, H., & Krisnatuti, D. 2015. Tekanan Ekonomi, Manajemen Keuangan, Dan Kesejahteraan Pada

Keluarga Muda. Jurnal Ilmu Keluarga & Konsumen, 8(1)

Undang-Undang (Indonesia Regulation) No. 1 in 1974 Regarding Marriage

UNICEF. 2011. Early marriage: a harmful traditional practice, a statistical exploration: www.unicef.org

UNMET NEED OF FAMILY PLANNING ON REPRODUCTIVE AGE COUPLE IN MAKASSAR

Rahmawati[1], Akmal[2]

1= Department of Epidemiology/Biostatistics-KKB, Institute of Health Science "Tamalatea", Makassar, Indonesia

2= Representation of National Population and Family Planning (BKKBN-*Badan Kependudukan dan Keluarga Berencana Nasional*) of South Sulawesi Province, Indonesia

E-mail: r.watiazis@gmail.com

ABSTRACT

The advantages of modern contraception usage was not only for female health but also for increasing perinatal health and child's survival by lengthening the space time in pregnancies. Reproductive age couple who was Unmet Need of Family Planning was a challenge for increasing Family Planning participation. Furthermore, this research aimed at analyzing risk factors of Unmet Need of Family Planning, such as a fear of Family Planning side effects, contraception cost, husband's attitude, and service of Family Planning worker. This research utilizing *case control* design. The population of this research was reproductive age couple in Makassar who had had child/children and did not want to have any child again when the research was in progress. The sample was chosen based on criteria. Meanwhile, the analysis result of the data which utilized Odd Ratio showed that there was risk factor of anxiety of Family Planning side effect and husband's attitude toward the occurrence of Unmet Need of Family Planning. Moreover, the women, who worried, had risk twice more for undergoing Unmet Need of Family Planning (OR = 1.85; 95% CI 1.158-2.944). Besides, the woman whose husband disagreed had risk 2.4 times more in undergoing Unmet Need of Family Planning (OR = 2.43; 95% CI 1.230-4.795). Meanwhile, the cost and the service from worker was not a risk factor of the occurrence of Unmet Need of Family Planning. Therefore, it was expected that the information regarding contraception, particularly regarding Family Planning side effect was more explained clearly by using interesting and correct method to the mothers. Besides, it was important to involve their husband while being explained the contraception information.

Keywords: Unmet need, Family Planning, side effect, cost, husband's attitude, service from the worker

INTRODUCTION

Background

The role of Family Planning (*Keluarga Berencana (KB)*) was dominant in reaching the goal of the fifth of Millennium Development Goals (MDGs), that was followed with Sustainable Development Goals (SDGs), which was increasing mother's health by realizing the access of reproduction health. The most specific target of the goal that needed certain attention was the increase of contraceptive prevalence rate in modern way and the reduction of Unmet Needs of Family Planning (Peterson *et al.*, 2013). Unmet Need of Family Planning *described* the condition of reproductive female in reproduction age who did not want to have any children again or postponing having children, but they did not use contraception. In around the world, in 2011 it was estimated 215 million of married female who was in reproduction age underwent Unmet Need of Family Planning. In developed country, the percentage of Unmet Need of Family Planning was estimated in 12.7% (UN, 2013).

Besides there was an achieving in Family Planning program in reducing fertility level, the fertility also became a problem that was faced in the implementation of population and Family Planning development in which the number of the birth was still valued high. Indonesia was the fourth biggest number of population in the world after China, India, and United States. Based on the result of SDKI in 2012, fertility level in Indonesia was stagnant since 2002 which was about 2.6, and the number of fertility had not reached ideal target which was TFR 2,1. This showed that it was weak Family Planning program, and so was the contraceptive prevalence rate. If it was seen from the result of SDKI 2002-2003 and 2012, *Contraceptive Prevalence Rate* (CPR) did not show a significant increase, which was each modern way from 56.7% to be 57.9% and all ways from 60% to be 61.9% (SDKI, 2012).

PUS (*Pasangan Usia Subur* in English is Reproductive Age Couple) total who wanted to postpone pregnancy or did not want to have any children again but they did not use Family Planning increased from 8.6 % in 2002-2003 became 9.1% in 2007 and it was occurred an increase again in 2012 which was 11%. Unmet Need of Family Planning couple was a challenge for increasing Family Planning participations because actually, they were the candidates of Family Planning acceptor. A tendency of *unmet need* in Indonesia since 1991 until in 2012 could be seen in Figure 1.
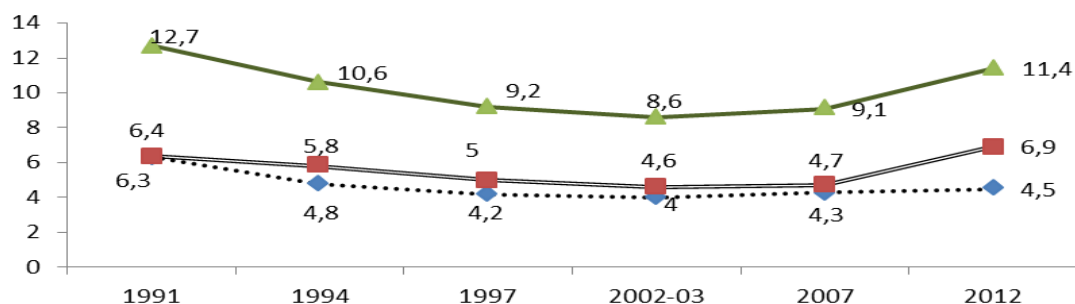
Figure 1. Trend of Unmet Need of Family Planning in Indonesia based on SDKI in 1991, 1994, 1997, 2002-2003, 2007, and 2012 (Data source : SDKI)

A female who was in reproduction age and did not use Family Planning had big challenge of pregnancy and underwent complication in pregnancy period, childbirth, and parturition. A problem that could arise due to *unmet need* was such as the occurrence of abortion toward unexpected pregnancy. Every year, almost 50 million from 190 million of pregnant females did an abortion for ending the unexpected pregnancy and around 13% of mother's death was due to abortion complication (Ahmed *et al.*, 2012). A conducted study by WHO (health institution of United Nations) and Guttmacher Institute estimated that every year, it was occurred around 56 million of abortion was done in around the world in 2010-2015. In a country that forbade abortion due to health reason caused the abortion was forced to be done illegally and it was often handled by non-medical person in safe way. Hence, it had a big risk of causing mother's death. If the number of unexpected pregnancy could be reduced, it would reduce the risk of mother's death that was caused by the process of illegal abortion that was done for foiling the pregnancy. By fulfilling Family Planning needs, it could avoid the unexpected pregnancy and warrant the female's reproduction health (Sedgh *et al.*, 2012).

South Sulawesi was chosen as a research area because the number of *unmet need* that was 14,3% was above national number which was in 11.4% (BPS, 2013). Among 23 districts/ cities in South Sulawesi, Makassar city was an area in South Sulawesi that had the highest number of Unmet Need of Family Planning (36.651 PUS(Reproductive Age Couple)) or the percentage level toward PUS (Reproductive Age Couple) in Makassar city was in 22% (BKKBN, 2013).

Research Purpose

This research aimed at analyzing risk factor for Unmet Need of Family Planning, including the anxiety of side effect, contraception cost, husband's attitude toward Family Planning program, the service of Family Planning workers in Makassar city.

METHOD

This research was observational analytic research by utilizing case control design in 2 sub-districts with either the highest *unmet need* level or the lowest one in Makassar city which were Panakukkang sub-district and Manggala sub-district. The sample of this research was 300 reproductive age couples (PUS) that consisted of case group (Unmet Need of Family Planning) and control group (*met need of* Family Planning) and each group was 150 persons. Technique of sample collection utilized inclusion criteria either for case group or control group. In the selection of control sample was conducted *matching* with case sample which was the variable of wife's age and living area. Moreover, the data analysis (hypothesis test) utilized *Odd Ratio*.

RESULT

Table 1 described that more than a half (59%) of reproductive age couple mother (PUS mother) worried about side effect of contraception.

Table 1. Analysis of Risk Factor of Contraception Side Effect toward the Occurrence of Unmet Need of Family Planning

Side Effect	Unmet Need of Family Planning		Met Need of Family Planning		Total	
	n	%	n	%	n	%
Worry	100	66.7	78	52.0	178	59.3
No Worry	50	33.3	72	48.0	122	40.7

p = 0.014; OR = 1.85 (1.158-2.944)

Table 1 showed that PUS mother who underwent a worry of side effect tended to undergo more Unmet Need of Family Planning. Odd Ratio was 1,85 with a tension of lower limit into upper limit that did not include value of 1 (1,158-2,944). Therefore, contraception side effect significantly had risk of the occurrence of Unmet Need of Family Planning.

Table 2 stated that there were more PUS mothers (88%) who felt that the contraception cost was cheap.

Table 2: Analysis of Risk Factor of Contraception Cost toward the Occurrence of Unmet Need of Family Planning

Cost	Unmet Need of Family Planning		Met need of Family Planning		Total	
	n	%	n	%	N	%
Expensive	20	13,3	16	10,7	36	12,0
Cheap	130	86,7	134	89,3	264	88,0

p = 0,594; OR = 1,29 (0,640-2,595)

Table 2 showed that PUS mother who gave opinion that contraception cost was expensive tended more to undergo *unmet need* although its difference was not quite significant. OR value of OR 1.29 with tension of *lower limit* into *upper limit* included value of 1 (0.640-2.595). Therefore. the contraception cost did not have any risk toward the occurrence of Unmet Need of Family Planning.

Table 3 showed that most of husband's attitude agreed with the use of contraception which was in around 85%.

Table 3: Analysis of Risk Factor of Husband's Attitude toward the Occurrence of Unmet Need of Family Planning

Husband's Attitude	Unmet Need of Family Planning		Met need of Family Planning		Total	
	n	%	n	%	n	%
Disagreed	30	20.0	14	9.3	44	14.7
Agreed	120	80.0	136	90.7	256	85.3

p = 0.014; OR = 2.43 (1.230-4.795)

Table 3 showed that husband who did not agree with the use of contraception tended to undergo Unmet Need of Family Planning case. The OR value of 2.43 with the tension from *lower limit* into *upper limit* did not include value of 1 (1.230-4.795). Hence, husband's attitude significantly was risk factor.

Table 4: Analysis of Risk Factor of Worker's Service toward the Occurrence of Unmet Need of Family Planning

Worker's Service	Unmet Need of Family Planning		Met need of Family Planning		Total	
	n	%	n	%	n	%
Dissatisfaction	68	45.3	60	40.0	128	42.7
Satisfaction	82	54.7	90	60.0	172	57.3

p = 0.414; OR = 1.11 (0.889-1.397)

Table 4 showed that PUS mother who was not satisfy with the health worker's service tended more to undergo Unmet Need of Family Planning. OR value of 1.11 with the tension from *lower limit* into *upper limit* included value of 1 (0.889-1.397). Therefore, the health worker's service did not have any significant risk toward the occurrence of Unmet Need of Family Planning.

DISCUSSION

Side effect in health field was an effect or influence that harmed and it was not wanted. As a result, it was as the result of a medical treatment or other interventions such as the use of contraception. An influence or negative effect was known as side effect when it arose as a secondary effect from the major therapy effect. The side effect of contraception still became a discussion because not all people underwent similar thing. Moreover, it depended from the kinds of contraception device that was used and also depended on the user's body condition. Quite big population explosion in Indonesia made BKKBN (National Population and Family Planning Institution in Indonesia) busy for doing training and giving information for mothers to do Family Planning program as soon as possible by utilizing contraception device so that they could manage the space pregnancy among the children and limit the number of children in family. However, other problems would be there when a woman used contraception device.

A common symptom of side effect that was felt was dizziness and nausea. Based on the interview result, the mothers who underwent side effect of dizziness and nausea stated that:

"Kalau saya sering pusing, kepala terasa berat saat menggunakan pil dulu. Jadi kuhentikan ki dulu…" ("When I often feel dizzy and the head is felt heavy while consuming this pill, I stop consuming the pill") (Ti, 19th September 2015).

"Apa boleh buat tetap ja pakai, daripada hamil. Kutahan-tahan mi sakitnya… biasanya kalau nda tahan, minum obat" ("What I can do then, I still consume the pill so that I will not being pregnant. I hold the pain and usually if I cannot hold the pain, I drink the medicine") `(Rb, 19th September 2015).

The use of Family Planning pill and Family Planning injection recently became the highest choice of contraception in society in Indonesia. They assumed that Family Planning method was cheap and effective. However, this contraception method often caused side effect and this could be known when the woman started to use it. Family Planning pill that contained progesterone hormone could increase appetite. Besides, the pill also had an ability to change over calories in the body to be converted to be fat under the skin. Hence, without being realized that the use of Family Planning pill that contained progesterone hormone would make the woman ate more and more rather than what the body should need. For preventing the fat, the use of Family Planning pill was suggested for managing regularly the diet and exercise.

Each of Family Planning pill had different side effect. It was depended on the content of the pill. The side effect would be occurred as soon as possible if there was a reaction that was not suitable with the body. The side effect of the use of Family Planning pill and Family Planning injection that was often occurred was headache, breast pain, and dizzy. The symptoms would usually lose after some times after the injection or drinking pill. The nausea due to the side effect of the pill and the injection would lose in several months. The way for reducing nausea was by consuming Family Planning pill while eating food. Nevertheless, if nausea complaint was still similar, she was suggested to use intrauterine device (IUD). The use of the pill and the injection sometimes also caused a bleeding (such as undergoing menstruation in long time). This often made the woman stress because she was afraid if there was an anomaly in her reproduction organ.

Hormonal method enabled to cause a change of mood, hence, the patient who still wanted to consume Family Planning pill was usually given anti-depress medicine by the doctor. The other side effects of the use of either Family Planning pill or Family Planning injection was triggering the physical change that could increase risk of heart disease, particularly for smoker woman, having fat body, and for who was from a family who had history of heart disease.

Generally, the injection worked to condense cervix, hence, it was difficult to be penetrated by the sperm. Besides, the injection helped to prevent the ovum to adhere in uterus wall, thus, the pregnancy could be avoided. Moreover, both methods of Family Planning injection (3 months and 1 month) had effectiveness in 99% if it was used in accordance with the suggestion. The injection could become a selection for them who wanted to use hormonal method. However, it was difficult for remembering the schedule of drinking Family Planning pill.

When a woman decided to use contraception device, she would expect that she did not have another problem regarding the pregnancy. However, the fact that there was side effect that she had. If the side effect was a bleeding, this made woman felt panic. The bleeding was usually occurred to the woman who used IUD, pill, and injection. Besides bleeding, the reduction of sexual desire was also occurred as what the IUD user stated below:

"Waktu pertama pasang spiral, ada banyak darah keluar bukan waktu haid. Kaget … tapi disuruh bidan rajin minum kunyit asam dan dikasih obat juga… Alhamdulillah sekarang sudah baik" ("When it is the first time in using IUD, there is so much blood out and it is not in menstruation period. However, the midwife asks me to drink tamarind and she also gives me medicine. Alhamdulillah, now I am better") (Wi, 19th September 2015).

The mothers who underwent a reduction of sexual desire, shyly she stated that she was forced to release IUD that was used due to unsuitable condition. She stated that:

"...Karena nda cocok, suamiku suruh lepas saja… … sampai sekarang belum pakai KB lagi" ("Due to unsuitable condition, my husband asks me to release it….until now I have not used it again") (Nia, 20th September 2015).

Furthermore, it disturbed the mother's activity, hence, the mothers were claimed to be clever in selecting the types of contraception device. Consultation with obstetricians or midwives was much needed so that the mother was not incorrect in selecting contraception device.

Musdalifah, et al. (2013) reported that the side effect of correlation and selection of contraception device which the side effect that was emerged by the contraception made the mothers did not want to use it again. Another research stated that 21,3% of reason that made respondents did not use the contraception was a fear of side effect (Prateek *and* Saurabh, 2012). The major reason of *unmet need* of family planning (KB) on woman was fear of side effect (Ferdousi *et al.*, 2010; Paudel *and* Budhathoki, 2011; Hukin, 2012). Moreover, it was reported that there was a significant correlation between the occurrence of *unmet need* and a fear of side effect and perception of fear feeling of side effect due to other people's experience. The real fear and was felt from the side effect was a major barrier. Rumor, myth, and wrong information about contraception often had strong negative effect on contraception user (Kandel, 2012; Ankomah *et al.*, 2013).

Woyanti (2005) stated that economic level influenced the selection of contraception type because for having contraception service, the family planning participations must provide the fund that was needed. Although IUD was cheaper rather than either Family Planning injection or Family Planning pill, sometimes the people saw it from the cost of IUD installation, thus, it was seemed more expensive. Furthermore, if it was looked at its use period, the cost of IUD installation would be cheaper because it could be active for 3-5 years, even, until menopause. Meanwhile, either the injection or the pill only had active period for 1 until 3 months. It meant that for having similar effect as similar as IUD, the woman must do 12 until 36 times of injection, even dozens times of injection (Saifuddin, 2008).

Based on the FGD result, the mothers had opinion that cost did not become a problem, even there were some methods which were obtained freely, for example: implant installation, using condom, and vasectomy from BKKBN (National Population and Family Planning Institution in Indonesia). Only one mother who had reason that its cost was expensive, as followed: *"Sebenarnya mau pakai KB, tapi nda bisa kalau macam pil atau suntikan. Pernah ka dioperasi angkat tumor jadi takut kalau pakai yang ada hormonnya… Nanti berpengaruh… mau pakai kalau seperti spiral tapi mahal, 400 sampai 600 ribu katanya".* ("Actually, I want to use Family Planning, but I can't if it is a pill or an injection. I ever had operation for tumor. Thus, I am afraid if using hormonal contraception. Later, it can cause something wrong to me. I want to use spiral but it is expensive, Rp 400.000,- until Rp 600.000,- people said") (Ia, 19th September 2015).

According to Harvey (1999, in Prata, 2007), when the total of contraception cost was more than 1% from household income, it would be occurred a reduction of contraception use. Another research showed that in sub-Sahara Africa, most of people were not capable in using family planning (KB) (Prata, 2007). Another research which was in accordance with this research result stated that the funding of family planning did not correlate significantly with the percentage of *unmet need* of family planning (Yulikah, 2011).

Attitude was an action toward an object that had been stimulated to the people which showed either happy or unhappy sign, either agree or disagree toward the object (Notoatmodjo, 2007). A decision in finding health service was the result of complex interaction network. Finding the process of decision-making and relevant communication pattern was not a simple problem. Decision in finding health service

could be made by the woman herself or her husband, society figure in the village, and/ or family members or other societies (Juliastuti, 2008).

This research result showed that the woman who had a husband who disagreed about it had more risks in undergoing *unmet need* of family planning. Along with the result of this research, it was reported that the husband's agreement in using contraception influenced toward the occurrence of *unmet need* di Indonesia (Qie, 2011). A tendency of the occurrence of *unmet need* was bigger for the mother whose husband disagreed toward the use of contraception. Musdalifah, et al. (2013), Lwelamira *et.al* (2012) reported that husband's support had more influences toward the selection of contraception that was used by the wife. If the husband disagreed with the contraception that was used by the wife, there was less wives who would use the contraception device. The user of modern contraception increased significantly on the woman who had her husband's agreement.

Arliana, et al. (2013) also reported that husband's support was one of factors that correlated with hormonal contraception user. A client who was given support from husband would use contraception continuously. In addition, another research also proved that a husband who agreed with the use of family planning method tended more for using family planning (Aynekulu *et al.*, 2013). Furthermore, the biggest barrier of contraception use on woman was the lack of husband's support and other important persons (Ankomah *et al.*, 2013). A challenge of husband's support was 2,6 times for supporting family planning use (Mekonnen *and* Worku, 2011). Meanwhile, the result of different another research was there was no significant correlation between husband's disagreement and the occurrence of unmet need of family planning (Ndaruhuye, 2009; Kandel, 2012).

Qualified Family Planning service impacted on satisfaction on the client who was served and who fulfilled the rules of Family Planning service implementation. The implementation was in accordance with ethic code and standard of service that had been settled. Competency of the workers who gave Family Planning service was a factor that very influenced the quality of Family Planning service besides other factors such as supported infrastructure, devices, contraception medicine, the availability of service guidance, and the effort for keeping the quality. If it was viewed from standard service perception, family planning service was qualified if it was in complication level, not ongoing, and low failure or was in tolerance limit (Kemenkes R.I. (Indonesia Ministry of Health), 2013).

Although the worker's service was not risk factor, but there were still mothers who complained with the service from the health workers/ family planning workers. From the research result that was conducted qualitatively was there were still acceptors who determined the chosen method only based on information from other acceptors' experience. Some of health workers did less/ did not give information and counseling which caused lack of mother's knowledge and understanding in selecting Family Planning type.

"... dari teman-teman kutau..." ("from my friends, I know…")(Ia, 19th September 2015).

"... pernah mengeluh kalau saya suka pusing, tapi cuek petugasnya...hanya bilang kalau nda cocok, ganti saja... ngomong sambil kayak marah-marah" (" I ever complained if I often felt dizzy, but the workers were not care…they only said that if I was not suitable, I should change to others… they said that seemed like in anger")(Nia, 20th September 2015).

"... kalau menurut saya, baik bidannya, biasa dilayani dengan senyum..." (For me, the midwife is better because she usually serves patient friendly) (Wi, 19th September 2015).

Those were in accordance with the report from Ndaruhuye *et al.* (2009) who stated that the worker's service regarding giving information about family planning while visiting in facility service did not influence toward the occurrence of *unmet need* of family planning. As what Jain *et al.* (2012) reported that the quality of service that was accepted by respondents did not increase the contraception use.

Meanwhile, different report that was stated by Kandel (2012) was there was significant correlation between visiting to the service of family planning health workers and the occurrence of *unmet need.* Musdalifah, et al. (2013) proved that giving information from family planning workers correlated with contraception selection and the health workers had role in giving information, training, and explaining about contraception device. The candidate of acceptor, who was still doubt of using contraception device, finally decided to use the contraception device as what health worker suggested. Okech *et al.* (2011) stated that family planning workers' kindness had marginal effect in 0,19. It showed that respondents' challenge for using family planning service was 19% higher if family planning staffs were kind. Of course, it would be different if they were not kind. *Unmet need for spacing* was significant low on the woman who was visited by family planning workers (Hailemariam *and* Haddis, 2011).

Although in this research, it had not been able to prove that worker's service was a risk factor for the occurrence of *unmet need* of family planning, good information from the workers could help client to

select contraception device. Moreover, good information would increase client's satisfaction that could impact on the success of family planning program.

CONCLUSION

A worry about side effect of family planning and husband's attitude were risk factors for the occurrence of *unmet need* of family planning. Furthermore, it was expected information about side effect of contraception use was explained clearly by utilizing correct and interesting method and by involving the husbands.

REFERENCES

Ahmed, S., Li, Q., Liu, L., & Tsui, A. O., 2012. Maternal deaths averted by contraceptive use: an analysis of 172 countries. The Lancet. 380 (9837), pp. 111-125.

Ankomah, A., Anyanti, J., Adebayo S., and Giwa, A., 2013. Barriers to Contraceptive Use among Married Young Adults in Nigeria: A Qualitative Study. International Journal of Tropical Disease and Health. 3(3), pp. 267-282.

Arliana, W.O.D., Sarake, M., and Seweng, A., 2013. Faktor yang berhubungan dengan Penggunaan Metode Kontrasepsi Hormonal pada Akseptor KB di Kelurahan Pasarwajo Kecamatan Pasarwajo Kabupaten Buton Sulawesi Tenggara. Unpublished thesis. Makassar: Hasanuddin University.

Aynekulu, Weyzer, and Buruh, G., 2013. Measuring Fertility Intention, Family Planning Utilization and Associated Factors among Married Couples in Mekelle City, Tigray, Ethiopia, Crossectional Study. IJPBSF International Journal of Pharmaceutical and Biological Sciences Fundamentals. Vol. 06, (1), pp. 1-15.

BKKBN, 2013. Profil Hasil Pendataan Keluarga Tahun 2012. Jakarta: BKKBN.

BPS, 2008. Survei Demografi dan Kesehatan Indonesia 2007. Jakarta: BPS, BKKBN, Depkes, and USAID.

Direktorat Pelaporan dan Statistik, 2012. Profil Hasil Pendataan Keluarga Tahun 2011. Jakarta: Badan Kependudukan dan Keluarga Berencana Nasional.

Ferdousi, SK., Jabbar MA., Hoque SR., Karim SR., Mahmood AR., Ara R., Khan NR., 2010. Unmet need of Family Planning among Rural Women in Bangladesh. J Dhaka MedColl. 19 (1), pp. 11-15.

Hailemariam, A. and Haddis, F., 2011. Factors Affecting Unmet Need For Family Planning in Southern Nations, Nationalities and Peoples Region, Ethiopia. Ethiop J.Health Sci. (21) 2, pp. 77-89.

Hukin, E.F., 2012. Contraception in Cambodia Explaining Unmet need. London : the London School of Economics and Political Science.

Jain, A. K., Ramarao, S., Kim, J., & Costello, M.., 2012. Evaluation of an Intervention to Improve Quality of Care in Family Planning Programme in The Philippines. Journal Of Biosocial Science, 44(1), pp. 27-41.

Juliastuti, D., 2008. Pengambilan Keputusan Pemakaian Kontrasepsi pada Ibu Grande Multipara di Kabupaten Tangerang: Studi Grounded Theory. Unpublished thesis. Jakarta: postgraduate department, Faculty of Nursing, Indonesia University.

Kandel, N.R., 2012. Unmet need for Contraception and its Associated Factors among Married Women of Reproductive Age in Simichaur VDC of Gulmi District. Health Prospect. (11), pp. 11-14,

Kementerian Kesehatan RI., 2013. Rencana Aksi Pelayanan Nasional Pelayanan Keluarga Berencana Tahun 2015-2015. Jakarta: Direktorat Jenderal Bina Gizi dan Kesehatan Ibu dan Anak Kementerian Kesehatan RI.

Lwelamira, J., Mnyamagola, G., and Msaki, M.M., 2012. Knowledge, Attitude and Practice (KAP) Towards Modern Contraceptives among Married Women of Reproductive Age in Mpwapwa District, Central Tanzania. Current Research Journal of Social Sciences. 4(3), pp. 235-245.

Mekonnen, W. and Worku A., 2011. Determinants of Low Family Planning Use and High Unmet Need in Butajira District, South Central Ethiopia. Reproductive Health (8) 37, pp. 1-8.

Musdalifah, Sarake, M., and Rahma., 2013. Faktor yang Berhubungan dengan Pemilihan Kontrasepsi Hormonal Pasutri di Wilayah Kerja Puskesmas Lampa Kecamatan Duampanua Kabupaten Pinrang 2013. Makassar: Hasanuddin University.

Ndaruhuye, D.M., Broekhuis, A. and Hooimeijer, P., 2009. Demand and Unmet Need for Means of Family Limitation in Rwanda. International Perspectives on Sexual and Reproductive Health, 35(3), pp. 122–130.

Notoatmodjo, S., 2007. Promosi Kesehatan dan Ilmu Perilaku. Jakarta: Rineka Cipta Jaya.

Okech, T.C., Wawire, N.W. and Mburu, T.K., 2011. Contraceptive Use among Women of Reproductive Age in Kenya's City Slums. International Journal of Business and Social Science. 2(1), pp. 22-43.

Paudel, I.S. and Budhathoki, S.S., 2011. Unmet needs For Family Planning In Sunsari, Eastern Nepal. Unmet needs For Family Planning. 9 (3), pp. 148-151.

Peterson, H.B., Darmstadt, G.L., and Bongaarts, J., 2013. Meeting the unmet need for family planning: now is the time. Lancet; (381), pp. 1696-1699.

Prata, N., 2007. The need for Family Planning. Popul Environ; 28, pp. 212–222.

Prateek, S.S. and Saurabh, R.S., 2012. Contraceptive Practices Adopted By Women Attending An Urban Health Centre. African Health Sciences; (4), pp. 416-21.

Qie, H., 2011. Determinan Penyebab Terjadinya Unmet Need Program KB di Indonesia (Analisis Data Survei Demografi dan Kesehatan Indonesia Tahun 2007). Unpublished thesis. Yogyakarta: Postgraduate of Gadjah Mada University.

Saifuddin, BA., 2008. Buku Panduan Praktis Pelayanan Kontrasepsi. Jakarta: Yayasan Bina Pustaka.

SDKI. 2007., Laporan Survei Demografi dan Kesehatan Indonesia (SDKI) 2007. Jakarta: BPS, BKKBN, Depkes, and USAID.

SDKI. 2012., Laporan Survei Demografi dan Kesehatan Indonesia (SDKI) 2012. Jakarta: BKKBN, BPS, Kemenkes, and USAID.

Sedgh, G., Singh, S., Shah, I. H., Åhman, E., Henshaw, S. K., & Bankole, A., 2012. Induced abortion: incidence and trends worldwide from 1995 to 2008. The Lancet; 379(9816), pp. 625-632.

United Nations (UN), 2013. World Contraceptive Patterns 2013. New York: United Nations.

Woyanti, N., 2005. Analisis Faktor-faktor yang Mempengaruhi Permintaan Kontrasepsi di Kota Semarang. Dinamika Kependudukan. Vol. 2, No. 1, pp. 40-56.

Yulikah, I., 2011. Hubungan Penyediaan Sumber Daya Pelayanan KB dengan Unmet need di Indonesia (Analisis Tingkat Provinsi). Unpublished thesis. Yogyakarta: Postgraduate of Gadjah Mada University.

THE EFFECT OF CHILDREN'S HEALTH SERVICES AND MOTHERS' CHARACTERISTICS AGAINST THE DEVELOPMENT OF UNDER-TWO-YEARS-OLD TODDLERS

Tri Riana Lestari[1]

1= Department of Prosthetic Orthotic, Health Polytechnic of Ministry of Health in Jakarta I

E-mail: tririanalestari@yahoo.co.id

ABSTRACT

Health care in children and mothers played a very important role for children's development. This research aimed at analyzing the effect of health care services on children and mothers' characteristics against development of children who were under two years old by using cross sectional design. Subjects were 100 mothers and children who were 3 months old to 2 years old, who were selected by multistage random sampling technique in three sub-districts and 10 villages in Blitar. Data were collected through questionnaires of maternal characteristics and Pre-Screening Questionnaires of Children Development (KPSP) which were analyzed by using Partial Least Square. The results showed that health care services for children (services at Public Health Center and Integrated Service Post (*posyandu*)) and mothers' characteristics (education, occupation, welfare) affected children's development.

Keywords: health care, mothers' characteristics, children's development

INTRODUCTION

Background

Children in developing countries were faced with several risks, such as: poverty, malnutrition, poor health, and lack of stimulation in home environment. These facts related to cognitive, motoric, and emotional development. It was estimated that over 200 million toddlers who were less than five years old failed to achieve their potential developments as what I had stated above. When children needed food, sanitation, and access to health care for surviving and developing optimally, harmonious and full of love relationship with adult caregiver who was responsive toward children's needs were the important factor. Furthermore, children had a right to obtain holistic growth and development inspection. Report from Basic Health Research (*Riskesdas*) in 2010 showed that only 49.4% of children were doing a monitoring regarding their growth in 4 times or more in the last 6 months and still 23.8% of children who never weighed. *Health Card* ownership of under five years toddlers was only 30.5% and ownership of KIA was 25.5%, while growth monitoring data of under five years toddlers had not been already yet.

Parents who did stimulation to their children in 2010 were 28% and it reduced in 2011 which was 23%. In DKI Jakarta Province, the parents who did stimulation to their children were 34.9%. Indicators of successful implementation of stimulation, detection, and early intervention of developmental aberrations in 2010, were expected that 90 percent of toddlers and preschool children were covered by stimulation activities, detection, and early intervention of developmental aberrations (Ministry of Health, 2011).

The growth and development of children correlated with family condition including their parents, father, and mother. In family, there was a mother who had a role in the children's growth and development. In China, mother's role was very important for positive parenting practice and children's development. Mothers' learning process and depression were important factors which affected competence that was perceived by mothers and mothers' satisfaction during postpartum. Optimal health should be developed continuously to promote mothers' psychological prosperity and to equip mothers with learned sense skills to facilitate mothers' role in taking and increasing their competence and satisfaction (Holroyd, 2007).

The study of Mexican-American mothers showed a correlation between behavioral aspects of parenting and infant cognitive development status. For motoric development status, the correlation emerged stronger with infant's characteristics rather than child rearing practices and behaviors which were tested in this research. In UK, economic difficulties and mothers' depression could reduce cognitive rate and emotional welfare of children, and this situation was a part of children's maintenance and care lacking that came from those with low economic and emotional. There were strong correlation between caring, development, and children's health with more responsive caregivers made better results and the *Responsive Parenting* was needed to support growth, development, and behavior of the children and mothers. Prolonged poverty affected children's development problems indirectly through other variables, and parenting practices directly affected every race/ethnic. The influence of mothers' depression was partly mediated through parenting in white and Latin samples and it was not mediated through parenting

practices in black samples. Environment affected on white and black but not significantly on Latin (Kiernan and Huerta, 2008).

Four groups of mothers varied in responsiveness pattern which were given in infancy and preschool years. Mothers with higher responsiveness to their children showed a higher level of their children's development. Examination showed that the status of higher risk births that was combined with minimal response produced cognitive scores, on average of 14 points lower rather than in parenting time with higher consistent response. Safely interaction of mother's touch on their baby at night was generally more consistent, sensitive, and responsive rather than mothers who did not touch their baby (Bogenschneider, 2008).

There were 10.3% of mothers who were in extremely powerful condition and as much as 4.9% mothers who were in extremely powerless condition. Indicators of mother's empowerment in family which was dominant determinant of infant mortality was mothers' involvement of decision-making in family and maternal age that was not far different with her husband's age was a protective factor of infant mortality. The lack support of health workers such as doctors, midwives, nurses, and health cadres made mothers unsuccessful in doing early initiation of breastfeeding.

The condition above showed impaired growth and development problem of children who were under five years old (toddlers). Thus, it needed to increase mother's role to support the toddlers' optimal development. Theoretically, Mercer stated that mothers' role achievement was interactional and developmental processes which were occurred from time to time, which the mother became closed to the baby, gained maintenance task competence that was involved in the role, and expressed pleasure and satisfaction which the mother had a sense of harmony, confidence, and competence in how she did her part. Bronfenbrenner's view about ecological development stated that children's development was influenced by five environmental systems and those were microsystem, mesosystem, ecosystems, macrosystem and chronosystem.

Children had a right to obtain holistic growth and development inspection. Based on the basic health research report in 2010, it was found that only 49.4% of toddlers who were monitored their growth in 4 times or more in the last 6 months and still 23.8% of toddlers who were never weighed. Health Card ownership of toddlers was only 30.5% and ownership KIA books was 25,5%, while toddlers growth monitoring data had not been already yet.

Children developmental disorders in Tehran which were tested with Denver Development Screening Test II were 34% and with Age and Stage Questionnaire were 12%. Children experienced developmental disorders in Denver screening tests II filtering examination were 25%. There was a significant correlation between quality and quantity of stimulation with the results of Denver screening tests II. Children who were given screening with Pre-Screening Development Questionnaire (KPSP) showed that 25% of them had a score of 7-8 and 10% of them with a score of less than 7 or suspected developmental disorders. 15% of them were estimated to undergo developmental disorders based on KPSP, and 12% based on the Denver II (Shahshahani, 2010).

Research Purpose

The purpose of this research was to explain the effect of health care on children and mothers' characteristics against development of toddlers who were under two years old.

METHOD

This research was cross-sectional design with sample of 100 mothers and children who aged 3 months to 2 years old who were selected by multistage random sampling technique. Data were collected through questionnaires of mothers' characteristics and children's health care and also Pre-Screening Development Questionnaire (KPSP), then, it was analyzed by using Partial Least Square.

RESULT

Mothers' Characteristics (Age, Education, Occupation, and Welfare)

Mothers' characteristics based on age, education, occupation, and welfare level could be seen in Table 1. Based on Table 1, it was known that the highest mothers' age was 20-30 years old. Most of them were high school graduated, most of them did not go to work, and the highest welfare level was in welfare I.

Table 1. Distribution of Mothers' Age, Education, Occupation, and Welfare in Blitar 2014

No	Mothers' Characteristics	Frequency	Percentage
	Age		
1	<20 years	10	10
2	20-30 years	75	75
3	30-40 years	14	14
4	40-50 years	1	1
5	>50 years	-	-
	Total	100	100
	Education		
1	Not Graduated Primary School	1	1
2	Primary School	5	5
3	Junior High School	21	21
4	Senior High School	57	57
5	Bachelor	16	16
	Total	100	100
	Occupation		
1	Civil Servant	3	3
2	Employee	17	17
3	Farmer	1	1
4	Labor	2	2
5	Entrepreneur	13	13
6	Jobless	64	64
	Total	100	100
	Welfare Level		
1	Under-privileged	4	4
2	Welfare I	34	34
3	Welfare II	32	32
4	Welfare III	22	22
5	Welfare III Plus	8	8
	Total	100	100

Health Services Factors

Table 2. Health Service Distribution in Blitar 2014

| No | Health Services | Category | | | | | | Total | |
| | | Good | | Enough | | Less | | | |
		(f)	(%)	(f)	(%)	(f)	(%)	$\sum$	(%)
1	Public Health Center	42	42	31	31	27	27	100	100
2	Integrated Services Post	40	40	33	33	27	27	100	100

From table 2, it could be seen that most of health services in Public Health Center and Integrated Services Post were in good and enough category.

Children's Development

Table 3. Children's Development Distribution in Blitar 2014

| No | Children Development | Category (KPSP) | | | | Total | |
| | | Yes | | No | | | |
		(f)	(%)	(f)	(%)	$\sum$	(%)
1	Rough Motoric Skill	81	81	19	19	100	100
2	Fine Motoric Skill	92	92	8	8	100	100
3	Socialization	95	95	5	5	100	100
4	Language	93	93	8	8	100	100

From Table 3, it could be seen that the development of rough motoric skills, fine motoric skills, socialization, and language were in good category. Most groups in good category were the development of socialization and the least was rough motoric skill development.

Hypothesis Test Result

Table 4: Reliability of Mothers' *Responsiveness* Composite Model Testing Against Under Two Years Toddlers' Development in Blitar 2014

Variable	Code	Composite	Note
Health Services	X_4	0.787482	Reliable
Mothers' Characteristics	X_2	0.753327	Reliable
Children's Development	Y_1	0.794918	Reliable
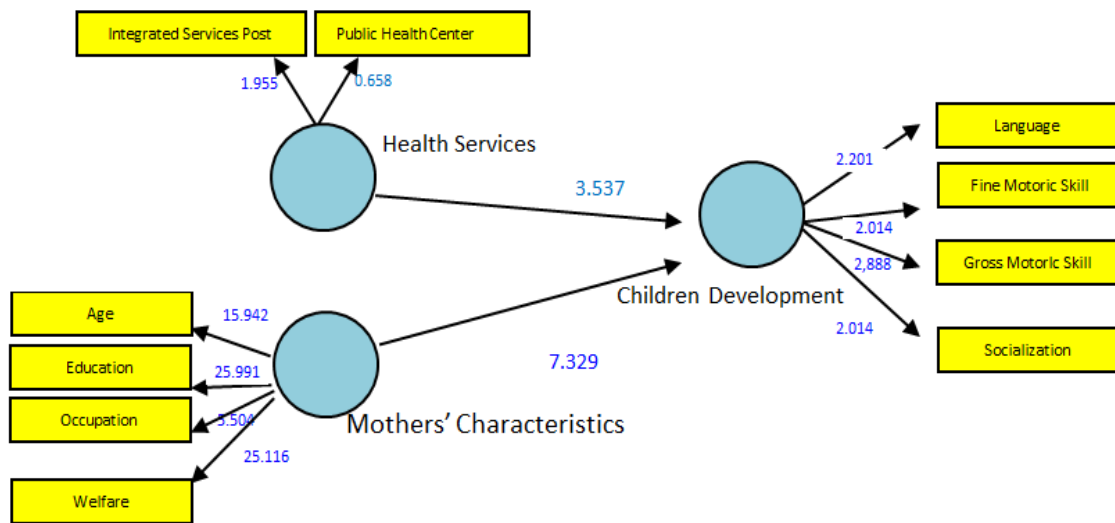
Figure 1. Effect of Health Care Model and Mothers' Characteristic against Toddlers' Development

The Effect of Mothers' Characteristics against Under Two Years Toddlers' Development

The analysis showed that mothers' characteristics (age, education, occupation, and welfare) significantly influenced against toddlers' development (T-Statistics 3537; CI 95%). The higher value of the mothers' characteristics, the better development of their children.

Breastfeeding in good category showed more healthy status which were 126 (96.9%), rather than breastfeeding with deficient category which were 21 (70.0%). It was different with conducted research by Sitaresmi, (2008) who stated that there were 407 children (64%) with normal development, 81 children (28%) with dubious development, and 43 children (8%) suspected of late development. Factors that influenced child development delays were low birth weight, lack of nutrition, lower maternal education, working mothers and poor families. Mothers' intimacy to baby grew simultaneously with parent's emotional. Mercer stated that there were many factors that could influence directly or indirectly to mothers' role.

Children's environment was described as a series of structures including interactions which were interconnected between inside and outside home, school and neighborhood of children's daily life. Therefore, children were never separated from their environment and continuously interacted with their environment in a very long period. This interaction became a motor or activator of children's development. In ecological theory of child's development, children were the center of a circle, and were surrounded by varied circles of interaction system that consisted of a micro-system, mesosystem, ecosystem, and macrosystems. Each circles or system would affect children's development

Mothers with low empathy but positive guidance would show a significant reduction of children's antisocial behavior. Parenting with empathy had a positive influence toward a better confidence and

maturity in children. Parents who paid more attention to their children's behavior would lead them to have good behavior and positive emotion

The Effect of Health Services against Under Two Years Toddlers' Development

The analysis showed that health care significantly influenced children's development (T-Stats 7,329; CI 95%). The higher the value of health care, the better the development of the children.

Prolonged poverty affected children's behavior problems indirectly through other variables, and parenting practices had a direct effect on each race/ethnic groups. Effects of mothers' depression were partially mediated through white's and Latin's parenting but without intermediary through black's. Environmental effects were seen in white and black but not significant in Latin. Chronic poverty, environment, mothers' depression, and parenting had an effect on children's behavior problems of white, black, and Latin, but the processes and mechanisms were through the factors which exerted different effects among the groups. Differences might be correlated with mechanism of social stratification and socio-cultural differences in family and child rearing practices.

Social cognitive contributed 13.2% of primary care, above variables influence of children's health and psychosocial status. Best predictions model was as many as 29.8% of primary care used, including interactions between parents' stress and *self-efficacy* to address parents' need, child behavioral problems, *self-efficacy* to access medical help, medication usage, and the use of parents' health care. There was a correlation between *self-efficacy* and parents' stress in decision-making about children's primary care. Social-cognitive theory provided a new perspective to evaluate factors that affected health care utilization.

Health Care such as Public Health Center (*Puskesmas*) and Integrated Service Post (*Posyandu*) in this research had a significant positive correlation with under two years toddlers' development. It was appropriate with Blum concept which in this case, the health status of children was affected by health service factors. Prevention of child developmental delay (rough motoric, fine motoric, language, and socialization) could be done as early as possible so that children could develop optimally.

Health care services to public in this case were mother and child who were given by health workers such as doctors, nurses, midwives, nutritionists, and volunteers who provide support to mothers in order to check their children's health regularly, to do visits, to spend some particular times to communicate with mothers, to give a support to them in order to carry out regular checks based on the schedule such as during pregnancy, after childbirth, child immunization, and other examinations.

CONCLUSION

The under two years toddlers' development with the aspect of language, rough motoric, socialization, and fine motoric were formed by the factor of mother's characteristic (age, education, occupation, and welfare) and the support of health service (Public Health Center and Integrated Service Post).

REFERENCES

McGregor SG, Cheung YB, Cueto S, Glewwe P, Richter L, Strupp B. (2007). Developmental Potential In the First 5 Years for Children in Developing Countries. Lancet, 2007;369(9555):60-70.

Eshel, N., Daelmans, B., de Mello, MC., dan Martines, J. (2006) Responsive Parenting: interventions and outcomes. Bulletin of the World Health Organization 84:992-999.

Bogenschneider, P. (2008) Responsiveness in Parent-Adolescent Relationships: Are Influences Conditional? Does the Reporter Matter? Journal of Marriage and Family. Volume 70 No. 4 (Nov 2008). 1015-1029

Kementerian Kesehatan RI, 2010). Kementerian Kesehatan RI, 2010 Riset Kesehatan Dasar (Riskesdas) in 2010

Kementerian Kesehatan RI. (2011) Buku Kesehatan Ibu dan Anak. Jakarta: Kementerian Kesehatan dan JICA (Japan International Cooperation Agency).

Holroyd, E. (2007) Translation and Validation of a Chinese Version of the Parenting Sense of Competence Scale in Chinese Mothers. Nursing Research Journal. Volume 56, No. 5. P348-354.

Ip Yim, W. (2010) Predictors and Correlates of Maternal Role Competence and Satisfaction. Nursing Research Vol 59, No. 3. P. 185-193.

Shahshahani S. (2010) Validity and Reliability Determination of Denver Development Screening Test II in 0-6 Year-Olds in Tehran. Iran J. Pediatric. Sep 2010; Vol 20 (No 3), Pp 313-322

Sinto Robert. (2008) Penapisan Perkembangan Anak Usia 6 bulan – 3 tahun dengan Uji Tapis Perkembangan Denver II. Jakarta: Sari Pediatri Vol. 9 No. 5, February 2008

Prawira Y., Tumbelaka, Alhadar, Hendrata, Hidayat, Anderson, Pakasi, Endyarni, Sekartini, (2011) Detection of childhood developmental disorders, behavioral disorders, and depression in a post-earthquake setting. Jakarta: Paediatrica Indonesiana, May 2011. vol 51, no 3, 133-137.

Dhamayanti, M. (2006). Kuesioner Pra Skrining Perkembangan (KPSP) Anak. Sari Pediatri, Vol 8, N0. 1, June 2006; 9-1

Warren, 2007 Warren, SF., Brady NC., (2007) The Role of Maternal Responsivity in the Development of Children With Intellectual Disabilities. Mental Retardation and Developmental Disabilities Research Reviews 13: 330-338. Wiley-Liss, Inc.

Landry, S.H., Smith, K.E., Swank, P.R. (2006) Responsive Parenting: Establishing Early Foundations for Social, Communication, and Independent Problem-Solving Skills. Developmental Psychology 2006, Vol. 42, No. 4, 627–642

Kiernan, K.E, dan Huerta, M.C,. (2008). Economic deprivation, maternal depression, parenting and children's cognitive and emotional development in early childhood, The British Journal of Sociology. Vol 59, Issue 4.

Mashar, R. (2011) Emosi Anak Usia Dini dan Strategi Pengembangannya. Jakarta: Kencana. pp. 7-33

Efendi, A. (2006) Mengembangkan Kecerdasan Emosional Anak melalui Kebiasaan Bercerita (Dongeng), Jurnal Pemikiran Alternatif Kependidikan, Vol. 11, No. 3, Sep-Dec 2006, 328-336, P3M STAIN Purwokerto.

THE EFFECTIVENESS OF RED BETEL LEAF EXTRACT (*Piper crocatum*) AGAINST THE MINIMUM INHIBITORY CONCENTRATION AND MINIMUM BACTERICIDAL CONCENTRATION OF BACTERIA SALMONELLA TYPHI

Moch. Achwandi[1]
1= Institute of Health Science "PPNI Bina Sehat", Mojokerto, Indonesia

ABSTRACT

Incidents rate of typhoid fever in Indonesia was still high which the 600,000-1,500,000 sufferers in a year with CFR was 10%. The high rate of morbidity and mortality mobilized various parties for solving this problem. One of the nurse's roles in this case was providing a nursing care by providing complementary therapy. One of medicinal plants which were empirically used for complementary therapy was red betel leaf (*Piper crocatum*). This research aimed at knowing the effective concentration of red betel leaf extract against minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) of bacteria *Salmonella typhi* by utilizing experimental laboratory approach in invitro by *posttest only control group design*. The red betel leaf was made in extract standardly, then, it was tested on bacteria *Salmonella typhi*. A testing method was conducted in liquid dilution in form of serial dilution by 4 times of repetition. A statistical test that was utilized was *Kruskal-Wallis* test. The research result showed that red betel leaf extract had MIC that could not be determined due to a turbidity of extract suspension and MBC on the concentration of 12.5%. Afterwards, it was concluded that effectiveness of red betel leaf extract against MIC of bacteria *Salmonella typhi* could not be determined. The extract of red betel leaf was effective against MBC of bacteria *Salmonella typhi* Moreover, a dose of effective red betel leaf extract against MBC of bacteria *Salmonella typhi* was in the concentration of 12.5%.

Key words: *Piper crocatum,* minimum inhibitory concentration, minimum bactericidal concentration, *Salmonella typhi*

INTRODUCTION

Typhoid fever was a systemic infectious disease that was caused by *Salmonella typhi* (Simanjuntak, 2009). A mortality rate of typhoid fever in Indonesia was still high with **Case Fatality Rate** in10% (Nainggolan, 2011). The high morbidity and mortality rate due to typhoid fever mobilized various parties for solving this problem. One of nurse's roles in this case was providing a nursing care by providing complementary therapy.

One of medicinal plants which were empirically used as a traditional medicine was red betel (*Piper crocatum*). According to its family, red betel was one genus with betel (*Piper betle linn*). Chemical compounds in red betel were flavonoids, polyphenols, saponins, alkaloids, tannins, and essential oil which were often researched and they contained anti-bacterial effect (Sudewo, 2007). In addition, previous research result showed that red betel leaf extract could inhibit a growth and kill *Staphylococcus aureus* (positive gram) in the concentration of 25% and it also could inhibit a growth and kill *Escherichia coli* (negative gram) in the concentration of 6,25% (Juliantina, et al., 2009).

Escherichia coli had several similarities with *Salmonella typhi*. Furthermore, the problem questions were: Was red betel leaf *(Piper crocatum)* effective in inhibiting a growth and killing *Salmonella typhi*?

However, this research aimed at knowing the effective concentration of red betel leaf extract *(Piper crocatum)* against MIC and MBC of bacteria *Salmonella typhi.*

METHOD

Research Design

This research was experimental laboratory in *invitro* by utilizing posttest only control group design, and by applying dilution method. This method was used in order to know the effective concentration of red betel leaf extract against MIC and MBC of bacteria *Salmonella typhi,* that was conducted in 2 stages: 1) Testing the substances in liquid media for determining MIC, 2) scratching on TSA media (*Tripton Soya Agar*) in order to know MBC.

The given substances test was red betel leaf (*Piper crocatum*) in 2 kg which were taken randomly from the tree. The taken leaves were fresh leaves, not more than 2 months old, not too old/ not yellow. These leaves were taken from betel tree in area Janti village, Jogoroto sub-district, Jombang district, East Java, Indonesia.

The bacterial test that was used was pure cultured **Salmonella typhi** from microbiology and parasitology laboratory, Faculty of Medicine, Muhammadiyah University of Yogyakarta which previously had been conducted some identification tests.

Independent variable in this research was red betel leaf extract with concentration of 50%, 25%, 12,5%, 6,25%, 3,125%, 1,5625%. Meanwhile, the dependent variable was the *Salmonella typhi* growth. In this case, MIC was settled based on turbidity in the tube and MBC was settled based on the number of *Salmonella typhi* colony in TSA media.

Determination of MIC and MBC

First step was preparation of devices and substances, sterilization device, then, producing red betel leaf extract with concentration of 100%. After that, the extract was diluted with comparison of 1 gram of extract with 1 ml of aquades streril (weight/volume), thus, it was obtained preliminary concentration of 50%. Then, it was prepared 8 tubes of reaction and they were given number 1-8. The tube 1 was a dilution result of extract with concentration of 50%. Aquades streril was entered into tube 2-6 which each tube was 1 ml. From tube 1, it was taken 1 ml and entered into tube 2, then, it was mixed until being homogenous. From tube 2, it was taken 1 ml for being entered into tube 3, and etcetera until tube 6 (the smallest concentration). From tube 6, it was taken 1 ml and was entered into tube 7 for being used as negative control. Suspension of *Salmonella typhi* in 1 ml was entered into tube 1- 6, and tube 8 which were later become as positive control. All of the tubes were incubated for 18-24 hours in 37°C. MIC value was determined by looking at the turbidity of all the tubes. By utilizing ose, each tube was taken 1 ose, scratched in TSA media, and incubated in 37°C for 18-24 hours. MBC value was determined by looking at TSA media in petri plate with the smallest extract concentration that still could kill the bacteria and it was signed by there was no colony growth of bacteria *Salmonella typhi*.

Data Analysis

Kruskal-Wallis test was used in order to analyze the difference of bacteria *Salmonella typhi* colony number on giving red betel leaf extract with different concentration. *Mann-Whitney* test was also used in order to analyze the difference of inter group. *Pearson test* was used in order to analyze a strength and correlation direction between red betel leaf extract and colony number of bacteria *Salmonella typhi*.
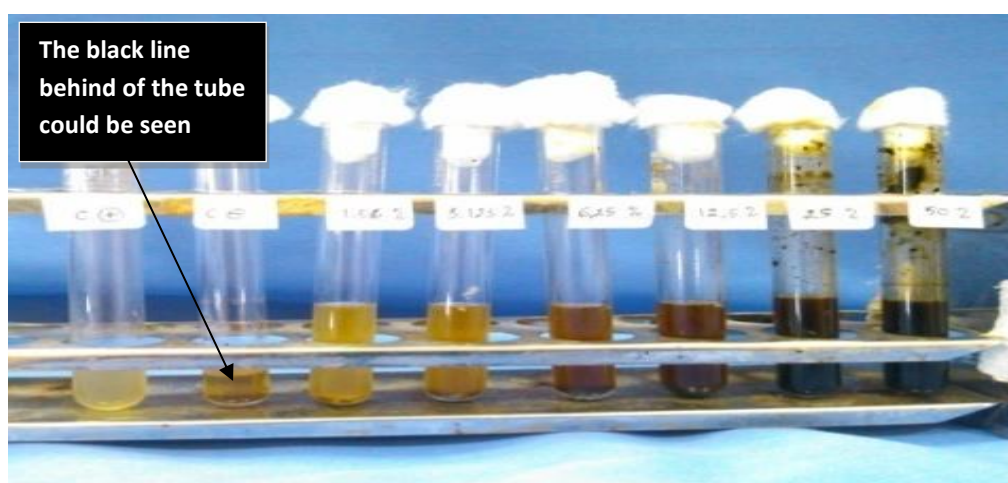
RESULT

Figure 1. The comparison of turbidity level for each red betel leaf extract concentration against bacteria *Salmonella typhi* after being incubated

The observation result on reaction tube after being incubated for 18-24 hours was not seen a black line that was behind of the tube, except in negative (-) control tube. The negative (-) control tube was the clearest, meanwhile, other tubes were looked turbid. The higher the red betel leaf extracts, the more turbid the red betel leaf extracts. The tube that should be with the highest extract was the clearest. This was occurred due to the turbid extract, hence, the highest the concentration, the more increase the turbidity level as in picture 1. Thus, MIC could not be determined qualitatively.

The test result of liquid dilution was conducted by utilizing *streaking* method in TSA media in order to know MBC. After that, it was conducted a calculation of bacteria colony number in each concentration and its repetition by utilizing colony counter device. According to colony number, it was obtained that MBC was in concentration of 12.5%. In that concentration, there was no bacteria growth any more. The highest the red betel leaf extract concentration, the more less the colony number of bacteria *Salmonella typhi* (Table 1).

Table 1. The difference of bacteria *Salmonella typhi* colony number on the giving of red betel leaf extract and different concentration

Concentration of Substances Test (b/v)	Colony Number				Mean
	I	II	III	IV	
0% (positive control)	257	192	245	237	232.75
1.5625%	131	145	120	130	131.5
3.125%	78	77	74	76	76.25
6.25%	32	65	54	68	54.75
12.5%	0	0	0	0	0
25%	0	0	0	0	0
50%	0	0	0	0	0
P (Kruskal-Wallis test)					0.000

Kruskal-Wallis test resulted p value was 0,000 (p<0.05), hence, it could be concluded that "there was minimal one/ more colony number of bacteria *Salmonella typhi* in TSA media, on every treatment".

Table 2. p value of comparison test between two different red betel leaf extract concentration against colony number of bacteria *Salmonella typhi*

Concentration of substances test & the number of colony		0%	1.5625%	3.125%	6.25%	12.5%	25%	50%
		232.75	131.5	76.25	54.75	0	0	0
0%	232.75	-	0.021	0.021	0.021	0.014	0.014	0.014
1.5625%	131.5	0.021	-	0.021	0.021	0.014	0.014	0.014
3.125%	76.25	0.021	0.021	-	0.021	0.014	0.014	0.014
6.25%	54.75	0.014	0.014	0.014	-	0.014	0.014	0.014
12.5%	0	0.014	0.014	0.014	0.014	-	1.000	1.000
25%	0	0.014	0.014	0.014	0.014	1.000	-	1.000
50%	0	0.014	0.014	0.014	0.014	1.000	1.000	-

Mann-Whitney test resulted p value was <0.05, which meant that there was a significant difference of bacteria colony number among all groups for concentration under 12,5%. However, there was no significant difference of colony number above concentration of 12,5%. Moreover, it was meant that after concentration of 12.5%, there was no reduction of colony number if the concentration was increased.

Table 3. The correlation between dependent variable (colony number of bacteria *Salmonella typhi*) and independent variable (red betel extract concentration)

		Colony Mean
Red betel concentration	Pearson Correlation (r)	-0.971[**]
	Sig. (2-tailed) (p)	0.006

Pearson correlation test resulted p value was 0.006 (p<0.05) which meant that there was a significant correlation between both of variables. *Pearson correlation coefficient* (r) showed the value of -0.971 which meant that it showed a very strong correlation. Negative value showed that its correlation was inversely which meant that the higher the red betel leaf extract concentration, the lower the bacteria colony number.

DISCUSSION

Minimum Inhibitory Concentration (MIC)

Effectiveness test of red betel leaf extract (*Piper crocatum*) against MIC and MBC of bacteria *Salmonella typhi* in this research was conducted by dilution method. This method was chosen due to having more benefits rather than diffusion method. Dilution method was more sensitive and more guaranteed the homogeneity of either inter media, substances test, or bacteria suspension. The substances test more interacted easily with the bacteria because the bacteria suspension was spread fairly (Pratiwi, 2008). By this method, it could be known the MIC and MBC against the bacteria.

A turbidity on the concentration of extract 50%, 25%, 12,5% until negative control tube that only filled 1 ml of extract with concentration of 1.5625% without additional bacteria gradually reduced and it started from dark green color until light yellow color. The turbidity that was assumed was caused by saponins content in red betel extract. Some saponins had acid character because there was carboxyl group on aglycone and or sugar group (*Gunawan, 2004*). Protein solubility would increase if it was given over acid treatment. Positive ion in acid would cause protein that contained neutral to be the positive one and it caused its solubility increased, hence, the tube became turbid (*Suhardi, 1992*). Therefore, the difference of a turbidity was not caused by there was or there was no bacteria, instead of the concentration of the extract. The higher the extract concentration, the higher the turbidity level, thus, the MIC could not be determined.

Minimum Bactericidal Concentration (MBC)

Research result showed that the MBC of red betel leaf extract against bacteria *Salmonella typhi* was in the concentration of 12.5%, which in this concentration there was no colony growth of bacteria *Salmonella typhi* any more on four times repetition. *Kruskal-Wallis* test resulted p value was 0.000 (<0.05) which meant that there was one/more differences of bacteria *Salmonella typhi* growth among several concentrations of red betel leaf extract. The correlation test result showed r was - 0.971 (very strong negative correlation), which meant that the higher the red betel extract concentration, the less more the colony number of bacteria *Salmonella typhi* that grew.

The analysis result above proved that the most probability of bacteria *Salmonella typhi* died due to very high red betel extract. Moreover, the red betel contained certain substances that had antimicrobial effect. The substances were Flavonoid, Polyphenol, Alkaloid, Tannin, Saponin, and essential oil (Sudewo, 2007). Flavonoid was an antibacterial substance. The mechanism of this flavonoid was damaging the bacterial cell wall, microsomes and lysosome as interaction result between flavonoid and DNA bacteria. Besides, the availability of hydroxyl group in structure of flavonoid compound caused organic component change and nutrition transport to the disturbed bacteria (Sabir, 2005). In addition, flavonoid content in red betel extract could inhibit *topoisomerase II* enzyme (DNA gyrase). This enzyme was an important enzyme in the replication process and transcription of DNA bacteria. The inhibition of *topoisomerase II* enzyme would impact on the inhibition of either replication process or transcription of DNA bacteria (Santoso, et al., 2011).

Polyphenolic was coagular against protein (Dwidjoseputro, 1994). *Salmonella typhi* cell wall was composed from peptidoglycan. Basic structure of peptidoglycan was a sheath that covered cell which was composed by threads of peptidoglycan which was side by side one another and was connected with crosslinking of tetra peptide that was made from amino acid (Miller & Pegues, 2000). The coagular from this polyphenolic would cause the surface of the bacteria *Salmonella typhi* cell wall became wrinkled and finally, it damaged. Alkaloid also disturbed the constituent component of peptidoglycan cell, hence, it would not be formed intact. Polyphenolic and alkaloid would cause wall damage of bacteria *Salmonella typhi* and the bacteria would die.

Santoso (2011) explained that tannin that was also owned by red betel extract had spasmolytic character. It was assumed that it could wrinkle the cell wall or cell membrane, thus, it disturbed the cell

permeability itself. The effect of disturbed permeability, the cell could not do life activity, hence, its growth was inhibited or even died. Tannin was also assumed to be able to inhibit bacterial growth by activating the enzyme. If the enzyme work was disturbed in defending continuity bacterial activity, it would cause the enzyme needed much energy for its activity. As the consequence, the growth energy became less, thus, microbial activity inhibited and became lysis if it was in long time (Santoso, et al., 2011).

Saponin worked to reduce surface tension and damaged cell wall. Essential oil would disturb the process of the form of cell wall, hence, it was not formed, or if it was formed, it would form imperfectly. The damage on cell wall caused cell membrane did not have a protection that impacted on the loss of semi permeability character of the cell membrane (Rahmanto, et al., 2013). Furthermore, it would cause inflow some substances such as water, and the enzymes were not selected. Further effect was the disturbance of cell metabolism, thus, the process of ATP form for cell growth inhibited. If this process continued, it would cause bacterial cell death.

Moreover, this research showed that red betel leaf extract had anti-bacterial power against bacteria *Salmonella typhi* in *invitro*. The anti-bacterial test by utilizing liquid dilution method showed MBC result was in the concentration of 12.5%. This statement was supported by previous conducted research by Juliantina. et al. (2009) who stated that red betel leaf extract (*Piper crocatum*) had an ability in inhibiting the growth and killing bacteria of positive gram by bacterial test of *Staphylococcus aureus* in the concentration of 25% and an ability in inhibiting growth and killing bacteria of negative gram by bacterial test of *Escherichia coli* in the concentration of 6.25%. Another conducted research by Mutmainah (2012) regarding the effect of giving red betel leaf extract (*Piper crocatum*) against histopathology illustration of incision wound of white mice's skin that was infected by *Staphylococcus aurius* and conducted research by Kusuma (2011) regarding effectiveness test of red betel leaf extract (*Piper crocatum*) against bacteria *Aeromonas hidrophila* in *invitro* also strengthened this research result. This case showed that red betel leaf extract (*Piper crocatum*) had anti-bacterial active substances. including in *Salmonella typhi.*

Production of red betel leaf extract (*Piper crocatum*) in this research utilized ethanol dissolver in 70%. The ethanol extract had stronger anti-microbial activity rather than water extract. Suksmawan. et al. (2004) had proven in the research of microbial activity test either in ethanol extracts or water extracts of ketapang leaf (*Terminalia catappa L.. Combretaceae).* All of the ethanol extracts and water extracts in ketapang leaf showed that there was a microbial activity. However. inhibition diameter of ethanol extract in ketapang leaf was bigger rather than water extract in the ketapang leaf. It meant that ethanol extract had stronger activity if it was compared with water extract.

Reveny (2011) explained in her research about antimicrobial power of red betel leaf extract and fraction that ethanol extract had stronger antimicrobial activity rather than ethanol fraction and n-hexane fraction, meanwhile, water fraction was not effective. That opinion strengthened that selection of extract production with ethanol had better antimicrobial activity rather than either water extract, ethanol fraction, n-hexane fraction, or water fraction.

A research about inhibitory power and bactericidal power of red betel leaf extract (*Piper crocatum*) against bacteria *Salmonella typhi* by liquid dilution method could be proven in *invitro,* nevertheless, based on research stages of drug screening, it had not been able to be used directly as standard drug for complementary therapy on typhoid patient because there were some differences of condition between *in vitro* and *in vivo.*

CONCLUSION AND SUGGESTION

According to this research result, it could be concluded that :
1. Effectiveness of red betel leaf extract *(Piper crocatum)* against MIC of bacteria *Salmonella typhi* could not be determined.
2. Red betel leaf extract (*Piper crocatum*) was effective against MBC of bacteria *Salmonella typhi.*
3. Dose of red betel leaf extract *(Piper crocatum)* that was effective against MBC of bacteria *Salmonella typhi* was in the concentration of 12.5%.

Based on the conclusion above, it was suggested that: 1) it was needed to be conducted further research in *invivo* on either experimental animal or probandus because there was difference of condition in either *invitro* or *in vivo,* 2) Further research was very needed, hence, the use of red betel leaf extract (*Piper crocatum*) for alternative complementary therapy on typhoid patient could be realized as soon as possible.

REFERENCES

Dwidjoseputro D. 1994. Dasar-Dasar Mikrobiologi. Djambatan, Jakarta.

Gunawan Didik, (2004). Ilmu Obat Alam (Farmakognosi) Jilid I. Penebar Swadaya. Jakarta.

Juliantina R Farida, Dewa Ayu Citra, Bunga Nirwani, dkk, (2009). Manfaat Sirih merah (Piper crocatum) sebagai Agen Bakterial terhadap Bakteri Gram Positif dan Bakteri Gram Negatif. Jurnal kedokteran dan Kesehatan Indonesia 1(1). Accessed on 28th September 2013 at 16.28 from http://journal.uii.ac.id/index.php/JKKI.

Kusuma Ratih W., (2011). Uji efektifitas ekstrak daun sirih merah (Piper crocatum) terhadap bakteri Aeromonas hidrophila secara invitro. Universitas Airlangga, Surabaya: Artikel ilmiah.

Miller SI, Pegues DA., (2000). Salmonella species, including Salmonella typhi. In: Mandell, Douglas, and Bennetts's Principles and Practice of Infectious disease, 5th ed. Mandel GL, Bennett JE, Dorlin R (editors). Churchill Livingstone.

Mutmainnah A. 2012. Pengaruh pemberian ekstrak daun sirih merah (Piper Crocatum) terhadap gambaran histopatologi luka insisi kulit tikus putih yang terinfeksi Staphylococcus Aurius. Universitas Airlangga Surabaya: Artikel Ilmiah.

Nainggolan, R. 2011. Karakteristik Penderita Demam Tifoid. Medan: Public Health Faculty, North Sumatera University.

Pratiwi, ST. (2008). Mikrobiologi Farmasi.Erlangga. Jakarta

Rahmanto kholil, Utami Sri Hastuti, Agug Witjoro, 2013. Pengaruh ekstrak daun sanseviera (Sanseviera trifasciata var laurentis) terhadap penghambatan Staphyilococcus aureus dan Escherichia coli secara in vitro. Accessed on 7th January 2014 at 13.20.

Reveny J. (2011). Daya antimikroba ekstrak dan fraksi daun sirih merah (Piper betle Linn), Jurnal ILMU DASAR, January 2011; 12(1): 6-12, Faculty of Pharmacy North Sumatera University. Accessed on 16th March 2014 at 13.15. from http://jurnal.unej.ac.id/index.php/JID/ article/download/79/56.

Sabir Ardo, 2005. Aktivitas antibakteri flavonoid propolis Trigona sp terhadap bakteri Streptococcus mutans (in vitro). http://ml.scribd.com/ doc/94817415/Aktivitas-Antibakteri-Flavonoid-Propolis-Trigona-Sp-Terhadap-Bakteri. Accessed on 26th april 2014 at 10.57.

Santoso Sanarto, Rita Rosita, Debby Sartika Mahardhika, 2011. Uji efektifitas ekstrak sirih merah (Piper crocatum) sebagai antimikroba terhadap bakteri Klebsiella pneumonia. http://old.fk.ub.ac.id. Accessed on 14th February 2014 at 14.30.

Santoso Sanarto, Soemardini, Novia Lucy Rusmayanti, (2011). Ekstrak etanol daun kersen (Muntingia calabura) sebagai antimikroba terhadap bakteri Salmonella typhi secara in vitro. Accessed om 14th February 2014 at 14.25 from http://old.fk.ub.ac.id.

Simanjuntak, C. H, 2009. Demam Tifoid, Epidemiologi dan Perkembangan Penelitian. Cermin Dunia Kedokteran No. 83.

Sudewo, B. 2007. Basmi Penyakit dengan Sirih Merah. Agromedia Pustaka. Jakarta

Suhardi, 1992. Khitin dan Khitosan. Pusat Antar Universitas Pangan dan Gizi UGM, Yogyakarta.

Suksmawan Rudhy, Asep Gana S, Elin Yulinah S, (2004). Uji Potensi Antimikroba Ekstrak Daun Ketapang (Terminalia catappa L.), Sekolah Farmasi ITB. Accessed on 19th March 2014 at 10.25 from http://bahan-alam.fa.itb.ac.id.

ADVERSITY QUOTIENTS AS THE DETERMINANT OF COLLEGE STUDENT'S SELF-ACTUALIZATION ABILITY IN STUDENT EXECUTIVE BOARD (BEM) MEMBERS

Byba Melda Suhita[1], Devi Prista Prawisudiarko[1]

1= Institute of Health Science "Surya Mitra Husada", Kediri, Indonesia

E-mail: bybamelda@yahoo.co.id

ABSTRACT

Adversity quotient was one of important factors in someone's achievement by changing pressure into opportunity. This condition was mostly found in students who were involved in Student Executive Board (BEM-Badan Eksekutif Mahasiswa) activities, particularly in a self-actualization. The aim of this research was to know the correlation between adversity quotients and college students' self-actualization ability as the member of Student Executive Board (BEM). This research applied a cross sectional design. The subjects of this research were 33 college students of BEM member of Surya Mitra Husada Health Science Institute Kediri who were chosen by using purposive sampling technique. The collected data was analyzed by using spearman rank correlation test. The result of the analysis showed that a value of p was 0.003 (< 0.05). Thus, it could be concluded that there was a significant correlation between adversity quotient and self-individualization ability in college students of BEM member.

Keywords: Adversity quotient, self-actualization, student

INTRODUCTION

Students included in early adulthood were between 18-40 years (Hurlock, 2012). In this period, habit, hope, demand, ambition, need, interest, and any aspects of life were full of a high idealism. Students' life was always dynamic and colored by any problems either light or heavy. These problems were sourced from self or the environment. The form of the problem which was faced by the students, such as failing to undergo the process of learning, not obtaining the expected mark, being too fatigue to undergo the lecturing activities or other difficult problems which made someone felt so inert. When facing those kinds of problems, usually feeling of disappointed, sad, angry, shame, afraid, hopeless, meaningless, inferiority, and other negative feeling might emerge(Hutasoit,2009).One of students groups who had more activities than others were the students involved in either intra-campus or extra-campus, for instance Student Executive Board (BEM). Besides having more activities, the students who were involved in BEM tended to have more opportunities in actualizing themselves generally in society which was among academicians in university (Ferdiansyah, 2011). This actualization was organizing the activities together with other fellow students and conducting several bargaining with the managements of university or other parties outside university (Herlambang, 2009).

Harmani (2012) reported that 27.4% of students were involved in BEM and they had the ability to do the organization job in BEM. Moreover, it was supported by Hasibuan (2012) who stated that in Padjajaran University, Bandung, 27% of the students were involved in inter-campus organization and 82% among them faced an barrier in lecturing, so they would decrease on their semester, even 12% among them had been dropped out. Nurmala (2012) reported that among BEM members in faculty of Psychology, UMS Surakarta, 42% of them had difficulty in self-actualization, particularly in relation with the academic problem, meanwhile, their self-actualization for non-academic field was pretty good. The result of previous study in IIK showed that BEM was less in actualizing themselves well, for instance in distributing students' aspiration regarding the academic conditions in the university. BEM tended to only be a tool for either the institute or the academic campus in order to show both existences, for example conducting an activity that showed more either institute role or academic role such as in dies natalies (institute anniversary/ campus anniversary) activity in which BEM did not have role independently instead of only following the direction from either the institute or academic campus. Based on the result of preliminary study which was among 33BEM members in Bhakti Wiyata Health Science Institute Kediri in 2016/2017, the students total who had GPA > 3.5 were 2 students, GPA 3.0-3.5 were 17 students, and GPA < 3.0 were 14 students.

In responding the problems, everyone had their own way to solve it. Hence, there was a failure and a success. The BEM members who had authority in conducting student activities in the university needed the ability in good self-actualization that was in accordance with the environmental needs and could support the invironment. In this case, the students inside the university were expected to actively participate in any BEM activities. Some obstacles might be occurred, such as there was a resistant from the target which came from among fellow students, the managements of campus, and even the family.

The ability to overcome the problems and change the obstacle into an opportunity for achieving the goal was known as adversity quotient (Suryabrata, 2009).

Adversity quotient was one of the important factors in achieving someone's achievement. Adversity quotient was one of the abilities to change the obstacle into opportunity in achieving a certain goal. In this sense, the definition of changing obstacle was that the individual was able to organize, solve, and respond the problems. According to Stotlz (2000), someone who was able to change the obstacle into opportunity was someone who would be able to fight in any situations to achieve success.

Adversity quotient was the basis for all aspects of success, including someone's career and life. Someone who had high adversity quotient would be able to enjoy much productivity, performance, vitality, tenacity, health, knowledge, improvement, motivation, and success by continually stuggling for facing the rising problem and having desire to develop, as the form of self-actualization. By having high adversity quotient, someone would be able to solve the obstacles or problems that emerged in their life. It could be the problem of the students, who faced in the process of learning education. Conversely, someone who had low adversity quotient would be weak, hopeless, and pessimistic when they overcame any obstacles or other miseries. These attitudes were obviously not a success (Stoltz, 2000).

A self-actualization ability of the students who involved in BEM was the form an effort to fulfill the highest need of life. The need of self-actualization encompassed self-fulfillment, awareness of their self-potential, and desire to be as active as possible (Maslow, 1970). People who had reached self-actualization level to become whole human fulfilled the needs that other people only saw at a glance even did not ever see at all. Furthermore, they were so natural and as natural as an animal or baby which they expressed their basic needs and did not let themselves under the cultural pressure. Maslow in Feist (2010) stated that people who had self- actualization were motivated by eternal varieties which were known as B values (Being values). This Being value (life) was an indicator of psychological health and the opposite from deficiency needs which motivated non-actualization people. The B values were not the similar needs as food, protection, or friendship. Maslow embedded the B values as the Metaneed to show that these values were the highest level of the needs. He distinguished the motivation based on the usual needs and the motivation from people who actualized themselves (Globe, 2010).

An effort to enhance students, who were involved in BEM in showing their existence, should be conducted a control for deciding who was involved in BEM. For example, college students who were academically poor should not obtain a support in involving BEM activity because it would alienate the college student's concentration in doing main duty for learning at college (Susanto, 2010). Certain treatment also should be given to BEM students (*Student Executive Board),* particularly for those who were involved in BEM activities that could support the increase of campus value, such as involving several competitions among the students, thus, the involved college students in BEM were not afraid for losing their academic achievements (Yulian, 2011).

METHOD

This research was purposed to analyze the correlation between adversity quotient and a self-actualization ability of BEM members of Bhakti Wiyata Health Science Institute, Kediri, East Java-Indonesia. This research used cross sectional design. The population of the research was all students of BEM members of Bhakti Wiyata Health Science Institute Kediri in academic year of 2016/ 2017. The samples were 31 students who were chosen by using purposive sampling technique. The data was collected by filling questioners; then, it was analyzed by using spearman correlation test.

RESULT

Table 1. Adversity quotient of the BEM member

No.	Adversity quotient	Frequency	%
1	Low	0	0,0
2	Quite low	0	0,0
3	Medium	19	61,3
4	High enough	12	38,7
5	High	0	0,0
	Total	31	100,0

Based on table 1, it was known that most of respondents had adversity quotient in medium category (61.3%).

Table 2. Self-actualization ability on BEM Members

No.	Self-actualization ability	Frequency	%
1	Less	0	0,0
2	Enough	20	64,5
3	Good	11	35,5
	Total	31	100,0

Based on table 1, it was known that most of respondents had self-actualization ability in enough category (64,5%).

The result of spearman rank correlation test showed that p value was 0,003 (<0,05). Thus, it could be concluded that there was a significant correlation between adversity quotient and self-actualization ability on BEM members of Bhakti Wiyata Health Science Institute, Kediri. The correlation coefficient value was (r)= 0,518. Then, it could be interpreted that there was a cohesive correlation between adversity quotient and self-actualization ability which was in medium category.

DISCUSSION

Adversity Quotient on BEM Members

Adversity quotient of BEM members of Bhakti Wiyata Health Science Institute , Kediri was in medium category. It meant that the students could defend well when it was occurred a difficulty. However, when the difficulty increased, the students would be exhaustion and would decide to quit.

Those difficulties which were faced by students were influenced by students' low adaptation. The effect of low self-adaptation was the lack of social interaction, the ability to control emotion, the inferiority feeling, the underappreciated feeling, aloof, and emerging either frustration, conflict, or anxiety (Drajat, 2010). Stoltz (2005) explained that someone who had high AQ, he/she would never be afraid in facing any obstacles in the process to achieve success. Moreover, he/she would be able to change the obstacles into an opportunity. Meanwhile, someone who had low AQ which correlated to low endurance and low self-esteem would have difficulty to see the wisdom behind all the problems. When the others were more successful, they would feel so useless. It was difficult for them to have relation with others. Fitriany (2008) proved that people who did not respond well the difficulty, they were not productive, and their performance was worse if they were compared with those who responded well the difficulty.

The result of the study showed that adversity quotient of BEM members of Bhakti Wiyata Health Science Institute Kediri was in a medium category due to many factors. Most of the BEM members were local students (Kediri and its surrounding), thus, the obstacle that they faced was smaller. The students' involvement in BEM could give much experience in overcoming the problems, hence, it would form a good adversity quotient. An individual who reacted constructively the difficulty was smarter in mainting the energy, focus, and having more power to success in competition. People who reacted destructively tended to lose the energy and be easy to stop trying. Competition was mostly connected to hope, agility, and tenacity which massively were determined by someone's way in facing the obstacle and failure in life.

The result of the research showed that BEM members tended to face huge pressure because they must organize BEM but still had to attend the lecture. This became the way for them to control themselves well and to manage the pressure into a benefit.

Self-Actualization Ability of the BEM Members

Self-actualization ability of BEM members (Student Executive Board Member) of Bhakti Wiyata Health Science Institute Kediri was mostly in enough categories. Self-actualization was the needs to do something based on their talents and harness the potential of self-growth and self-development as maximal as possible (Handoko, 2010). Someone who could actualize himself/ herself was more able to see that his/her potential was better and he/she accepted the condition around spontaneously. Self-actualization was the way of someone to use skill, ability, and potential maximally to obtain work achievement in which the individual or organization was eager to achieve. On other hand, if someone was not able to actualize him/herself, high performance could not be achieved (Ruky, 2011). According to Maslow, self-actualization was the high level of human's basic need (Poduskan, 2008).

Most of BEM members had self-actualization in enough categories. Moreover, it was because they generally had busier activity rather than those who were not the BEM member. Nevertheless, they also found difficulty in actualizing themselves in the academic context. Meanwhile, in social context, their self-actualization tended to be better because their time was more in student activity. One of the factors that influenced the achievement of self-actualization was motivation. When the motivation decreased, sometimes they felt difficult to achieve their wants. Self-actualization referred to the tendency of organism to grow from a simply creatures to a complex one, then, from dependence to independence, and from fixation and stiffness to the process of transformation and freedom of expression.

The Correlation between Adversity Quotient and Self-Actualization Ability of BEM Members

The result of the research showed that there was a significant correlation between adversity quotient and self-actualization ability in BEM members of Bhakti Wiyata Health Science Institute, Kediri. Self-actualization ability of the students who involved in BEM was the effort to fulfill high life. The needs of self-actualization encompassed self-fulfillment, the awareness of self-potential, and the desire to be as creative as possible (Maslow, 1970). People who had reached self-actualization level to become whole human fulfilled the needs that other people only saw at a glance even did not ever see at all. Furthermore, they were so natural and as natural as an animal or baby which they expressed their basic needs and did not let themselves under the cultural pressure. Maslow in Feist (2010) stated that people who actualized themselves were motivated by Eternal Verities principle, which was known as the B values (Being values). This Being value (life) was an indicator of psychological health and the opposite of deficiency needs which motivated non-actualization people. The B values were not the similar needs as food, protection, or friendship. Maslow embedded the B values as the Metaneed to show that these values were the highest level of the needs. He distinguished the motivation based on the usual needs and the motivation from people who actualized themselves (Globe, 2010).

The research result that showed that there was the significant correlation was caused by the adversity quotient which was the form of someone's ability to do an exact action when they got pressure. This ability would become a supporting factor for students who became BEM members to actualize themselves positively. The needs of self-actualization were pivotal to the development of an individual; since with the good self-actualization, an individual could develop his/her skills and potential optimally. When someone had a poor self-actualization, he/she would have an obstacle in developing his/her skills and potential optimally. Moreover, there was a respondent who had less category of self-actualization. It was because they did not have a good way in organizing the psychological pressure. Someone who had high (good) self-actualization would be adaptive in facing the pressure and in maximizing the potential. One of the individual characteristic who had high self-esteem was that she/he was less burdened with doubt and fear. They accepted the difference in competence level, including academic performance, friendships, and personal pursuits. The inferior person tended to place a guilty feeling which was actually not necessary for all the worse occurrences which were occurred, looking at him/herself as the cause of a problem. Moreover, a guilty feeling could help a person to learn by tending to contemplate him/herself, learn and adapt his/her behavior. Guilty feeling also could lead to a regretting by looking at the attitude that had hurt other people. Questioning to ourselves was important and effective; but it was only to a certain extent that did not exceed on individual's role in causing problem. Someone who had high AQ would not avoid bad events, would always blame the others, and would not learn anything.

CONCLUSION

Based on the result of the research, it could be concluded that self-actualization ability of BEM members of Bhakti Wiyata Health Science Institute, Kediri, East Java-Indonesia was determined by their own adversity quotient.

REFERENCES

Ahmaini, Dini. 2010. Perbedaan Prokrastinasi Akademik Antara Mahasiswa yang Aktif dengan yang Tidak Aktif dalam Organisasi Kemahasiswaan PEMA USU. North Sumatra University: Faculty of Psychology.

Andi, 2010. Mengolah Data Statistik Hasil Penelitian Dengan SPSS 17, 1 edition,. Yogyakarta: C.V ANDI OFFSET.

Arianto, 2009. Penilaian Hasil Belajar Mengajar. Bandung: PT Remaja Rosdakarya.

Arikunto S, 2006. Prosedur Penelitian Suatu Pendekatan Praktik, Ed Revisi VI. Jakarta: Penerbit PT Rineka Cipta.

Asmadi. 2008 . Konsep Dasar Keperawatan. Jakarta : EGC

Darwis, S. D. 2006. Metode Penelitian Kebidanan Prosedur Kebijakan & Etik. Jakarta: EGC.

Feist, J and Feist, J.G.2010. Teori Kepribadian, Edisi 7. Jakarta : Salemba Humanika

Ginanjar, Ari. 2001 Rahasia Sukses Membangun Kecerdasan Emosional dan Spiritual. Jakarta: Arga

Hasibuan, Malayu. 2012. Manajemen Sumber Daya Manusia. Jakarta: PT. Bumi Aksara

Hawadi. 2008. Psikologi perkembangan anak mengenal sifat, bakat, dan kemampuan anak. Jakarta: Grasindo.

Hidayat, A. Aziz Alimul. 2008. Pengantar Konsep Dasar Keperawatan. Jakarta: Salemba Medika

Hurlock, E.B. 2012. Psikologi Perkembangan: Suatu Pendekatan Sepanjang Rentang Kehidupan . Edisi Kelima. Alih Bahasa: Istiwidayanti dan Soedjarwo. Jakarta: Erlangga

Hutasoit. 2009. Pelayanan Publik Teori dan Aplikasi. Jakarta: MagnaScript. Publishing

Kartono, 2006. Pemimpin dan Kepemimpinan. Jakarta: PT. Rajagrafindo Persada.

Leman. 2007. Memahami Adversity quotient. Anima Indonesian Psychological Journal.

Monks, F.J. et al., 2006: Psikologi Perkembangan : Pengantar dalam Berbagai Bagiannya. Yogyakarta: Gajah Mada University Press

Nashori. 2007. Pelatihan Adversity Intelegence untuk Meningkatkan Kebermaknaan Hidup Remaja Panti Asuhan. Jurnal Psikologi No.23 Thn XII January 2007

Notoatmodjo, S. 2007. Promosi Kesehatan dan Ilmu Perilaku. Jakarta: Rineka Cipta

Notoatmodjo, S. 2010. Metodologi Penelitian Kesehatan. Jakarta : Rineka Cipta.

Nursalam. 2008. Konsep dan Penerapan Metodologi Penelitian Ilmu Keperawatan. Jakarta : Salemba Medika

Papalia, D. E. Et al. 2007. Adult Development and Aging 3rded.. New York: Mc. Graw Hill Companies, Inc

Poduska, Bernard. 2008. 4 Teori Kepribadian Eksistensialis, Behavioris, Psikoanalitik, Aktualisasi diri. Jakarta: Restu Agung.Alwisol, 2009

Rahmawati, Ade. 2006. Motivasi Berprestasi Mahasiswa Ditinjau Dari Pola Asuh. Tesis Jurusan Psikologi. Faculty of Medicine USU. Medan

Stoltz. 2008. Adversity Advantage Mengubah Masalah Menjadi Berkah. Jakarta: Gramedia

Sudrajat, Akhmad. 2008. Pengertian Pendekatan, Strategi, Metode, Teknik dan. Model Pembelajaran. Bandung : Sinar Baru Algensindo

Sugiyono.2010. Metode Penelitian Kuantitatif Kualitatif & RND. Bandung: Alfabeta

Suryabrata, Sumadi. 2009. Psikologi Kepribadian. Jakarta : Raja Grafindo Persada

Suryabrata. 2006. Psikologi Pendidikan. Jakarta: PT Raja Grafindo

Takwin, B. 2008. Menjadi Mahasiswa. [on-line]. Accessed on 30th October 2010. Available FTP: bagustakwin.multiply.com

THE NECESSITY OF DEVELOPING THE EFFECTIVE COPING MECHANISM FOR WOMEN IN PENITENTIARY

Sabina Gero[1]

1= Department of Nursing, Health Polytechnic of Ministry of Health in Kupang, Indonesia

E-mail: bina_gero@yahoo.co.id

ABSTRACT

A woman who was in penitentiary (*LAPAS, Lembaga Pemasyarakatan)* needed to adapt herself either physically, psychologically, spiritually, or socially. This adaptation needed effective coping mechanism so that she could be success in facing difficult period in penitentiary. This research aimed at exploring the thought, feeling, and response from the woman who was in penitentiary in defending her mental health by utilizing qualitative approach. Moreover, the respondents were 51 female prisoners in female penitentiary in class III. Ecological-Psychological design with experimental research was utilized in this research in order to describe how woman defended her mental health during in the penitentiary (*LAPAS, Lembaga Pemasyarakatan).* The respondents wrote their thought, feeling, and response of act regarding their thought and feeling during in penitentiary to be analyzed. The female prisoners stated easily their thought and feeling rather than their response of act during in penitentiary. The female prisoners who stated their thought was in 70.6%, their feeling was in 76.5%, and their response of act was in 31.4%. The easier the someone stated her thought, feeling, and response of act, the easier to know the pattern of coping mechanism. The thought, feeling, and positive response of act were only less explored. Moreover, the thought was such as yearning for their children, yearning for their family, and yearning for their husband. The feeling was such as yearning for their home and yearning for feeling happy. Meanwhile, the response of acts were such as praying and surrendering to God, asking help to pray to the other people, doing good things to the friends, and accepting the situation recently. The female prisoners' thought, feeling, and response of act during in penitentiary were more negative. Therefore, the coping pattern that was developed was not effective. The coping that was not effective could defend less someone's mental health.

Keywords: Women, penitentiary (*Lembaga Pemasyarakatan (lapas)*), and Coping Mechanism

INTRODUCTION

A person who was in penitentiary or jail was an unpleasant condition for everybody. Person who was in jail was confined and his/her freedom was limited by some regulations because this person was undergoing rehabilitation process. Penitentiary *(Lembaga Pemasyarakatan (lapas))* was a place for conducting a development for adult prisoners and prison students (teenager prisoners) (UU No. 6 in 2013 regarding the rules of penitentiary *(Lembaga Pemasyarakatan (lapas))* and national house of detention (*Rutan, Rumah Tahanan Negara)).* A prisoner was a convicted person who underwent a crime and loss of his/her freedom in penitentiary. Every prisoner must obey the regulation in penitentiary. The penitentiary regulation included obligation and prohibition. There were 7 (seven) obligations there, such as joining all activities which were programmed, wearing certain uniform that was decided, and many others. Meanwhile, there were 22 points of prohibition, such as no immoral acts and/ or sexual deviation, no escaping and helping an escape, and many others.

According to nursing concept, human was consisted of physical/biological dimension, psychological/mental dimension, social and spiritual dimension, and was a holistic and unique unity. A person who was in jail underwent a pressure and psychological/mental stress that could threaten mental health. The meaning of mental health according to UU No.18 in 2014 was an individual condition that could develop physically, mentally, spiritually, and socially, thus, the individual realized his/her own ability, could overcome the pressure, could work productively, and could give contribution for his/her community. From the explanation about prisoner and mental health above, it could be concluded that prisoner faced some conditions that hindered him/herself to develop physically, mentally, spiritually, and socially for developing his/her ability, overcoming the pressure, working productively, and giving contribution for his/her community. A paradox was between fulfilling mental health needs as a prisoner with regulation and disciplines in penitentiary. The community during at penitentiary was among the prisoners. Defending mental health was important to be attempted for passing punishment time. The major effort was through development and management of coping mechanism in him/herself effectively.

Coping mechanism was someone's way to defend mental/psychological balance to face various stress and pressure. The form of coping mechanism was such as unconscious behavior to give psychological protection against some tense things (Potter P. & Griffin A, 2005). Coping was cognitive

and motoric activities which were done constantly in the effort of overcoming internal demands and self-external that more exhausted, even, it could need much energy in him/herself. Coping mechanism limited a damage or self-psychological problem (Gail W. Stuart. 2006). Coping could be identified through either psychological response or physical response. The effective coping resulted adaptation, meanwhile, ineffective coping could cause maladaptive behavior. The mechanism of ego coping was more in deceiving him/herself toward the reality. Meanwhile, the mechanism of constructive coping or healthy coping was such as rationalization, objectivity, concentration, humor, suppression, ambiguity, and empathy. The best form of self-adaptation rather than constructive coping was anticipation or mental readiness for accepting stimulation, affiliation, or the needs for relating with other people, altruism, and emphasizing other people's interest, self-affirmation or expressing the feeling and thought directly, self-observation, or self-testing objectively or self-introspection (APA, 2016).

Indonesia placed in tenth rank of the most number of prisoners in the world. Ratio of Indonesian prisoner number was in position of 180 with the ratio of 67 people for every 100.000 population. The female prisoners were in 84th rank. The number of prisoner population increased in 20% since in 2000. The total of female population as prisoners increased in 50%. Proportion of women and daughters in population total of female jail increased in 5.4% since in 2000, and recently, it increased again in 6,8% (www.mantannapi.com). Moreover, there were 93 female prisoners in female penitentiary in class III Kupang-Indonesia and this was over the capacity which was 186%. The great number of prisoners had potency to disturb the pleasantness and this could increase prisoner's stress (Correctional Database System, 2017).

Several of human types could meet each other in penitentiary. Besides, they also did not know each other, strange situation, all in limitation, and there was no significant difference among the prisoners. Rahmat (2015) reported that new system of prisoner development viewed them as either subject or object. As the subject of prisoner was the God's creature with his/her unique individually, meanwhile, as object of prisoner was viewed differently in development in accordance with the classification that was made in penitentiary. The prisoners would be developed, thus, after finishing punishment time, they would become good man/woman and be responsible man/woman, realizing his/her mistake, and would not act that violated the law. The development of human civilization, including human rights, influenced the development way of the prisoners in penitentiary recently.

Person who was in penitentiary was not a person with psychiatric problems (*Orang Dalam Masalah Kejiwaan (*ODMK)), but he/she had risk to become ODMK. Therefore, in Indonesian regulation (Undang-undang regarding Mental Health), it was explained that there was an effort of health promotion in penitentiary as one of promotion targets of mental health. Completely, it was explained more in chapter 8 verse (9) regarding promotive effort in penitentiary and jail institution that was conducted in : a. The increase of knowledge and understanding from the prisoners regarding mental health; b. Development of adaptation ability in society; and c. Creating conducive life situation for the prisoners' mental health.

A penitentiary especially for women had own uniqueness. The women who became prisoners had different life from the previous life. The female prisoner underwent many losses such as loss of children and family, loss of self-control, loss of model, and loss of support. Besides, the female prisoner underwent loss of relation with the opposite sex, loss of having rights to get service, property rights, loss of security, and much more. The process of this loss forced them to adapt for surviving in new environment (Meilina Clara Pricilla, 2013).

This research aimed at describing thought, feeling, and response of act (physics) as coping mechanism of female prisoners who were in penitentiary in defending meantal health. Besides, it also aimed at identifying either effective coping mechanism or non-effective coping mechanism on female prisoners who were in female penitentiary of class III, Kupang- East Nusa Tenggara, Indonesia.

METHOD

This qualitative research utilized ecological-psychological method through field study. The data was obtained from 51 women as the respondents through observation and essay writing in female penitentiary of class III Kupang, East Nusa Tenggara, Indonesia in October 2016. The thought, feeling, and response of act were written in paper, then, they were collected by the researcher. Analysis was conducted by listing the respondents' thought, feeling, and response of act (physics); categorizing themes of thought, feeling, and response of act whether they were in positive or negative; analyzing the data by comparing among positive themes and negative themes from the thought, feeling, and response of act with theory of coping mechanism.

RESULT

Table 1. Respondents' thought (positive and negative) in Female Penitentiary of Class III Kupang, East Nusa Tenggara, Indonesia in 2016

Theme of Positive Thought	Theme of Negative Thought
Remembering/ thinking the children : 16	Postponed court trial, had not accepted the decision:: 2
Yearning for home situation: 2	There was sick family member
Yearning for husband: 7	No seeing children and parents
Yearning for family: 8	No calling: 2
Pleasant with opened friend	No being visited by husband : 2
Wanting to back home: 2	Being Unable for reading and writing
Surrendering to the God	No money
	No seeing with the family due to situation and condition
	Sick mother
	Thinking of the prisoner: the length of punishment verdict that would be undergone
	The free friends but she was not so
	In break, eating eggs, salted fish, eggplants, and food that had been eaten in years
	Having heavy weight
	Being angry to husband: "due to the husbands, she was punished 8 years"
	Never being invited by either my family or my husband's family
	All things were occurred in contrast with what I had wanted
	Many thoughts due to far distance from the family
	The children who did not visit : 2
	Being manipulated by the superior and being not helped
	Thinking of when I could be out from the trouble
	The occupation after being out from the jail
	Waste water

Analysis: The woman's positive thought who was in penitentiary, first was thinking of children, family, and husband. Home situation and wanting to back home also obtained attention. Surrendering to the God obtained last rank and was only written by a prisoner. The prisoner wrote herself to think for always surrendering to the God and to increase personal pray. The most number of negative thought were such as the court trial that was postponed, thus, there had not a decision, no calling, and children never visited or looking at her mother.

Table 2. Respondents' Feeling (positive and negative) in Female Penitentiary of class III Kupang, East Nusa Tenggara, Indonesia in 2016

Theme of Positive Feeling	Theme of Negative Feeling
Happy/ pleasant	Stress and stress in facing witness : 10
Yearning for home : 2	Unhappy, uncomfortable: 6
	Extraordinary fear in overcoming punishment verdict: 4
	Broken heart due to be humiliated, scolded, slandered: 2
	Unfair government (having no parole) :2
	Saturated
	Lazy
	Annoying, hate : 8
	Boring : 2
	Unfair God
	Useless for family
	Jail Community for the pain
	Sad : 9
	Disappointed : 4
	Angry : 2
	Worry

Analysis: The respondents' major positive feelings were yearning for home and happy and pleasant. Meanwhile, the most number of negative feelings which were written most were stress, sad, annoying/ hate, unquiet, unhappy, uncomfortable, and disappointed. However, the feeling was dominated by negative feelings.

Table 3. Respondents' Response of Act (positive and negative) in female penitentiary of class III Kupang, East Nusa Tenggara in 2016

Positive Response of Act	Negative Response of Act
Seeing own children	More quiet
Seeing father – mother	Angry : 4
Surrendering in overcoming the situation recently	Quiet
Doing good act to the friends	Ignorant
Asking spiritual help (prayer) from other people	Crying
Praying and surrendering to God	Isolating
	Being easy to be offended
	Complaining of hot weather: 2
	Being uncomfortable
	No being asked
	Headache and strained neck
	Having no withstanding in overcoming the jail situation
	Insomnia

Analysis: The respondents could tell more their negative response of act rather than the positive one. The main negative acts were anger and complaining hot weather. Meanwhile, the positive response of acts were such as seeing their own children and parents, surrendering in facing that situation, doing good act to the friends, asking spiritual help (prayer) to the other people, praying and surrendering to the God.

DISCUSSION

Understanding regarding stress and coping were important in order to be able to develop health education, promotion, disease prevention, Stress could cause sick either directly had an effect for physics or indirectly through maladaptive behavior (smoking, drugs, drinking, etc). Stress did not have similar influence for someone and managing self-coping well that caused someone did not undergo an ill. Someone's coping role was different in overcoming every life situation. Coping role was a tendency in interpreting and responding toward stress with certain way. Coping process and its result toward a stress was influenced by someone's coping role. Besides, coping role could impact directly toward emotion and someone's physical act in facing a stressful things (Glanz K, Rimer B.K, and Viswanath K, 2008). A prisoner during in penitentiary underwent stress and was oppressed because the process of losing freedom, family (children, husband, parents), occupation, home situation, challenge, and many more. Moreover, the effective coping mechanism was needed for overcoming the loss of all of them.

The research result toward women in penitentiary showed that negative thought and negative feelings were more dominant rather than positive thought and positive feelings. The woman who was dominant with negative thought and feeling developed to be negative psychology. According to Seligman and Csikszentmihalyi, 2000, a human should develop positive psychology. Positive psychology was a character that was developed to be someone who had expectation, being wise person, had orientation on the future, being brave person, had well spiritual life. Positive psychology also correlated with optimistic character, strong, useful in life, having feeling to be able to cooperation, and the increase of attention. Moreover, some conducted research showed that there was a significant correlation between positive self-appearance and active coping (Lechner and Others, 2006; Kinsinger and others, 2006). A prisoner was important to develop positive psychology, thus, she/he became anyone who was having expectation, optimistic, having orientation on the future, brave, strong, feeling useful in life, and having well spiritual life. Therefore, it would be formed active coping to face stress in penitentiary.

There were several ways in intervention the stress based on the transactional model of stress and coping. The coping effort was directed for management of problem and management of emotion.

Therefore, it was important to have positive self-appearance, to revise the goals, increase spiritual belief, and always do positive things. A prisoner in penitentiary was important to develop either positive thought or positive feelings, to determine her / his new life goals for in penitentiary to undergo the punishment, to surrender to God and to always do positive things which could be done in penitentiary. As the example of phrases were "why our cases must undergo punishment purely, why I could not do remission and organize parole? And the others could do that?" (P6). This respondent still thought and felt negatively. The goal in penitentiary was still unclear and less surrendering. The statement from respondent 11, " the situation in this community here (penitentiary) caused pain", or " I often cried, isolated, and being offended easily. The God was unfair toward me, and I was useless for my family" (P10). Meanwhile, these respondent 10 and 11 needed to develop optimism, determine new goal during in penitentiary, surrender and pray to the God based on her religion and belief, involve in positive activities in penitentiary.

Someone's behavior correlated directly with emotional dysfunction and irrational thought. This could be treated by changing the pattern of thought from negative to be positive and was followed by behavior change to be adaptive behavior. As what had said by respondent 7," I am keeping quiet more and angry'; respondent 40," I cannot accept if I am ordered"; respondent 43, "having headache and strained neck always"; and respondent 48 "sometimes, I am not strong to be in here with the situation like this". However, there was participant who stated that " I feel so afraid to be here due to being warned with loud voice"(P27). Respondent 28 stated that "feeling uncomfortable to be in the middle of many people due to having known each other". In this condition, it needed to learn to identify the wrong thought and changed to be realistic thought that would reduce depression and increase adaptive coping (Carrico and others, 2005b). The positive thought resulted a pleasantness, joy, health, and success in every person's situation and action. Positive thought and feelings were found in this research by being stated," praying to God because the God is everything. God accompanied with us in every trouble" (P46); "I feel so happy and pleasant to be here" (P33); "happy for having friends with the opened mind, thus, it will not become a burden of thought" (P21). If there were many prisoners thought positively such as P21, P33, and P46, they could transmit to other prisoners, hence, there were many female prisoners who had healthy mental.

According to emotional scheme from Greenberg 2002, The thoughts which were with emotion/feeling would form subject emotional experience, and then, it would be showed in someone's behavior (Suyanta, Ekowarni Endang, 2012). Negative thought about a postponed court trial, family and parents who were sick, no calling, no being visited and seen by family, thinking of the long of punishment verdict, no money, no being visited by children and husband, having heavy burden in life, many thoughts, the occupation after being out from penitentiary. The prisoner's negative feeling and emotion such as stress, sad, annoying/hate, unhappy/uncomfortable, fear of facing punishment, disappointed, angry, unfair, boring, hurt in resulting negative response of act. Therefore, penitentiary staffs learned about effective coping mechanism, thus, they could guide the prisoners to defend their mental health.

The life experience in jail or penitentiary was very hard for woman, particularly for woman who was as a housewife. According to international convention, a female prisoner suffered harshness because undergoing physical affliction (hot room temperature), sexual (separating with her husband), and psychologist (losing her freedom, separating with children and family), including certain threat (postponed court trial, verdict), assertion (following the regulation in penitentiary such as certain hour to see, working in hauling water drain), plundering freedom in public (life in penitentiary , no being out from penitentiary), and in personal life (cannot do hobby, etc.) (Wiwiek Afifah, 2013). Furthermore, there were double burdens that caused the necessity for female prisoners intensively. It should be divided in group which was in accordance with the criminal case, hence, it could be occurred sharing experience, information, knowledge, and strengthening the coping each other (Rahmat, 2015). Group therapy should be combined with humor therapy and recreation with regular schedule and good professional leader of group. In nursing the curative mental therapy was as an information source, developing new hope, universal based, being pleasant if helped other people, correction of recapitulation result again from the main family, developing social techniques, giving attention more for fake behavior, learning interpersonal, strengthening the relation or unity in group and as catharsis (cleaning) (Stuart , 2006).

CONCLUSION

The female prisoners developed more about negative thought and feelings, and also negative response of act during in penitentiary. This gave an illustration that more developed copings in female

prisoner had not developed. Therefore, health education regarding the importance in developing optimistic attitude in facing all situations or troubles gave effective coping response effect in facing the trouble. The effective coping was formed from social support (support from husband, family, children) positive psychology, well management of stress. Either staffs or health workers in penitentiary needed to develop groups with similar criminal case in order to conduct group therapy for keeping and defending mental health.

REFERENCES

American Psychiatric Association (APA), 2016. Practice Gaudelines for the Psychiatric Evaluation of Adults. 3rd. USA: APA

Corrico, A.W., and Others. "Cognitive Behavioral Stress Managementy Effects on Mood, Social Support, and a Marker of Antiviral Immunity are Maintained up to 1 Year in HIV-Infected Gay Men" Internasional Journal of Behavioral Medicine, 2005b, 12, 218-226

Ekowarni Endang, Suyanta. "Pengalaman Emosi dan Mekanisme Koping Lansia yang Mengalami Penyakit Kronis" . Jurnal Psikologi , Volume 39, no. 2, December 2012: 208-221

Gail W. Stuart, 2006. Buku Saku Keperawatan Jiwa. Jakarta: EGC

Kanwil Nusa Tenggara Timur. 2017. Sistem Database Pemasyarakatan Maret 2017. Kupang

Karen Glanz, Barbara K. Rimer, K. Viswanath, 2008. Health Behavior And Health Education Theory, Research,and Practice. 4th.EDITION. St. Fransisco: Jossey-Bass

Kinsinger D.P., and Others. "Psychosocial and Sociodemographic Correlates of Benefit-Finding in Men Treated for Localized Prostate Cancer". Psychooncology, 2006, 15, 954-961

Lechner, S.C. and Others. "Curvilinear Associations Between Benefit Finding and Psychosocial Adjustment to Breast Cance" Journal of Clinical and Consulting Psychiatry, 2006, 74, 828-840

Meilina Clara Priscilla, 2013. Skripsi: Dampak Psikologis Bagi Narapidana Wanita yang Melakukan Tindak Pidana Pembunuhan dan Upaya Penanggulangannya. Malang: Brawijaya University

ntt.kemenkumham.go.id Satuan Kerja di lingkungan kantor Wilayah NTT, Lapas Wanita Kelas III Kupang. Data narapidana Perempuan. On 13rd March 2017

Peraturan Menteri hukum dan Hak Asasi Manusia RI, Nomor 5 Tahun 2013 tentang Tata Tertib Lembaga Pemasyarakatan dan Rumah Tahanan Negara.

Potter, Patricia; Perry, Anne Griffin, 2005. Buku Ajar: Fundamental Keperawatan, Konseo, proses dan praktik. Jakarta: Penerbit EGC

Rahmat Hi. Abdulah. "Urgensi Penggolongan Narapidana dalam Lembaga Pemasyarakatan" Fiat Yustisia Jurnal Hukum, Volume 9, Nomor I, January-March 2015: 49-60

Seligman, M., and Czikszentmihalyi, M. "Positive Psychology: An Introduction". American Psychologist, 2000, 55(1), 5-14

Wiwik Afifah. "Perlindungan Hukum Bagi Perempuan Korban Perkosaan Yang Melakukan Aborsi". DIH, Jurnal Ilmu Hukum Pebruari 2013, Vol. 9, No. 18: 93 – 109.

THE CORRELATION BETWEEN COPING STRATEGY OF AUTISTIC CHILDREN'S PARENTS AND THE PARENTING PARENTS

Ambar Asnaningsih[1]
1= Nursing Academy of Kosgoro, Mojokerto, Indonesia

ABSTRACT

Autism is still a nightmare for most parents. Parents with autistic children can be very stressful while dealing with a hyperactive, aggressive, and passive child's behavior. Stress experienced by autistic children's parents will affect the parents' ability in parenting role, especially in correlation with coping strategies that has in dealing with children's problems. The parents' participation is crucial to being success in socializing with autistic children in general society. Moreover, this study aimed at determining the correlation between coping strategies of parents who had autistic children and the parenting parents. The type of research was an analytic correlation with cross sectional approach. The population in this research was all parents who had autistic children in SLB Muhammadiyah Mojokerto (school for children with special needs). Samples in this study were all parents of autistic children in SLB Muhammadiyah Mojokerto which were 15 people by using total sampling technique. The data was collected by using questionnaires, analyzed by using cross tabulation, and presented in frequency distribution. On cross-tabulation, it obtained results which tended to use maladaptive coping strategies in permissive parenting that was 8 (53.3%). Besides, there were also respondents who used adaptive coping strategies by using authoritarian parenting as much as one person (16.7%), and adaptive coping strategies tended to use democratic parenting as much as 5 people (33.3%). Expected parents still sought information to broaden their knowledge on coping strategies of autistic children's parents and parenting parents as well as parents who gave special attention for autistic children to the development and advancement of their lives because they had the same rights as other normal children.

Keywords: Coping Strategy, Parenting Parents, Autistic Children.

INTRODUCTION

Parents who had children with autism could be stressful if the parents faced their hyperactive, aggressive, and passive behavior. Children with autism tended to be difficult to control their emotion. They could cry, laugh, or be angry without any reasons. Lack of information and awareness from their parents regarding autism caused they would feel isolated, thus, it could make their life became a misery (Lakshita, 2012). Parents' role extremely determined the autistic child's success in socializing with society. Guidance and support for autistic children so that they could live independently was one of helps that could be given (Brooks, 2008). Recently, there were still parents who were incorrect in parenting their children and they tended to be more authoritarian and permissive.

Autism was a mental disorder to the children who were 2-3 years old, such as abnormal speech and language development (Yatim, 2002). Negative response from society regarding children with autism caused several parent's reaction, such as isolated their own autistic child or had no willing to recognize their own autistic child. Besides, there were also parents who tried to give more attention and give the best for their autistic child by searching an expert who could handle autistic child (Suryani, 2005). Therefore, the parents needed coping strategy in parenting their autistic child. Coping strategy was meant as a process or a way for managing psychic pressure (either externally or internally) that was consisted of an effort (either real act or intra-psychic or emotional attenuation, input management in cognitive) (Hasan & Rufaidah, 2013). Besides, it was needed different parenting with normal children. Furthermore, parenting was important part in socialization and the process for children in learning to behave as social expectation and standard. In family, a child was expected to develop their ability and help them to live in this world (Martin & Colbert in Silalahi, 2010).

UNESCO (2011) reported that there were 35 million of people with autism in the world. In 2016 in Indonesia, it was expected that there were 12,800 children with autism (Judarwanto, 2016). Data at Child Psychiatric Clinic of Cipto Mangunkusumo General Hospital, Jakarta-Indonesia, in 1989 concluded that there were only 2 patients who were autism. Then, it increased to be 103 children with autism in 2000. In 1997 at RSUD Dr. Soetomo Surabaya, East Java, Indonesia (regional public hospital) noted a drastic increase of autistic sufferer number until 20 children in a year. Data that was concluded by autistic

expert in Indonesia, in 1990 there were 1-2 new patients in each day and it increased until the total of patients were 4-5 new patients in 2000 (Lakshita, 2012). United States reported the comparison between autistic child and normal child which were 1:150. Meanwhile, in England, another researcher noted the comparison between autistic child and normal child which were 1:100 (Hasdianah,2013). From conducted research by Dewi & Sari, they stated that 46,15% of respondents implemented democratic parenting for autistic child.

Based on previous research at SLB Muhammadiyah Mojokerto (School for children with special needs), Mojokerto district on 19th December 2016 through interview with the head master, it was obtained that the total of autistic children at SLB Muhammadiyah Mojokerto were 15 children and the observation result was there were 2 parents who were waiting for their children for learning an education at the SLB. Meanwhhile, other autistic children were picked up and delivered by SLB staff of Muhammadiyah Mojokerto. The interview was resulted from two autistic child's parents regarding coping strategy in facing their child's behavior. First, Mrs. A stated that if her child cried, laughed, and being angry without any reasons, she only permitted. She surrendered with her child's condition in autism. She stated that by studying at SLB Muhammadiyah Mojokerto (School for children with special needs), she expected that it could help her in parenting her child and her child's development was better and better. Second, the Mrs.B stated that if her child behaved strangely while at home, the child was often scolded and sometimes was permitted. Even, if the child cried, he was hitted so that he stopped crying. Moreover, it was very seldom to allow the autistic child for playing in the outside with her/his peers and she/he always was asked only in home.

The child's behavior that was difficult to express herself/himself and could not have eye contact, was difficult to focus an attention due to lack of communication between autistic child and the parents. The autistic child tended to isolate him/herself which was caused by the parents who less understood the autistic child's condition. The child's condition was like that due to inappropriate coping strategy from the parents in overcoming every problem that was from autistic child (Lakshita, 2012). Besides, the stress that was undergone by the parents who had autistic child would influence parents' ability in parenting role, particularly regarding coping strategy that was owned in overcoming children problem (Silalahi, 2010).

Various therapies, which were proven to help, increased life quality of individual autistic child. The handlings that had been available in Indonesia were Applied Behavioral Analysis (ABA) therapy, speech therapy, occupational therapy, physical therapy, social therapy, play therapy, behavioral therapy, developmental therapy, visual therapy, and biomedical therapy (Hasdianah, 2013). Besides the given therapy by a doctor or psychiater, the most important thing from autistic child's parents self in facing autistic child's attitude was emphaty. By the parents' ability in respecting and loving autistic child, it would influence on autistic child's development (Lakshita, 2012).

METHOD

The population of this cross sectional research was all of autistic child's parents at SLB Muhammadiyah Mojokerto (School for children with special needs) in 2016 which were 15 people (population number). All of the population members were as research subjects (sampling total). After the data were collected, the data were analyzed descriptively.

RESULT

Table 1. Distribution of the Education of Autistic Child's Parents at SLB Muhammadiyah Mojokerto

Education	Total	Percentage
Not graduated Primary School	1	6.7
Primary School	7	46.7
Junior High School	5	33.3
Senior High School	2	33.3
Total	15	100

Tabel 1 showed that most of autistic child's parents at SLB Muhammadiyah Mojokerto had graduated the education in primary school (46.7%).

Table 2. Distribution of the Parents' Occupation who had Children with Autism and Learned at di SLB Muhammadiyah Mojokerto, Mojokerto district

Occupation	Total	Percentage
Worked	6	40.0
Did not work	9	60.0
Total	15	100

Table 2 showed that most of autistic child's parents at SLB Muhammadiyah Mojokerto were did not work (60,0%).

Table 3. Distribution of the Close Relation between Parents and Autistic Child at SLB Muhammadiyah Mojokerto, Mojokerto district

Close Relation with the Child	Total	Percentage
Mother	15	100
Total	15	100

Table 3 showed that all of autistic child's parents at SLB Muhammadiyah Mojokerto who had the closest relation with the child were mother (100%).

Table 4. Distribution of Coping Strategy for Autistic child's Parents at SLB Muhammadiyah Mojokerto, Mojokerto district

The Relation with the Child	Total	Percentage
Adaptive	6	40.0
Maladaptive	9	60.0
Total	15	100

Table 4 showed that most of parents (60.0%) had maladaptive coping strategy.

Table 5. Distribution of Parenting of Autistic Child's Parents at SLB Muhammadiyah Mojokerto, Mojokerto district

The Relation with the Child	Total	Percentage
Authoritarian	2	13.3
Permissive	8	53.3
Democratic	5	33.3
Total	15	100

Table 5 showed that most of Autistic Child's Parents had permissive parenting.

Table 6. The Correlation between Coping Strategy of Autistic Child's Parents and Parenting Parents at SLB Muhammadiyah Mojokerto, Mojokerto district

Coping Strategy	Parenting			Total
	Authoritarian	Permissive	Democratic	
Adaptive	1 (16.7%)	0 (0%)	5 (83.3%)	6 (100%)
Maladaptive	1 (11.1%)	8 (88.9%)	0 (0%)	9 (100%)
Total	2 (13.3%)	8 (53.3%)	5 (33.3%)	15 (100%)

Table 6 showed that the parents who had adaptive coping strategy tended to implement democratic parenting (83.3%), meanwhile, the parents who had maladaptive coping strategy tended to implement permissive parenting (88.9%).

DISCUSSION

Coping Strategy of Autistic Child's Parents

Most of autistic child's parents at SLB Muhammadiyah Mojokerto tended more to use maladaptive coping strategy when they solved a problem that was from their own child. The coping strategy was influenced by sociodemographic, including: education degree, gender, marital status, the difficult life,

social network sources such as social support, and optimism (Charles J. & Moss dalam Mukhlis & Muqim, 2013).

The education degree was one of the factors that influenced coping strategy. Based on the research result, parents with maladaptive coping strategy tended to have low education degree which was in primary school graduate (46.7%) and no finishing primary school (6.7%). According to Muklis & Muqim (2013), the education degree influenced whether someone was easy to have stress or not. The higher the education degree, the better the tolerance and the control against stressor and vice versa. Better education made someone's knowledge better too because someone's education degree also influenced towards himself/herself. Besides, education degree would determine someone in facing the stressor.

According to Notoatmodjo (2007), education was someone's learning effort so that someone would act to solve the problem and increase his/her health. The education was occurred because growth process, development process, or change process to be more mature and better for him/her, group, and society. This activity or learning process was occurred wherever, whenever, and by anyone. Someone could be stated "learning" if it was occurred a change from unknown to be known, from undone to be done something, however, not all changes were occurred due to only learning because of the mature process from their own development.

The education degree could influence someone's coping strategy because the higher the education degree meant that the easier for someone to accept health information. Someone who had lower background of education degree had lower attitude development on him/herself and mature process due to lack of experience and knowledge degree.

Gender also could influence someone's coping strategy and it was known on the research result that a respondent who was a research subject was a female (mother). According to Muklis & Muqim (2013), there was a significant difference between male coping and female coping. A male often showed an attitude that we assumed difficult, such as over happy and doing aggressive physical activity, meanwhile, for the female, she often showed soft and sensitive behavior. According to Mutoharoh (2010), male and female used different coping strategy. The female tended to use a coping strategy that aimed at changing their emotional response toward a condition, meanwhile, male tended to solve directly the problem. The different gender between male and female especially in solving stress problem was one of reasons that the female tended to show psychological distress signs, more anxiousness rather than the male because the female prioritized more on emotional in solving problem rather than solving directly the problem.

Referring to those explanations above, it could be stated that gender could influence coping strategy because male and female used different coping strategy. A female tended to show psychological distress, anxiousness, and depression signs because the female used coping strategy that aimed at changing their emotional response toward a condition. Thus, the female tended to be emotion rather than male who directly solved the problem.

Parenting Parents

The research result showed that most of parents implemented permissive parenting. Some factors that influenced parenting parents based on Silalahi (2010) from the child factor were age, temperament, gender: from family factor which were the number of siblings, social environment, coping ability and stress, economic and social status, and social support: from parents factors which were personality, belief, and history of parent development. According to Santrock, a factor that influenced parenting besides as what had been stated by Silalahi was education degree.

Education degree was one of factors that influenced parenting parents. The parents' education background could influence mindset, aspiration, or parent's hope to the child. The higher the parent's education, the parents could accept all information from the outside, particularly regarding how to nurture well (Erwanto, 2013). According to Santrock (2007), the education that was owned by parents would influence parents' readiness in nurturing the child. According to conducted research by Sir Godfrey Thomson, he showed that education was meant as environmental effect for individual to result several kinds of changes. Based on the theory above, the higher the parents' education degree, they could accept all information from the outside, particularly regarding how to nurture the child well in accordance with the child's condition.

Gender was one of the factors that influenced a parenting. Based on Silalahi (2010), parents who supported the female child to be depended more, loving more, and emotional, meanwhile, for male child, the more age for the male, he would have more freedom rather than female child. According to Syafei

(2006), mother had big and important role in nurturing process, education, and founding a personality for children since early age.

Based on the theory above, gender influenced parenting parents because mother's role could give a parenting for her children. Thus, they could become independent individual and they could be accepted in society.

The Correlation between Coping Strategy of Autistic Child's Parents and Parenting Parents

Parents who had maladaptive coping strategy tended to implement permissive parenting and these were caused by coping and stress ability. Autistic child's behavior that was not guided, such as crying, laughing, anger without any reasons, jumping without any goals, and could not be quiet made the parents stress. The stress that was undergone by the parents could influence parents' ability in playing role as caregiver, particularly in regarding with coping strategy that was owned in facing child's behavior. Besides, it was also from coping strategy factor which was optimism that meant the parents who had pessimistic thought based on the individual while facing a problem as a threat rather than the parent who had optimistic thought could face a problem effectively. Hence, the parent interacted less with their autistic child.

Furthermore, parents who had adaptive coping strategy tended to implement democratic parenting. This was caused by good social support that was obtained by the parents which was support from family or the society regarding parent's action toward the autistic child. Besides, it was also influenced by personality factor which adult people were different in intelligence level, patience, attitude, and the maturity because not all of the people could use well coping strategy and give exact parenting for autistic child. Some autistic children showed their ability in self-care and their independence although it was very small of its influence in changing child's attitude in mental retardation such as autism.

CONCLUSION AND SUGGESTION

Based on research result, it could be concluded that parents who had maladaptive coping strategy tended to implement permissive parenting, meanwhile, the parents who had adaptive coping strategy tended to implement democratic parenting.

REFERENCES

Erwanto, Rizky. 2014. Hubungan Pola Asuh Orang Tua Dengan Sosialisasi Anak Usia Prasekolah Di Dusun Tempel Caturtunggal Depok Sleman Yogyakarta. Undergraduate Thesis, Respati University Yogyakarta.

Hasdianah, HR. 2013. Autis pada Anak Pencegahan, Perawatan, dan Pengobatan. Yogyakarta: Nuha Medika.

Hidayat, A.A. 2007. Metode Penelitian Keperawatan dan Tehnik Analisa Data. Jakarta: Salemba Medika.

Judarwanto, W. 2016. Jumlah Penderita Autis di Indonesia. http://klinikautis.com (accessed on 19th December 2016).

Lakshita, N. 2012. Panduan Simpel Mendidik Anak Autis. Jogjakarta: Javalitera.

Muklis, and Muqim. 2013. Pendekatan Psikologi Kontemporer Perilaku Masyarakat Pada Aras Kekinian. Malang: UIN MALIKI Press.

Notoatmodjo. 2007. Promosi Kesehatan dan Keilmuan Perilaku. Jakarta : Rineke Cipta

Nursalam, 2008. Konsep dan Penerapan Metodologi Penelitian Ilmu Keperawatan. Jakarta : Salemba Medika.

Silalahi, K. 2010. Keluarga Indonesia Aspek dan Dinamika Zaman. Jakarta: PT. RajaGrafindo Persada.

Yatim, Faisal. 2002. Autisme Suatu Gangguan Pada Anak. Jakarta: Pustaka Populer Obor.

THE CORRELATION BETWEEN HEALTHY HOUSE CONDITION AND DYSPNEA FREQUENCY OF PULMONARY TUBERCULOSIS PATIENTS

Abdul Muhith[1], Himawan Saputra[1], Sandu Siyoto[2]
1= Institute of Health Science "Majapahit", Mojokerto, Indonesia
2= Institute of Health Science "Surya Mitra Husada", Kediri, Indonesia
Abdulmuhith1979@gmail.com ; cua_muhith@yahoo.co.id

ABSTRACT

In Indonesia, pulmonary tuberculosis was a major problem of public health. The purpose of this study was to analyze the correlation between healthy house conditions (population density, ventilation, house floor types, lighting, temperature, and humidity) and dyspnea frequency of pulmonary tuberculosis patients at Ujungpangkah Public Health Center Gresik by using Cross Sectional design. The samples of this research were 76 respondents. The data were collected and analyzed by using Logistic Regression Test. The results of the analysis concluded that healthy house condition correlated with dyspnea frequency of pulmonary tuberculosis patients which were population density ($p = 0.031$), ventilation ($p = 0.046$), house floor types ($p = 0.025$), lighting ($p = 0.004$), and temperature ($p = 0.015$).

Keywords: Healthy house, Tuberculosis, Dyspnea Frequency

INTRODUCTION

Pulmonary tuberculosis was an infectious disease that became a public health problem in the world because Mycobacterium tuberculosis had infected one third of the world's population. In Indonesia, pulmonary tuberculosis was a major problem of public health. The number of patients with pulmonary tuberculosis in Indonesia placed the 3rd number highest in the world after India and China with the number of patients approximately 10% of the total number of pulmonary tuberculosis patients in the world. The case of positive pulmonary tuberculosis TBA was about 110 per 100,000 populations. At Ujungpangkah public health center, Gresik, East Java, Indonesia the case of pulmonary tuberculosis in last two years showed an addition of positive pulmonary tuberculosis patients from 2014 which was 88 cases to 93 cases in January to October 2015.

Mycobacterium tuberculosis as well as other bacteria would thrive generally in high humidity environments. Water made up more than 80% bacterial cells volume and became an essential thing for the growth and survival of bacterial cell. An increase of air humidity was a good medium for pathogenic bacteria including tuberculosis. According to Blum cit. Notoatmodjo (2013), the factors which affected health status were environmental factors, behavior, health care, and descent. House environment was one of major factors that influenced the health status of the residents. House environment was one of factors in the tuberculosis germs transmission. TB germs could live for 1-2 hours or even up to a few days to weeks depending on the presence or absence of ultraviolet, good ventilation, humidity, temperature, and population density.

The house was a dwelling that had to qualify health or technical provisions in order to protect dwellers from harm or health disorders, hence, it was possible for dwellers to have optimal health degree. House and environment that did not qualify the health requirements would have a risk to be a source of various types of diseases transmission. Therefore, the standard of public house building architecture was basically intended to provide good home to stay in design form, layout, and spacious rooms and other facilities in order to fulfill the family needs or to qualify the requirements of a healthy house. House or a place to stay that did not qualify health requirements could favor the occurrence of diseases and various health problems such as respiratory tract infections, tuberculosis infections, skin infections, and infections which were caused by rat infestations and infections due to mental accidents (Chandra, 2007).

METHOD

This study aimed at analyzing the correlation between healthy house conditions (population density, ventilation, house floor types, lighting, temperature, and humidity) and dyspnea frequency of pulmonary tuberculosis patients at Ujungpangkah public health center Gresik in 2015 by using cross sectional design. The population was all TB patients who registered at Ujungpangkah public health center

Gresik in January-November 2015 (93). The sample size was 76 people who were selected by simple random sampling technique. The collected data were analyzed by using Logistic Regression test.

RESULTS

Table 1. Population Density in Work Area of Ujungpangkah Public Health Center Gresik 2015

No.	Population Density	Frequency (f)	Percentage (%)
1.	Poor	47	61.8
2.	Good	29	38.2
	Total	76	100

Table 2. Ventilation distribution in Work Area of Ujungpangkah Public Health Center Gresik 2015

No.	Ventilation	Frequency (f)	Percentage (%)
1.	Poor	40	52.6
2.	Good	36	47.4
	Total	76	100

Table 3. House Floor Types Distribution in Work Area of Ujungpangkah Public Health Center Gresik 2015

No.	House Floor Types	Frequency (f)	Percentage (%)
1.	Poor	29	38.2
2.	Good	47	61.8
	Total	76	100

Table 4. Lighting Distribution in Work Area of Ujungpangkah Public Health Center Gresik 2015

No.	Lighting	Frequency (f)	Percentage (%)
1.	Poor	49	64.5
2.	Good	27	35.5
	Total	76	100

Table 5. Temperature Distribution in Work Area of Ujungpangkah Public Health Center Gresik 2015

No.	Temperature	Frequency (f)	Percentage (%)
1.	Poor	34	44.7
2.	Good	42	55.3
	Total	76	100

Table 6. Humidity Distribution in Work Area of Ujungpangkah Public Health Center Gresik 2015

No.	Humidity	Frequency (f)	Percentage (%)
1.	Poor	37	48.7
2.	Good	39	51.3
	Total	76	100

Table 7. Dyspnea Frequency Distribution in Work Area of Ujungpangkah Public Health Center Gresik 2015

No.	Dyspnea Frequency	Frequency (f)	Percentage (%)
1.	Seldom	47	61.8
2.	Often	29	38.2
	Total	76	100

Table 8. Logistic Regression Analysis Results of Correlation between Healthy House Condition and Dyspnea Frequency of Tuberculosis Patients at Ujungpangkah Public Health Center Gresik

No	Variable	β	p value	P	Note
1	Population Density	-2.788	0,031	p<0,05	Significant
2	Ventilation	-2.566	0,046	p<0,05	Significant
3	House Floor Types	-3.689	0,025	p<0,05	Significant
4	Lighting	-5.146	0,004	p<0,05	Significant
5	Temperature	-3.423	0,015	p<0,05	Significant
6	Humidity	0,240	0,053	p>0,05	Not Significant

DISCUSSION

House Condition

The results showed that residential population density of tuberculosis patients at Ujungpangkah public health center Gresik mostly was in poor category (61.8%). Population density correlated with spacious floor area of houses that should be adapted to the number of dwellers in order to not cause *overload*. This was conducted to minimize the contact of pulmonary tuberculosis disease transmission to family members. The denser the dwellers, the faster transmission were occurred.

Home ventilation existence of Tuberculosis patients at Ujungpangkah public health center Gresik mostly was mostly in not good category (76.6%). Natural permanent ventilation was at least 10% of floor spacious. Ventilation condition greatly affected air circulation and diluted pulmonary tuberculosis germs which were carried out.

The existence of house floor type of Tuberculosis patients at Ujungpangkah public health center Gresik was mostly in good category (61.8%). Dwellers' behavior factor in cleaning their home environment one of which was floor greatly affected the cause of pulmonary tuberculosis. House floor type that was made from soil was a good medium for the growth of mycobacterium tuberculosis. A poor house-floor-type could be an indirect cause of pulmonary tuberculosis, weak economic conditions, for example was one of factors that made family to not plaster their home floor.

The existence of house lighting of tuberculosis patients at Ujungpangkah public health center Gresik was mostly in poor category (64.5%). This meant that most of the respondents' home lighting did not qualify the requirements of healthy house. This might be influenced by the presence or absence of ventilation or windows that allowed sunlight entered into house in order to kill tuberculosis germs. Natural or artificial lighting could either directly or indirectly illuminate the whole room with minimum intensity of 60 lux and could not dazzle the eyes.

The existence of house temperature of tuberculosis patients at Ujungpangkah public health center Gresik was mostly in good category (55.3%). The triggering factors that could increase house temperature were air circulation system and population density.

House humidity of tuberculosis patients at Ujungpangkah public health center Gresik was mostly in good category (51.3%). Factors that led high humidity in respondents' house were for example, house floor types, wall types, lighting, and ventilation.

Dyspnea Frequency

The results showed that most respondents had a seldom dyspnea frequency (61.8%). Tuberculosis was a contagious disease that was caused by bacteria (bacillus) infection. One of the clinical symptoms of pulmonary tuberculosis was dyspnea; encountered if the disease was in advanced level and there was extensive lung damage.

The Correlation between Population Density and Dyspnea Frequency

Based on the analysis result, there was a correlation between population density and dyspnea frequency of pulmonary tuberculosis patients at Ujungpangkah public health center Gresik. The spacious room closely correlated with the incidence of pulmonary tuberculosis. Besides, the association of pulmonary tuberculosis prevention, Bradbury, statistically concluded that the incidence of pulmonary tuberculosis was mostly the result of unqualified house in spacious room case. According to Soemirat (2010) spacious floor of healthy house should be sufficient for the dwellers inside, which meant that

spacious floor area of house had to be adapted to the number of dwellers in order to not cause overload. Moreover, it was unhealthy because it did not only cause lack of oxygen consumption but also if one of family member suffered infectious disease, it would be easier to transmit the disease to other family members. In addition, population density greatly affected the transmission of pulmonary tuberculosis because pulmonary tuberculosis was a contagious disease that could be transmitted through the air. The denser the dwellers, the faster transmission were occurred. If the house was not dense, the air circulation became smooth so the patient and other family members could prevent pulmonary tuberculosis transmission. Population density could also have an impact on appearance of clinical symptoms of pulmonary tuberculosis that was emergence of dyspnea.

The Correlation between Ventilation and Dyspnea Frequency

Based on the results, it could be concluded that there was a correlation between Ventilation and dyspnea frequency of tuberculosis patients at Ujungpangkah public health center Gresik. According to Achmadi (2010), he stated that ventilation was beneficial for air changes in the house and it could reduce humidity inside the room. One that caused humidity was human perspiration, the more people in one room, the higher the humidity of the room. Ventilation affected air dilution process, which in other word was diluting the concentration of tuberculosis germs and other bacteria to be carried out and died due to ultraviolet from the sun. According to Azwar (2009), he stated that ventilation had a function to liberate the air from bacteria, especially tuberculosis. Spacious ventilation that did not qualify health requirements would lead to obstruction of air and sunlight exchange process into house. As the consequent, tuberculosis germs in the house could not be sucked out and it was absorbed together with air breathing. The spacious vent area of a qualified health was $\geq 10\%$ of the floor area of the house. From the results and some studies, it could be concluded that ventilation had a major influence on dyspnea frequency of pulmonary tuberculosis patient because the existence or inexistence of ventilation affected other factors that triggered tuberculosis bacteria's growth and breeding well.

The Correlation between House Floor Types and Dyspnea Frequency

Based on the analysis result, there was a significant correlation between house floor types and dyspnea frequency of Pulmonary Tuberculosis patient at Ujungpangkah public health center Gresik. According to Achmadi (2010) who stated that hypothetically, ground house floor types had a role on incidence of pulmonary tuberculosis against humidity at room. Ground floor tended to cause humidity. Therefore, the viability of tuberculosis germs in environment was also very influenced by house floor type that was made from soil (ground). When tuberculosis was at the soil, it would be difficult to clean and also difficult to minimize the humidity in room that was from ground.

The Correlation between House Lighting and Dyspnea Frequency

Based on the results, it could be concluded that there was a significant correlation between lighting and dyspnea frequency of Pulmonary Tuberculosis patient at Ujungpangkah public health center Gresik. Tuberculosis germs could survive in a damp place, dark place with no sunlight for years and would die when was exposed by the sunlight, lisol soap, carbolic acid, and fire heat (Atmosukarto 2008). According to Azwar (2007), sunlight was not only useful to illuminate the room but also had power to kill bacteria. This was proven by Robert Koch (1843-1910) who concluded that sunlight could be used for pulmonary tuberculosis prevention by ensuring the entry of sunlight. Sunlight was an important component for the development of tuberculosis germs, because sunlight contained UV rays that could kill tuberculosis germs. The more sunlight in the house, the smaller chance for bacteria to live and breed. Thus, it caused smaller chance for dyspnea of tuberculosis patients.

The Correlation between Temperature and Dyspnea Frequency

Based on the results, it could be concluded that there was a significant correlation between temperature and dyspnea frequency of Pulmonary Tuberculosis patient at Ujungpangkah public health center Gresik. According to Goul and Brooker in Nurhidayah (2007), mycobacterium tuberculosis had a preferred temperature range. Within this range, there was an optimum temperature when they grew rapidly. Mycobacterium tuberculosis was a mesophilic bacteria that thrived in range of 25-40^{0}C, but it

would grow optimally at temperatures 31-37^{0}C.Tuberculosis bacteria could live for 1-2 hours or even up to a few days to weeks, depending on the presence or absence of ultraviolet light, good ventilation, humidity, temperature and population density (Notoatmodjo, 2007).

The Correlation between Humidity and Dyspnea Frequency

It could be concluded from the result that there was no significant correlation between humidity and dyspnea Frequency of Pulmonary Tuberculosis patient at Ujungpangkah public health center Gresik. According to Achmadi (2010), humidity was a good medium for the bacteria's growth, including tuberculosis. Notoadmojo (2007) stated that tuberculosis bacteria lived in environments with high humidity. Water made up more than 80% bacterial cells volume and was an essential thing for the growth and survival of bacterial cell. In this research, humidity had no direct influence on dyspnea frequency of pulmonary tuberculosis patient at Ujungpangkah public health center Gresik and this could be caused by humidity conditions that mostly were in good category.

CONCLUSION AND SUGGESTION

From this study, it could be concluded that dyspnea frequency of tuberculosis patients at Ujungpangkah public health center Gresik was determined by population density, ventilation, house floor types, house lighting, and house temperature. Further, it was suggested that: a) For people at Ujungpangkah public health center Gresik to seek health residential neighborhood by modifying house design that its air circulation system or ventilation could qualify health requirements in order to decrease the incidence rate of pulmonary tuberculosis, b) Ujungpangkah public health center Gresik was expected to increase services and elucidation to public regarding a prevention and treatment for pulmonary tuberculosis which was environmentally based disease.

REFERENCES

Achmadi,. U, 2010. Manajemen Penyakit Berbasis Wilayah. Universitas Indonesia press: Jakarta

Amin,. M, 2006. Pengantar Ilmu Penyakit Paru. Airlangga University Press: Jakarta.

Arikunto, S. 2010. Prosedur Penelitian Suatu Pendekatan Praktek, Edisi Revisi. Jakarta: Rhineka Cipta.

Atmosukarto and Sri Soewasti. 2008. Pengaruh Lingkungan Pemukiman dalam Penyebaran Tuberkulosis. Jakarta: Media Litbang Kesehatan

Azwar,. A, 2009. Pengantar Kesehatan Lingkungan, PT. Rineka Cipta. Jakarta.

Chandra,. B, 2007. Pengantar Kesehatan Lingkungan. Buku Kedokteran EGC: Jakarta.

Kusnoputranto, Haryoto.2008. Kesehatan Lingkungan. Public Health Faculty UI. Jakarta.

Misnadiarly,. 2006. Mengenal, Menanggulangi TBC Paru, Ekstra Paru, Anak dan Pada Kehamilan. Pustaka Popolar Obor. :Jakarta.

Muhith A., Nasir 2011. Metodologi Penelitian Kesehatan. Yogyakarta: Nuha Medika.

Notoadmodjo, S. 2007. Promosi Kesehatan Teori Dan Aplikasi. Jakarta: Rineka Cipta

Notoadmodjo, S. 2010. Pendidikan dan Prilaku Kesehatan. Jakarta: Rineka Cipta

Notoatmodjo,. S, 2007. Ilmu Kesehatan Masyarakat, Prinsip Dasar. Jakarta: Rineka Cipta:

Nurhidayah,. I , 2007. Makalah Hubungan antara Karaktristik Lingkungan Rumah Dengan kejadian Tuberkulosis (TB) Pada Anak Di Kecamatan Paseh Kabupaten Sumedang.

INTERVENTION AND INTEREST KATUK LEAVES AND MALE PAPAYA FLOWER OF NUTRITIONAL STATUS OF PREGNANT WOMEN TRIMESTER II (4-6 MONTHS)

Tanty Wulan Dari[1], Noer Saudah[2]
1= Health Polytechnic of Health Ministry in Surabaya, Indonesia
2: Institute of Health Science "PPNI Bina Sehat", Mojokerto, Indonesia
E-mail: saudah_noer@yahoo.co.id

ABSTRACT

Nutrients that can be used to impregnate the natural nutrition of pregnant women. Food ingredients used include Katuk leaves and male papaya flower. The purpose of this research was the effect of the intervention Katuk leaves and male papaya flower on nutritional status in pregnant women trimester II. This research uses quasi experimental with pre nonrandomized form Test-posttest control group design. Conducted by taking the second trimester pregnant women respondents in Sumber Kembar and Bendungan Jati Pacet for 1 month. Samples were with the inclusion criteria of 20 people were divided into two treatment groups. Group 1 was given intervention Katuk leaves. Group 2 was given the male papaya flowers intervention. Then, before the intervention measure nutritional status based on weight, height, MUAC, and laboratory tests hemoglobin and albumin. Test the hypothesis using a paired t - test. The results was a significant difference before and after intervention leaves pregnant women get Katuk leaves for BMI, a significant value of p = 0.045, then to Hb significance value of p = 0.00, for LILA a significance value of p = 0.124, which means no difference before and after intervention. The same thing happened to Albumin with significance value of p = 0.068. The results showed that no significant difference before and after the pregnant women get the intervention interest papaya males, for Hb significance value of p = 0.046, then to albumin significance value of p = 0.004, and for LILA value significance at p = 0.142, which means no No difference before and after intervention by katuk leaves. The same thing happened at the BMI with a significance value of p = 0.061. Comparison of the two groups after the intervention all the variables no significant difference between getting katuk leaves and flower papaya with significant value for BMI p = 0.931, p = 0.981 LILA, Hb p = 0.774 and p = 0.420 for albumin. The conclusion have average values are likely to be similar this is due katuk leaves and flowers papaya male nutritional can improve the nutritional status of pregnant women. The difference is only foodstuffs katuk leaves easily available, cheap, and processing tends to be easier while the male papaya flowers material is a bit hard to come by, relatively more expensive if cannot cultivate tastes bitter.

Keywords: nutritional status, pregnant women, Katuk leaves (Sauropus Androgynus), male papaya flowers.

INTRODUCTION

Background

The gestation period is a time of much awaited newly married couple. Generally they dream of healthy offspring and smart. Unfortunately, sometimes this desire is not in line with expectations. Various causes, one of which is a deficiency of nutrients, experienced mothers during pregnancy. During pregnancy, the body's supply of all nutrients to the developing baby, which weighs approximately achieving 3.5 to 3.75 kg at birth. Pregnant women are undernourished reserve deficiency of nutrients needed to support the growth of the embryo. A few days after conception, the embryo appears in the womb but not yet implanted in the uterine wall. In this period, there was a division and rapid cell replication. Maternal malnutrition will adversely affect the division and replication of cells in the embryo, which have a negative impact on the fetus in the next stage. There are a number of health risks to the fetus if the mother is deficient in nutrients.

Another risk to the fetus, pregnancy, and childbirth if the mother has poor nutrition is, fetal risks that could occur among miscarriage, stillbirth, birth defects in babies, low birth weight and newborn health status lower , Another impact of poor nutrition during pregnancy also occurs when the mother in labor. Such as difficult labor, premature delivery, bleeding after childbirth, and childbirth and surgery. Poor nutrition during pregnancy is a big contribution to preterm birth. Pregnant women with poor nutrition also difficult vaginal delivery because the condition tend to be weak and lacking energy for

normal childbirth. Pregnant women with poor nutrition also tend to be weak and lack of appetite. If this occurs during pregnancy, the risk that can arise is bleeding. Pregnant women are also at high risk of infection, in addition to experiencing anemia with a hemoglobin level less than normal (11 mg / dL).

According to the World Health Organization (WHO) (2008), the prevalence of anemia in non-pregnant women of 30.2%, while for pregnant women 47.40%. Anemia vary due to differences in socio-economic conditions, lifestyle, and health-seeking behavior in different cultures. Anemia affects almost half of all pregnant women in the world; 52% are in developing countries, while for developed countries of 23% was mainly due to micronutrient deficiencies, malaria, worm infections, and schistosomiasis; infection with the human immunodeficiency virus (HIV) and disorders of hemoglobin as an additional factor.

Many maternal deaths occur in the period surrounding childbirth that can actually be prevented through effective activities such as antenatal continuous and adequate nourishment. In addition, to minimize the risks during pregnancy and childbirth pregnant women need to apply a healthy diet. If previously the mother had a less healthy diet, immediately change. Eating nutrient enhancer supplements can help meet the nutritional needs of the mother. But if consumed in excess and not as recommended will only bring adverse effects on pregnancy. Actually, a lot of food around us is rich in nutrients that can be used to impregnate the natural nutrition of pregnant women. Foodstuffs that can be used include katuk leaves and male papaya flowers.

In katuk leaves contained 100 g: energy 59 cal, 6.4 g protein, 1.0 g fat, 9.9 g carbohydrates, 1.5 g fiber, ash 1.7 g, 233 mg calcium, phosphorus 98 mg, iron 3.5 mg, 10020 mcg carotene (vitamin A), B, and C 164 mg and 81 g water. In addition to leaf content katuk as nutrients mentioned above, katuk leaves also contain secondary metabolic compounds that monomrthyl succinate and cis-2-methyl cyclopentanol acetate (ester), benzoic acid and acid phenyl malonate (carboxylic acid), 2-pyrolodinon and methyl pyroglutamate (alkaloid), saponins, flavonoids and tannins. The compounds are very important in the metabolism of fats, carbohydrates and proteins in the body. Males Papaya Flower contains an energy of 45 kilocalories, 2.6 grams protein, 8.1 grams carbohydrates, 0.3 grams fat, 290 milligrams of calcium, phosphorus 113 milligrams and 4.2 milligrams of iron. Also in Males Papaya Flower also contained as much as 0 IU vitamin A, vitamin B1 and vitamin C 0.01 milligrams of 23.3 milligrams. The results obtained from conducted a research of 100 grams Males Papaya Flower.

From the statement above it can be seen that the katuk leaves and male papaya flowers has a high nutrient content, among others carbohydrates, protein, energy, calcium, phosphorus, iron, and vitamins. These substances are substances that are needed by pregnant women for fetal development. The abundance of both these foodstuffs in communities that provide benefits for pregnant women to get an inexpensive nutrients and rich in benefits.

METHOD

The design used in this research is a Quasi-experimental research is experimental or quasi-experimental with form nonrandomized pretest-posttest control group design (Nasir, 2005). , In this research, sample selection was not done with randomization. Population and samples referred to in this research were all pregnant women aged 21 years to 35 years of age in the first trimester of pregnancy (0-3 months) in the district of Kirkcaldy in 2014. The sample in this research were pregnant women who meet the criteria as much as 20 person.

Criteria for inclusion on the sample to be selected in this research were pregnant women aged 21 to 35 years, with a gestational age in the first trimester (0-3 months) and not suffering complications of other diseases, living around districts Pacet, Mojokerto regency, east java and willing to be a sample by signing a letter of approval or informed consent either as research subjects nor invasive, ie blood sampling. In the Exclusion Criteria that will be selected that pregnant women who suffer from either chronic or severe illnesses such as hypertension, heart disease and diabetes mellitus, cancer or have pregnancy complications. In addition, if the gestational age of the first trimester and did not have a permanent residence or not willing to be a sample.

Variable of the research was katuk leaves, male papaya flowers, Food Recall by URT, Respondent Characteristics (age, education, work), Nutritional Status Pregnancy Trimester II, Inspection blood (hemoglobin and albumin)

The instrument used in this research were questionnaires and forms that consist of: pre test and post about recording recall food and observations about the intervention provision katuk leaf, male papaya flower, and as well as the examination of the nutritional status were measured anthropometry

includes, weight / SO 2, LILA, and hemoglobin, hematocrit, albumin with INDIRECT ELISA technique quantitatively.

RESULTS

1. Sample

In the Data Collection Using data Identity Sample: conducted by interview using a structured questionnaire by the researchers, the data measurement of nutritional status are anthropometric measurements conducted by researchers assisted by Community health service and cadres of integrated service post in each research group, the data Laboratory Tests: Do by personnel from selected laboratory analysis.

2. Analysis

In the analysis of statistics using Test for equality of variance (Levene's test) to determine the method of independent sample t-test, t-test to test the difference intervention katuk leaf and male papaya flower maternal trimester 2, correlation test was to determine the relationship intervention katuk leaves and flowers of papaya males, on the improvement of the nutritional status of pregnant women trimester 2. Distribution of respondents based on maternal age, education, occupation, parity is presented in the following table: respondents will be divided into two groups, namely the group receiving therapy katuk leaves and flowers giving papaya.

Table 1. Comparison of the two groups before the intervention

Variabel	Kelompok	Mean	Std. Deviation	Std. Error Mean	Sig
Pre BMI	Papaya flower	25.17	5.28	1.67	P= 0.883
	Katuk leaves	24.87	3.53	1.12	
Pre LILA	Papaya flower	27.83	3.59	1.14	P= 0.261
	Katuk leaves	26.36	1.65	0.52	
Pre HB	Papaya flower	10.70	0.50	0.16	P= 0.912
	Katuk leaves	10.72	0.42	0.13	
Pre Albumin	Papaya flower	3.76	0.45	0.14	P= 0.583
	Katuk leaves	3.89	0.55	0.18	

From the table above data seen that before treatment, the variables - variables that are in both groups had a value - average who tend to be the same. Statistically and performed statistical tests using test Independent t-test has a value of p> 0.05 so that it can be concluded that the nutritional status variables between the two group no significant comparison. Comparison of the results before and after the intervention in both groups, after administration of the intervention measurement variables - variables related to nutritional status. Comparisons are made on the group and the group katuk leaves male papaya flowers.

Comparison before and after the group leaves of katuk

The results of the comparison variable nutritional status in the group katuk leaves can be seen from the table below:

Table 5.3.2 Comparison before and after the intervention of giving katuk leaves

	Mean	Std. Deviation	Std. Error Mean	Sig
Pre BMI katuk	24.87	3.53	1.12	P= 0,045
Post BMI katuk	25.30	3.19	1.01	
Pre LILA katuk	26.36	1.65	0.52	P= 0.116
Post LILA katuk	26.80	1.14	0.36	
Pre Hb katuk	10.72	0.42	0.13	P= 0,00
Post Hb katuk	10.87	0.41	0.13	
Pre Albumin katuk	3.89	0.55	0.18	P= 0.068
Post Albumin katuk	3.98	0.51	0.16	

From the paired t-test are variable - variable nutritional status, BMI and Hb variables that have significant differences before and after intervention. The p-value that can be smaller than α = 0.05. It can

be concluded that the leaves can increase the variable katuk BMI and hemoglobin in pregnant women significantly

Comparison before and after the group papaya flower

The results of the comparison variable nutritional status in a group of male papaya flowers can be seen from the table below;

Tabel 2. Comparison before and after the group papaya flower

	Mean	Std. Deviation	Std. Error Mean	Sig
Pre BMI	25.17	5.28	1.67	P=0.061
Post BMI	25.47	5.00	1.58	
Pre LILA	27.83	3.59	1.14	P= 0.142
Post LILA	28.30	3.13	0.99	
Pre Hb	10.70	0.50	0.16	P= 0.046
Post Hb	10.93	0.49	0.16	
Pre Albumin	3.76	0.45	0.14	P= 0,004
Post Albumin	3.80	0.44	0.14	

From test papered t-test are variable - variable nutritional status, hemoglobin and albumin variables that have significant differences before and after intervention. The p-value obtained is smaller than α = 0.05. It can be concluded that the interest male papaya can increase hemoglobin and albumin in pregnant women significantly.

Comparison of the two groups after intervention

Tabel 5.3.4 Comparison of the two groups after intervention

Variabel	Kelompok	Mean	Std. Deviation	Std. Error Mean	Sig
Post BMI	Papaya flower	25.47	5.00	1.58	P= 0,931
	Katuk leaves	25.30	3.19	1.01	
Post LILA	Papaya flower	28.30	3.13	0.99	P= 0,181
	Katuk leaves	26.80	1.14	0.36	
Post Hb	Papaya flower	20.93	0.49	0.16	P= 0,774
	Katuk leaves	20.87	0,41	0.13	
Post Albumin	Papaya flower	3.80	0,44	0.14	P= 0,420
	Katuk leaves	3.98	0.51	0.16	

From the table above it can be seen that after the treatment, the variables - variables that are in both groups had a value - average who tend to be the same. Statistically and performed statistical tests used independent t-test test has a value of p> 0.05 so that it can be concluded that the nutritional status variables between the two groups there was no significant difference.

DISCUSSION

In this research, the results described differences in the nutritional status of the second trimester pregnant women before and after the intervention between groups of Katuk leaves and male papaya flower , that there is an increase in the average - average BMI, MUAC, hemoglobin and albumin in pregnant women after intervention katuk leaves. For BMI using a paired t-test obtained significance value of p = 0.045, which means there is a significant difference before and after the intervention of pregnant women get katuk leaves. The same thing happened in Hb, using the paired t-test obtained significance value of p = 0.00, which means there is a significant difference before and after interventions katuk leaves. Different things happen at MUAC, using the paired t-test obtained significance value of p = 0.142, which means there is no difference before and after the intervention of pregnant women received katuk leaves. The same thing happened to albumin, using the paired t-test obtained significance value of p = 0.068, which means there is no significant difference before and after the intervention of pregnant women

get katuk leaves. On the intervention of the male papaya flowers no increase in the average - average BMI, MUAC, hemoglobin and albumin in pregnant women after the intervention of the male papaya flowers. For Hb using a paired t-test obtained significance value of p = 0.046, which means there is a significant difference before and after the intervention of pregnant women get the male papaya flowers. The same thing happened to albumin, using the paired t-test obtained significance value of p = 0.004, which means there is a significant difference before and after interventions male papaya flowers.

Differences in nutritional status of pregnant women trimester II after the intervention, between two groups of leaves and flowers katuk male papaya. For BMI using a paired t-test obtained significance value of p = 0.0931, which means there is no significant difference both groups after the intervention of Katuk leaves and male papaya flower . The same thing happened at MUAC, using the paired t-test obtained significance value of p = 0.181, which means there is no significant difference both groups after the intervention of Katuk leaves and male papaya flower . The same thing happened in Hb, using the paired t-test obtained significance value of p = 0.774, which means there is no significant difference both groups after the intervention of Katuk leaves and male papaya flower . The same thing happened to albumin, using the paired t-test obtained significance value of p = 0.420, which means there is no significant difference both groups after the intervention of Katuk leaves and male papaya flower.

CONCLUSION

Obtained from this research after a statistical test group between the two treatment groups all variables have average values are likely to be similar this is due katuk leaf and male papaya flower nutritional content is almost the same which contains calcium, iron, phosphorus, vitamin A, B and C, protein, fiber, ephedrine and water and everything that can improve the nutritional status of pregnant women. The difference is only foodstuffs katuk leaves easily available, cheap, and easy processing tends to be more male papaya flowers while the material is a bit hard to get, relatively more expensive if we can not cultivate it tastes bitter.

SUGGESTION

Pregnant women are expected to pay attention to the food they consume, nutritious food is a must. Therefore, the family of pregnant women should pay attention to this. Food sources can be taken from the yard around which katuk leaves and relationship of male papaya contains a lot of nutrients. This has been proven in studies such materials can improve the nutritional status of pregnant women. That can be consumed both or according to the taste depends on the processing of these materials.

REFERENCES

Almatsier, Sunita. 2009. Ilmu Gizi. Jakarta : Gramedia Pustaka Utama

Almatsier, S. Perinsip Dasar Ilmu Gizi. Penerbit: PT.Gramedia Pustaka Utama. Jakarta: 2006.

Bartini, istri. 2012. ANC Asuhan Kebidanan pada Ibu Hamil Normal. Yogyakarta : Nuha Medika

Firda, yani. 2013. Panduan Klinis Kehamilan dan Persalinan. Yogyakarta :D-Medika

Francin, P. Gizi Dalam Kesehatan Reproduksi. EGC, Jakarta:2005.

Hartono, Andry. 2006. Terapi Gizi dan Diit Rumah Sakit Edisi 2. Jakarta : EGC

Irianto, Kus,Kusno Waluyo.2004.Gizi dan Pola Hidup Sehat.Bandung : CV. RAMA WIDYA

Kartasapoerta, Drs. G. Ilmu Gizi. Penerbit : Rineka Cipta. Jakarta : 2003.

Kementrian kesehatan RI, JICA. 2012. Buku Kesehatan Ibu dan Anak. Jakarta

LeFever, Joyce. 1997. Pemeriksaan Laboratorium dan Diagnostik. Jakarta : EGC

Priyanto, agus. 2009. Komunikasi dan konseling. Jakarta : Salemba Medika

Proverawati, atikah. 2011. Anemia dan Anemia Kehamilan. Yogyakarta : Nuha Medika

Simkin, penny, dkk. 2008. Panduan Lengkap Kehamilan, Melahirkan, dan Bayi. Jakarta : Arcan

Supariasa, I Dewan Nyoman.2002.Penilaian Status Gizi.Jakarta:EGC

Suyatno. 2009. "Statistik Vital Sebagai Indikator Status Gizi". http://suyatno.blog.undip.ac.id diakses tanggal 12 April 2014

Sediaoetama, Achmad Djaeni. 2004. Ilmu Gizi Untuk Mahasiswa dan Profesi. Jakarta: PT Dian Rakyat

Sediaoetama, Drs. Ahmad Djaeni. Ilmu Gizi. Penerbit : Dian Rakyat. Jakarta : 2006.